LAPHIA

Laser and Photonics in Aquitaine

Mid-term report

2012 / 13 > 2015

http://laphia.labex.u-bordeaux.fr/en/

PUBLIC SUMMARY

PUBLIC SUMMARY

Funded by the Excellence Initiative of the University of Bordeaux, LAPHIA (Laser and Photonics in Aquitaine) boosts research through collective site projects, drawing on the excellence of materials science and physics teams. LAPHIA gathers 22 research teams with around 120 Researchers and Professors.

During the 1st period of exercise, our work allowed to federate the entire scientific community through interdisciplinary projects in the field of lasers and photonics that contributed to raise the international profile and excellence of Bordeaux research. Considered as "the pillars" of the scientific program, **4** collaborative projects have been launched and have strengthened interactions between researchers of the photonic cluster. In addition of these 4 collaborative projects, **30** other projects (all typologies) have been selected to boost the excellence of the research. With an average of 210 publications per year (international peer-reviewed journals), we can note an increase of the publication quality between 2013 (*8 publications with an IF > 10)* and 2014 (*16 publications with an IF > 10*). Pro active, the Board pushed the implementation of a new research thematic on "multi material fibers" thanks to the recruitment of S.Danto (before at MIT, now Post doc international IdEx at ICMCB), the results are promising: one ANR obtained (retour chercheur), 2 patents in progress, 1 publication in the high level journal "Advanced Optical Material".

In strong partnerships with industrials, laboratories, Aquitaine Science Transfer (AST), the Competitiveness Cluster Route des Lasers and international partners, we succeeded in initiating an efficient area for collaborations in research but also in innovation - technology transfer and education.

We implemented a strategy to boost technologic transfer through the passport projects. We combined our strengths with AST and the Competitiveness Cluster Route des Lasers to ensure research meets the requirements of the industrial world. Up to now, we supported **5** passport projects (**60%** of them have a socio-economic partner included in their consortium; **2** of them are pursuing thanks to a maturation funding from AST (FOCI and PROXMI) and 2 patents have been issued). In parallel of this program, the risky project "GigaPico" obtained a common laboratory with the company ALS (*LabCom*) and allowed to launch the start up "Irisiome". We also helped entrepreneurs to launch their start-up: as an example, after 2 work experiences within Swinburne University in Australia and Politecnico di Milano in Italy, A.Dubrouil has been recruited by the cluster in the framework of the risky project "AttoFlower", he's now creating a start-up "FemtoEasy" in ultrafast instrumentation thanks to several supports.

The main achievements in Education are at the international level, with educational networks that enhance the exchanges for students and the Bordeaux attractiveness (**1** SPIE student chapter has been created (4e in France) / 1 "ETN – Fun Glass" is in progress). Thanks to our education call, we recruited **17** interns (**71%** of them are international and have been recruited directly abroad) and we strongly encouraged student exchanges with our main international partners: **13** mobility grants awarded (co-tutelle PhD/ Master). At the local level, new Master programs are under construction and it will be a good opportunity for LAPHIA to increase the visibility of education in photonics in Bordeaux.

Through a proactive action, we developed an efficient activity of promotion of international networking: 1 International Laboratory Associated "LUMACQ" with Laval University and INRS has been created, a R&D Center with Yonsei University and LG Innoteck is in progress. We also increased our involvement and participation in international networks such as Photonics 21 (L.Canioni belongs to the Board of Stakeholders) and SPIE (Photonics West). As attractiveness is one of our priorities, we succeeded in recruiting international talents within the LAPHIA projects: up to now, **40** recruitments (**9 PhD, 28 Post doc and 3 research engineers**) have been done and **76 %** of them have an international nationality.

The annual LAPHIA symposium is a key-structuring event for the dissemination of knowledge (up to now, **3** symposia with **57** talks, **91** posters and an average of **150** attendees per symposium). In addition, **29** LAPHIA seminars have been organized. We also worked on different communication actions to a large audience in close interaction with Science Philosophy Humanity laboratory and Bordeaux Montaigne University. Common actions have been reinforced during the International Year of Light (1 photo contest, 1 exhibition with CNAM, 3 large audience conferences…).

Please refer to appendix H for the performance indicators and appendix J for the list of publications (RICL).

1. PROGRESS OF THE PROJECT

Governance

The governance of LAPHIA guarantees a smooth operation and is exercised in **4** committees:

- **Board of Directors:** around **100** meetings since the launch of the Cluster. Consisting of a director (L.Canioni), a deputy director in charge of training (E.Fargin), a deputy director in charge of transfer (P.Bouyer) and a deputy-director in charge of research (P.Balcou). This Board is the executive committee. Pro active, the Board proposes new research areas, seeks for new collaborations and makes new links between laboratories in partnership with local state and economic development organizations. Therefore several projects that will be presented in this report have been initiated and/or boosted by the Direction. The members take all the operational decisions, determines which project is selected (after the evaluation of the external experts and members of the Scientific Council) and redefines when necessary the schedule and budget of the LAPHIA program as it evolves.
- **Scientific Council: 12** meetings since the launch of the Cluster. Consisting of **15** members: 14 local researchers belong to the 11 laboratory partners and **1** representative from Competitiveness Cluster Route des Lasers. The council issues a scientific opinion on programme activities and projects received in the framework of the LAPHIA research call and monitors these.
- **Strategic Committee: 2** meetings since the launch of the Cluster (Sept. 2014 and Nov. 2015[1]). Consisting of **7** high-level national and international researchers from all LAPHIA fields. It gathers once per year and its role is to assess strategy for research, training & technology transfer and to provide expertise on current and future activities.
- As LAPHIA belongs to the IdEx program, the 4th committee is **"Conseil de gestion":** which gathers representatives of research establishments involved in IdEx program to decide on strategic issues and objectives, allocate the adequate level of resources, thereby defining a unique overall research policy, with full coherence both at the regional and national scales.

A manager (AL.Bué) has been hired in March 2013 (half-time with the Cluster CPU from March 2013 to December 2014 and full-time since January 2015). Two people (R.Collas, S.Da Silva Reis) from the MIA department help for the budget and the LAPHIA expenses (shared service facilities with the IdEx program).

Given the dynamism and the actions launched to boost the Education program of LAPHIA, we have created an **education committee** composed of *E.Fargin (Deputy Director - Education), V.Jubera (chemistry), E.d'Humières (physics), MB.Vieules (manager - IdEx education platform in photonics and laser).* To help for the program of the seminars and annual symposium (invited speakers, scientific thematics…), we have set up a **seminar committee** composed of **6** researchers from different labs (*JC.Delagnes from CELIA, N.MC Clenaghan from ISM, Y.Petit from ICMCB-CELIA, T.Cardinal from ICMCB, M.Dussauze from ISM and JB.Trebbia from LP2N*).

Since the launch of the Cluster, we have initiated meetings with the directors of the labs, Région Aquitaine, institutional representatives (CEA; Bordeaux University: S&T department, S&T College, ECA, innovation…), local actors (Competitiveness Cluster Route des Lasers, AST…).

Two adjustments in regard of the initial project: > In 2014, following a recommendation from the "Conseil de Gestion" IdEx, it has been decided to divide the Scientific Council (local members and external members) and create a unique external committee called "**Strategic Committee"** composed of national and international experts in the domain. Therefore, since 2014, the scientific council is composed of researchers from the Bordeaux site and the strategic committee from external experts. > In 2014, F.Hannachi (CENBG) has sent her resignation from the scientific council to the LAPHIA Direction (her research activities are no longer aligned with the initial statement).

Our **Quality Management System** (QMS) is based on democratic and transparency values. Regarding our **selection process:** a research call website has been created, **23** national/international reviewers have been solicited for the evaluation of the applications from **70** experts registered in our database. Different documents have been written (description call, rules, evaluation form…).

[1] The Strategic Commitee report 2015 is presented in appendix D.

The **follow-up phase** of the selected projects is also mandatory. We give importance on final reports, presentations in front of the members of the scientific council and during the symposium, regular meetings with the PI, redaction of different documents (like timeline guidelines, HR rules…).

About our **management,** we try to analyse and anticipate the dysfunctions. As examples: centralisation of the LAPHIA credits, redaction of guidelines related to the expenses and eligibility, improvement of the seminars impact / HR process... Therefore we have initiated several meetings with different offices (accounting, HR, labs…). We also optimized all the meetings in preparing them before and/or to work by emails often as possible for reactivity and time saving. We pledge to deliver reports and final decisions.

To improve: *> In order to anticipate some breaking results and/or major bottleneck which can occur in a project, we would like to increase the interactions between the PI and the Board of Directors: it is a way to create a friendly and confortable research environment and to be reactive. > IdEx develops its own programs and policy; we need to discuss more about the schedule objectives of their calls (example: PhD with LIA Canada) in order to have a perfect match, to avoid redundancies and to share our best practices. > We have to send the final reports of the projects to Directors of labs (to inform and to give more visibility).*

Research

The scientific objective is to address few of the most important challenges facing photonics: integrated molecular architectures, nanoscale plasmonic devices, high power laser technologies and applications to laser/matter interactions, by bringing together a multidisciplinary consortium of scientists - some of them world renown - thereby reaching critical levels and allowing to address societal expectations, especially in the fields of energy, health, and economic development. Therefore, **the research program** of LAPHIA is focused on three areas where many actors on the Bordeaux site already acknowledge a high level of expertise, with the ambition to keep and expand the site's world- wide leadership in these fields. The subjects addressed in priority since the starting of the Cluster:

- **Emerging photonics and materials.** Molecular sciences, coupled to plasmonics and surface functionalization will be the central elements of high potential applications.
- **Innovating imaging**, directed either to super-resolution imaging methods, both for health sciences, but also for materials, systems, up to the large scale investigation of gravitation fields.
- **Lasers and high-energy physics.** Among the strategic objectives are the successful implementation of experiments on the LMJ/Petal lasers for fusion energy, laboratory astrophysics and nuclear physics, high average power laser developments for medicine and processes, and the use of the novel X-ray sources.

The strategic objective is to make Bordeaux one of the foremost research centers in Europe in the field of Lasers & Photonics. The Cluster research strategy is mainly based on **3** tools/typologies of projects described in the initial project:

- **Collaborative projects.** These illustrate research through their large scale, associated several research groups, and focus, targeting projects of strategic importance within the field of the cluster strategy and having the potential for making significant scientific impact leading to social, economic or other societal benefit. These projects are a core-structuring tool of the cluster. **4** collaborative projects have been supported since the launch of the Cluster. As an example, INPHOTARCH (Integrated Photonic Architectures) is a collaborative project involving around **25** researchers from **4** laboratories that brings together leading-edge skills in optics, lasers and materials chemistry. ***LAPHIA impacts:*** *To increase and strengthen the collaborations between teams*[2]*; to trigger a pulling effect, allowing to bringing new teams into the excellence perimeter of LAPHIA.*

- **Risky projects.** The main idea is to promote potential new breakthrough ideas, with high risk but also high possible pay-off. They will be envisaged as start-up funds for more ambitious research projects, possibly to be submitted later either to the Cluster Call for strategic & collaborative projects, and/or national or international funding calls. **15** risky projects have been selected since the launch of the Cluster. ***LAPHIA***

[2] *The team-interactions are presented in appendix B.*

impacts: *to create the conditions to allow bright new ideas to emerge and bloom; to stimulate cooperations to achieve a critical mass in our specific research areas.*

****LAPHIA success story****

As an example, ***INDIMONE risky project*** *allowed to Brahim Lounis team's to perform world premieres: i) the implementation of a magneto-optical microscope for imaging the Abrikosov vortex in niobium (type II superconductor) with excellent optical contrast. ii) a novel method of de-trapping of the vortex with temperature gradients induced by a focused laser beam has been developed. The aim was to control the position of vortices in the vicinity of preselected individual molecule. Experimental data were obtained on the local variations of the electric field probed by optical resonance in a single molecule near a Meissner border in an indium film. One publication within "Nature Photonics" and one "ANR" project selected.*

- **Research mobility projects.** The aim is to enhance researcher mobility, both incoming and out-going. These funds are meant to facilitate the international exchanges between research teams from the Cluster and international researchers in foreign universities. Researchers, post-doc fellows as well as PhD students can apply. **4** research mobility projects have been selected. ***LAPHIA impacts:*** *to enhance the international visibility and attractiveness of the Cluster and the University of Bordeaux as a whole.*

Key figures: These tools are proposed in the framework of annual call for proposals. Since the launch of the Cluster, **6** research and valorization calls have been organized and **74** applications have been received (all typologies). Our global success rate is **39 %** (there is a fierce competition for the risky projects with a success rate of **29 %**).

In parallel of these calls, 5 other projects have been supported by the Board to have a leverage effect on the site:

> 3 InterlabEx projects: "**MULTIMAT**" between LabEx LascarBx and the Cluster LAPHIA: the objective is to design and validate multi physics experiments based on the implementation of non-invasive testing system at multi-scale level to preserve the decorative caves. "**HOBIT**" between Clusters CPU and LAPHIA: the objective is to create a Hybrid Optical Bench mixing augmented reality and a real simulator for Innovative Teaching. "**NANO2BRAIN**" between the LabEx BRAIN & the Cluster LAPHIA: the objective is to decrypt brain pathophysiology using innovative optical nanoprobes as extra cellular space probing.
> Project "**MIGAphys**" is a research project linked to the EquipEx MIGA (*Physics Beyond MIGA*). The objective is twofold: the development of a new generation of ultra-stable lasers and / or high power in the visible and infrared for coherent manipulation of atoms and the reconstruction of mass distributions and their variation with the recorded signals from the antenna (consortium: LP2N, CELIA, LABCOM STARLIGHT, GEOAZUR, IPRA).
> Project "**Multi material fibers**": Taking full profit of the locale, fertile scientific ecosystem, LAPHIA implements a fiber-drawing capability and a dedicated line of research at the University of Bordeaux to develop innovative solution for the shaping and functionalization of hybrid fiber devices. S.Danto has been selected for an "IdEx Post-Doctoral Fellowship" hosted by LAPHIA under mentoring of Prof. Canioni (a scientific program expected to attract high-profile candidates to bring an innovative insight into a strategic on-site research topic). The LAPHIA impacts are multiple***:*** ANR "Acceuil Chercheur Haut Niveau" awarded to Y.Ledemi (2015); Grant ANR@Raction 2014 "Hosting high-level researcher" awarded to Dr. Danto (36 months); scientific outcome (to date) 1 publication / 3 patents in preparation; consulting Launching of the study "A platform for photonics materials in Bordeaux" with the group ERDYN; International Launching of the project "Laboratoire International Associé" between the Laval university, INRS - Québec and the University of Bordeaux.

Education

The **educational objective** is to set up a completely integrated Graduate program, in photonics that will blend education with high technology and a structured research experience. This interdisciplinary program will also provide the label of an **International Graduate School**. The strategic long-term objectives are to:

- Increase the **attractiveness**, making the Bordeaux a major international center in Lasers and Photonics. This implies the implementation an ambitious international policy, with income and outcome mobility actions directed both to students and teachers;

- Reach maximum rates for graduate awards and **professional insertion**. Two key tools are considered: i) offer students an opportunity to gain both a degree in management and a Ph.D. in Photonics; ii) Optimize the

reactivity to the new trends in the field at large, and to the needs expressed by industry.

It should be noticed that Bordeaux University operated fusion of the different universities located in Bordeaux and all the services were reorganized in January 2014. As a consequence, many administrative processes were reported later. According to the new functioning rules of the Bordeaux University it was not possible to set up a complete vertically integrated programme, for a future International Graduate School in photonics. Research and Education have been effectively attributed to separated administrations: Colleges of Formation, Doctoral Schools and for the research: department of Science and Technology. From beginning of 2015 the future Master programs are under construction for the new accreditation for September 2016 prohibiting new project for international Master in collaboration with a foreign University.

The University of Bordeaux and schools are a breeding ground for future research. LAPHIA goes hand in hand with the actors of training in physics and chemistry at the University of Bordeaux, in order to extend the innovation effort of the laser and photonics sector. To open up training to an international audience, LAPHIA offers mobility opportunities to partner universities. Our aim is to boost and give more visibility on the different education programs proposed by the university in laser and photonics (Master Physics/chemistry, ED SPI). At the university, we don't have any specific academic curses devoted to photonics and laser but we have different specializations, which have been set up specifically for photonics. Therefore it is great importance to clarify, simplify and promote the education offer concerning photonics.

Several actions at different levels have been set up to reinforce the photonics and laser education area:

- **Master programs:** LAPHIA was concerned by different Master tracks already existing in the University of Bordeaux according to the last accredited official program: Master of Physics (~22-23 students/year, a few students from IOGS attended classes in 2014-2015), Master National "Fusion" (~3 students/year); Master of Chemistry CPCM (Chemistry and Physico-Chemistry of Materials)(~14 students/year); Master International "MILMI "(only 1 US University of Central Florida student in 2012-2013). This MILMI program stopped in 2013 due to drastic differences between Master degree requisites and financial conditions between the French and American Education systems. Within this context some implementations have been specific to LAPHIA: the long-distance teaching successfully experimented by Pr. Kathleen Richardson and Pr. M. Richardson as a live visioconference given to UB and UCF USA students together; courses available on Moodle, the online course platform of the University of Bordeaux (Photonics: V.Jubera, Glass materials: K.Richardson, Electrodynamics: E.D'Humières); the last MILMI summer school hold in Bordeaux in September 2013 on "Entrepreneurship in Photonics" which was offered to all Master and PhD students involved in LAPHIA research. The fact is that only 1-3 Master students/year will begin PhD thesis in Bordeaux on LAPHIA research axis. This shows the necessity to offer more national and international visibility and attractiveness to Photonics in the future accredited formations proposed by Bordeaux University. The LAPHIA Education team thus actively participated to the elaboration of the future Master accreditation and assumed responsibilities of specific routes largely opened to international with better visibility in Photonics. The LAPHIA involvement is found in the following programs: Master of Physics, International M2 LMN route (Lasers, Material, Nanosciences) or NPU route (Nucleus, Plasmas, Astrophysics): courses in English language (Lasers, Nonlinear Optics, Ultra-short waves), (Biophotonics & bio-imaging) for LMN and (Plasmas & radiation Physics) and (Instrumentation) for NPU; Master of Chemistry, M2 PCCP International route: courses in English language (laser and imaging) and (Functional Materials). Other courses can be given in English language depending on the audience of foreign students, intensive English language training during M1&M2 is delivered and a 3 months or 6 months lab internship can be done abroad in M1 or M2 respectively. Vocational, Entrepreneurship, Innovation and Communication Training are included in the programs. Supports for Master courses linked to LAPHIA are expected to be available on Moodle. Third year Engineering Schools Agreements for the validation of the UB Master degree are in progress for IOGS (15-20 students expected each M2 year from 2016) and are under discussion with IPB from March 2015.

- **PhD programs:** one of our priorities is to give more visibility at an international level in increasing the number of co-tutelles (up to now, 6 co-tutelles with Laval University; 1 with INRS; 1 with Yonsei University). We also increased the integration of students into the workplace through invitations of PhD students to the **summer school MILMI "Entrepreneurship**" in Sept.2013 and from 2014 collaboration with **ECA** to propose our PhD students the one week summer school "Entrepreneurship". We strengthened the implication of students to the quality of education and work skills thanks to the creation of the **SPIE student chapter in**

optics in April 2015 (in collaborations with Doctoral Schools CS). This campus organization federates a group of students studying optics & photonics (master and PhD) to support the professional development of its members. It is a volunteer organization that receives funding and support from SPIE to organize local and international events. The chapter benefits are to connect with optics & photonics students from other countries, to share knowledge, to build team and professional skills, to connect with the international optics & photonics community. The students can also apply for mobility scholarships (one per year is offered to a member to attend the leadership workshop in San Diego or Munich). From April to Dec. 2015, **15** PhD students from different laboratories of Bordeaux are involved. They will now promote the chapter to Master students from Bordeaux University and IOGS. We also enlarge international European attraction in submitting a **European Training Network (ETN) "LASE2020"** in 2014 (not selected), the project will be therefore resubmitted in 2016 ("**Fun Glass"**).

- **Synthesis - international agreements:** To open the way for new international partnerships, specific agreements have been signed with Universities of Laval in Canada and Yonseï in South-Korea. For **Laval University**: **i)** « *Entente pour la collaboration dans le domaine de l'optique, photonique et laser* » in Dec. 2013, **ii)** « *Entente portant organisation des programmes d'enseignement en maîtrise chimie avec mémoire et en master mention chimie* » - May 2014, **iii)** « *Protocole CREPUQ* » allowing validation of both Master and Maîtrise diploma – Sept. 2015 for M.Chazot (registered in Master of Chemistry in UB and in Maîtrise de chimie in U.Laval). With **Yonsei University: i)** *"Accord de collaboration académique"* validated by the French Higher Education Ministry (for student exchange programs) and signed between both universities in order to set up codiplomation in 2013, **ii)** *Délivrance de l'autorisation de soutenir la thèse en cotutelle de* MOK JIN MYOUNG - Dec. 2014, **iii)** Memorandum of Understanding (MoU) – 2015 (in progress), **iiii)** agreement on academic and research affairs between Yonsei-LGIT R&D Center and LAPHIA-Bordeaux Univ. (2015 – in progress).

- **Events related to the education program:** Since the start of the cluster, we have initiated different events such as « ***Café de l'entreprenariat*** » with ECA (May 13, 2014; around 20 attendees*).* In the framework of the annual symposium, students and Post doc have presented **posters** (in total **91** posters have been presented during the **3** symposia; **11** best poster prizes have been awarded) and have prepared a synthesis (2 min.) of their research works for the "**flash presentations**". They also attended a **round table with industrials** to share the visions on training, research and innovation in laser and photonics. In Sept. 2014, a "**Pint of LAPHIA**" (inspired by Pint of Science) was organized by a junior committee to present different scientific applications in an accessible discourse for Master students of the University of Bordeaux. The Student chapter in optics has organized **3 InterLab events** and have actively participated to the "Open Days" of Institut d'Optique d'Aquitaine (presentations such as "*ma these en 180 secondes*", hologram stands…) for large public and teenagers. We have initiated **2 industrial mentoring for PhD students** (Arnaud Royon (Argolight) and Eduardo Cueto Diaz (PhD at IMS); François Salin (Eolite Systems) and Hanbin Zheng (PhD at CRPP).

- An **education call** has been launched (at the end of 2014) to offer student mobility opportunities in a large array of laser, innovative imaging and photonics and material between LAPHIA and its international partners for joint supervision of theses, double Master's degrees *(http://idex.u-bordeaux.fr/LAPHIA-education-program).*

Key figures: Since the launch of the Cluster, we have supported: **6** Master mobility grant (**6** outgoing grants), **7** PhD mobility grant (**4** incoming grants, **3** outgoing grants) and we have recruited **17** interns within a LAPHIA laboratory (**76 %** are international; **71%** are international and have been recruited abroad). In order to be attractive, we published the call on different international networks (Photonics 21, SPIE, OSA…). Therefore, the number of applications has doubled from 2013 to 2015.

****LAPHIA success story****

Firstly, LAPHIA helped me find a very good Master's internship in one of its partner laboratories. In connection with the cluster's manufacturing partners, I received a grant from the company Amplitude Systems, which specializes in new generations of lasers, and that enabled me to continue my research work on the optimization of laser performance for three months in the laboratory. I then applied for and received a CIFRE doctoral placement.

Moreover, thanks to the LAPHIA initiative, I am also part of the «Bordeaux SPIE Student Chapter in Optics» network which enables the Bordeaux-based student community focused on laser and photonic fields to unite around this discipline along with a worldwide network. Aside from this opportunity for professionalization, my academic path shows how the LAPHIA community is organized in such a way that it can help any motived student continue his education in the best conditions. Wendwesen GEBREMICHAEL (previously Master student at Friedrich–Alexander Universität in Germany).

LAPHIA impacts: *To support the setting up and strengthening of research and academic partnerships and networks involving LAPHIA partners; To strengthen the positioning of Bordeaux as a major education and research institution in an international level; To enable students to enjoy an international environment early-on in their academic path**;** To participate in the internationalization of the institution to share best practices.*

- **Other LAPHIA actions:** In the framework of our Education program, up to now, we welcomed **48** well renowned invited Professors[3] who gave seminars, worked on research collaborations (to apply for European projects) and/or higher education partnerships (K.Richardson from UCL; S.Juodkazis from Swinburne Univ; Christian Kränkel from Hambourg Univ…). In 2014, LAPHIA has supported the removal and transport of laser materials (included a femtosecond oscillator) from Milan to Bordeaux to reinforce the equipment for the "Travaux pratiques Laser plasma" (training around 110 people: undergraduate/Master students and professionals for more than 1500 hours). LAPHIA has been a partner for the summer school "*Ecole d'Aquitaine Ondes et Matières*" organized by CEA in Oct. 2014. In 2015, student events have been supported: a scientific workshop organized by students involved in the bachelor degree of chemistry and the "J-DOC Day" related to cold atoms organized by PhD students from LP2N). These contributed to boost the student initiatives and the networking.

- **IdEx Initiative related to the photonics and laser education:** An optics-photonics-lasers training platform was created to structure and develop the Bordeaux training in that sector and to have a main entrance for the education offer of the university (*http://photonique.u-bordeaux.fr/Rejoignez-la-plateforme*). This platform is managed by M-B.Vieules, she's also a member of the LAPHIA Education Board. In 2015, in collaboration with PYLA, a strategic partner (H2020 program) has been selected "IT-ELLI". Several projects have been supported by the platform *(Serious Games, E-book, ETOP2015, HOBIT project).*

Exploitation of results

Research is preparation for tomorrow's markets. LAPHIA provides the "fuel" for technology transfer, via research projects with potential for technological breakthroughs. Progress in optics and photonics plays an important role in many sectors of our society: aerospace, energy, automotive, communications, health, medical, etc. In this context, the results of research supported by LAPHIA make technological innovation possible, as well as development of new products and/or business creation. **Innovation and technology transfer** is the third pillar of the LAPHIA program. In very close partnership with AST and the Competitiveness Cluster Route des lasers, this program boosts the economic outcomes of the research achievements of the various teams by several means:

- Dedicated programs such as **passport projects** supports research lines with high potential of creation of Industrial Property. This is to demonstrate feasibility in the laboratory. A boost to ensure research meets the requirements of the industrial world and to guarantee a technology level high enough (TRL) to start a maturation project provided either by the Bordeaux University or AST.

LAPHIA impacts: *Fund application-oriented projects on short term and high pay off with patents pending, with high potential of fruitful technology transfer in the future. Increase the numbers of LAPHIA project routed to systems. An increased number of research projects should then focus gradually from purely interest-driven subjects, to applications-oriented subjects, among the four fields identified for LAPHIA: Energy, Health, Non-destructive examination, laser processes.*

Key Figures: In the framework of our annual call for proposals, **5** passport projects have started since the launch of the Cluster. Up to now**, 60 %** of passport projects have a socio-economic partner included in the consortium and **40 %** of them have received a support from AST for pre-commercialization.

[3] *The list of the 48 Invited Professors is presented in appendix C.*

LAPHIA success story

*The "**FOCI passport project**", which involved ICMCB, CELIA and the company PODEO, develops new ideas of transparent moulded ceramics for infrared laser applications. PODEO Company has shown a great interest in this topic. The demonstration in the laboratory was successful and a maturation program in partnership with PODEO starts thanks to Aquitaine Science Transfer (AST) with the objective to produce optical elements for infrared vision (maturation funds obtained: 105 k euros and an international patent with the obtained results from FOCI-Ref No. 8363-01N PACT IP Ref ICG70077).*

- Increase the relationships with the **Competitiveness Cluster "Route des Lasers"**. To date, we have co-organized two initiatives of industrial mentoring for PhD students (Arnaud Royon (Argolight) and Eduardo Cueto Diaz (PhD at IMS); François Salin (Eolite Systems) and Hanbin Zheng (PhD at CRPP) and the symposium 2013. Moreover, a representative from the Pole belongs to the Scientific Committee and a LAPHIA representative is invited to the DAS meetings of the Pole.
- Work in partnership with **Fondation Bordeaux Université** to establish and enhance industrial – academia collaborations through fundraising tools in order to involve companies in the Cluster's environment. In 2014, we raised funds from Amplitude Systèmes for a 3 month-engineer contract (W.Gebremichael) in order to bridge the gap between the end of the LAPHIA internship and the start of his CIFRE thesis within the enterprise.
- Launch internships in **innovative start-ups.** Our aim is to contribute to the funding of internships for students (both at Master and PhD levels) and Post doc in small innovative start-ups. This is meant both to enhance collaboration between LAPHIA and its private partners and to improve the professional insertion of graduates from courses connected to the Cluster. In 2015, we have supported a first start up project called **FemtoEasy**.

**** LAPHIA success story ****

*After 2 work experiences within Swinburne University in Australia and Politecnico di Milano in Italy, A.Dubrouil has been recruited by LAPHIA in the framework of the risky project "AttoFlower", he's now creating a start-up "**FemtoEasy**" in ultrafast instrumentation. The innovative nature relies on a special design for autocorrelators and FROG. The project is part of the "Incubateur Régional d'Aquitaine" and has been financially supported by CNRS, Aquitaine Science Transfer and LAPHIA (6 months of internship: recruitment of Pierre Lefebvre: student from ENSEIRB Matmeca). The project has been also laureate of the i-LAB contest in ''emergence'' category and a market study has been performed. FemtoEasy has an important R&D plan to develop other innovative products that will reinforce the turnover growth of the company.*

In the environment of GigaPico risky project, one of the innovative technological parts of this project has been converted to a start-up. Romain Royon (previously PhD at CELIA) has created his start-up **Irisiome** related to laser machines for medical applications and tattoo removal. He is the laureate of the i-Lab competition within the Emergence category in 2014 and within the Creation-development category in 2015. LAPHIA federates actors with a variety of complementary skills and allows them to meet around a table to drive research forward. This networking in research has allowed Romain to start from scratch and he has been able to create a start-up business.

- Reinforce of **continuing education**: The Cluster strives to reinforce the continuing education within the courses to which it is closely connected. To this aim, it will develop specific certifications jointly with representatives from private and public sectors. People from the Cluster private and public partners constitute a privileged target for these continuing education courses, as this will enhance the connection between the Cluster and the private and public sectors. During this first period, we organized events towards industrials such as courses oriented to industrial applications in research and innovation during the Symposium 2014: P.Lalanne (LP2N), L.Cognet (LP2N) and S.Danto (ICMCB) have presented respectively three **courses** related on: "Artificial optical materials", "High-resolution optical microscopy" and "Specialty optical fibers: an overview". We also organized a **round table** with industrials to share our visions on training, research and innovation (E.Mottay from Amplitude Systèmes, C.Ranger from ExploraNova, R.Gouin from Fondation Bordeaux University, P.Bouyer from LAPHIA, MB.Vieules from the IdEx platform in photonics and laser).

2 adjustments in regard of the initial project:

- In the initial project, we have proposed to create a Club Affiliate with Affiliate Days in partnership with the Competitiveness Cluster Route des Lasers. The challenge was to actively involve corporations (members of the Pole but also other national and international companies) in the research environment of LAPHIA. The company's involvement will benefit the company as well as the entire optics and photonics field, and it will also enhance the R&D's progress, help to expand the education and research programs, and help to formulate and crystallize the research work on technology and applications in optics, lasers, and photonics, both now and in the future. Taking into account the complexity of the ecosystem, we work on the best scheme with the help of the Foundation Bordeaux University (fundraising tools, adhesion fees…) but we did not succeed to find a proposal that satisfied both parties. Moreover, the Pole already organized industrial events for networking therefore it was not relevant to organize new ones (too many solicitations…). It seems that this club is an excellent idea but not enough mature. Even if the club has not been created, we have set up several actions to keep in close touch with the needs and expectations of private companies, both in terms of research and development and in terms of teaching (cf valorization part).

- In the initial project, we presented an eventual partnership with Alphanov for our innovation and transfer technology program. Different research teams from LAPHIA have projects in partnership with Alphanov to develop prototypes and/or research oriented projects. In the other hand, Aquitaine Science Transfer, SATT (Technological Transfer Acceleration Companies) has been created and funded by the government (50 M. €). Since 2012, AST has taken the major part of the maturation and development of projects from Bordeaux University (*cf agreement*). AST is also in charge of evaluation and protection the IP of the new technical solutions implemented in University. It was quite naturally to involve them in our technology transfer programs. Indeed, AST could sollicitate Alphanov as a supplier for specific AST maturation projects linked to photonics.

International programs

International programs in progress initiated by the Board. In those programs, we set u a triptych in research, higher education and dissemination of results.

- The creation of a "LIA" with **Canada** (Laval Univ, INRS): **"Lumière Matière Aquitaine Québec".** This program gathers COPL from Laval University, LAPHIA from Bordeaux University and INRS. For the research part: 5 research work packages linked to the LAPHIA research areas; 7 PhD students in cotutelle). For the education part, there are exchanges of bachelor and master students between universities). Socio economic actors show their interests in the LIA, discussions are in progress. A spring symposium has been organized in May 2015 in Laval University in order to pursue the discussions (10 Bordeaux researchers attended).
- Creation of a research Center with Yonsei University (South Korea) related to "***Advanced three dimensional nonlinear materials ».*** 1 PhD student in cotutelle, exchange of 1 PhD and 1 post doc. About the results exploitation, LG INNOTECK launches an exploratory project in Bordeaux with LAPHIA. There have been several exchanges of professors and researchers to give courses and seminars in Seoul and Pr Park came to Bordeaux twice.
- **Long-term collaboration between UCF (Creol) and Bordeaux University:** This collaboration started more than 10 years ago before the creation of LAPHIA. It involves international Master (MILMI), exchange of bachelor and Master students in the framework of REU program. At the moment, 2 Phd students in cotutelle are in progress. A spring seminar has been organized in USA in 2015. This cooperation seeds LAPHIA birth, moreover, Dean Lewis (*formal President of Bordeaux 1*) vests Professor Martin Richardson of the University of Central Florida with the insignia of a "Docteur Honoris Causa" of the University of Bordeaux in December 2013. Moreover, Martin Richardson will propose a Fullbright Tocqueville Chair in 2016.

In any Center of Excellence, research teams have already strong collaborations with many worldwide Universities. Those collaborations are "one to one" on specific areas. In this framework, the Board has been pro active to broaden transversal collaborations involving from 2 to 3 research teams (min.) in a bottom up approach:

- Darmstadt University / Jena - Germany
- Partners ETN "Fun Glass": National Hellenic Research Foundation, University of Southampton, Consiglio Nazionale delle Ricerche

- Euskampus – Spain (2 symposia, 1 workshop organized in 2014 and 2015)

The LAPHIA scope of influence & promotional activities

Up to now, we have realized several activities for different targets to promote and enhance our national and international influence. We have initiated a lot of actions but also supported in co-funding events in respect of excellence selection criteria established by our seminar committee. In order to support the research teams in their dissemination of scientific and technical information and help us to organize national and international manifestations, LAPHIA has co-funded **8** events up to now (summer schools and/or scientific conferences for research and training) which has contributed up to an average of 1 000 euros each one. We have also taken an active part in scientific media events for a wide audience, such as the conference-debate organized by Master Students of Bordeaux Montaigne University on "*Lasers et société: Craintes justifiées ou bienfaits méconnus*?" at Cap Sciences in February 18, 2014 (around **120** attendees; accessible for deaf and dumb people).

UNESCO proclaimed 2015 "the **International Year of Light** and techniques using light". In this context, a LAPHIA committee has been created (JC.Delagnes, L.Canioni and AL.Bué) and has initiated a number of activities for a large audience around Light such as: **i)** An **interactive exhibition** about the history of laser in Aquitaine "milieu amplificateur - les lasers en Aquitaine » in partnerships with CNAM and CEA (inauguration on July 1st, 2015 at IOA), a website is in progress in order to propose to all organizations (high schools, industrials…) to welcome the exhibition**. ii) 3 large public conferences** have been organized (Peter Van Ballmoos in March 20, 2015 about astrophysics; Ludwig Pasenau about art and light in April 24, 2015; Jean de Giacinto and Yannick Deshayes about architecture and light technologies "OLED" in May 2014). The main idea was to mix different points of views and disciplines. For example: for the third conference, an architect with a scientist have presented their work and answered the following question: "how the science related to light can serve architecture/design?" **iii) A photo contest "Lumière sur…"** with 5 categories (architecture/illusion/free creations/portraits/light sources) has been launched from April 1 to October 5, 2015 to all Bordeaux University personal and students, Bordeaux Montaigne University, CEA-CESTA, IOGS (Bordeaux), CNRS Aquitaine Region, Alpha-Route des Lasers and Alphanov. Our aim was to federate the community whatever the Institution/the position around an original event between art and science. We received **264** photos from students/administrators/researchers from different Institutions. **21** members (with different profiles, organizations, ages, sex, positions…) have been solicited to be part of the selection committee and a ceremony has been organized in November 19, 2015 to award the 5 laureates. Then the photos will be exposed in different locations in the campus (BUST…) and outside (Hotel de Region, Maison Eco-Citoyenne…). **iiii)** In order to highlight the **student projects of IUT "Mesures Physiques"** related to the Light, LAPHIA supported two of them "*Vitrine de l'Eclairage*" and "*arc en ciel*", visible during ETOP 2015 and the 3rd edition LAPHIA symposium and other events (Open Days of IOA…) **iiiii)** We have also co-organized the **Open Days** of Institut d'Optique d'Aquitaine planned on October 9-10, 2015 (research speech by the students from the Student Chapter, presentation of student projects, stands and animation about holograms organized by the PhD students…), **220** attendees during both days).

For all the events listed above, we are satisfied. These events allowed federating the community. This program has been realized thanks to the help of an intern (Q.Mennecart) from the Master "Médiation des Sciences"of Bordeaux Montaigne University. Moreover, we received funds from CNAM (3 000 euros) and Aquitaine Region (2 500 euros). Although the large public conferences were interesting and communication has been anticipated, there were a small number of attendees (around 50 for the conference "astrophysics", 5 for the conference "art and light" and 30 for the conference "architecture and light"). We learned from our mistakes and analyse the reasons of this weak attendance (location, schedule…).

Regarding the press release, we published in different journals with different target audiences: "Nouvel Observateur" for large audience (regional edition - March 2014); "Dephy Interne" for local scientific and student community (N°2, Sept. 2014), "Innovation Review" for industrials and the scientific community at national and international levels (April and May 2015 with a focus on aeronautic). Published in "Innovation Review" has been decided in order to generate the interest for the transfer of the knowledge towards the socioeconomic world specifically to show the synergy between photonics and aeronautic. For the moment, we have not yet noticed the short-term impacts.

We are also involved in **national and international networks** such as Photonics 21 (Board of Stakeholder; European level), SPIE (international level), CNAM Steering Board (local level) in order to do lobbying, to share best practices and to broaden our knowledge (these networks provide an enormous amount of access to resource information).

A lot of **public talks** were given by the Board of Directors to present the Cluster and to promote our programs. Here are some examples: InnoVin, Forum Montesquieu, ECA, CNAM, … (*list non exhaustive).*

The **LAPHIA booklet**[4] have been created and published in English and French. We wished to highlight the outcomes of our programs and projects through testimonies of researchers and students. This booklet has been designed for different profiles (large public, researchers, students, industrials, institutions). This work was realized thanks to the help of an intern (N.Plantey) from Bordeaux Montaigne University Master "Mediation des Sciences".

The Cluster LAPHIA's **website**, a showcase for the LAPHIA actions, showed a strong increase in terms of the number of visits between 2013 and 2015. From 2013 to 2014, the visits have increased by over **48 %**. The visitors are mostly French (73 % in 2014) followed by in order India, USA, Germany.

Conclusion

LAPHIA has four general objectives: **Excellence, Dissemination, Exploitation of Results and Attractiveness**. We proposed different type of procedures in order to achieve these general objectives: **projects** of different type will be run within LAPHIA framework; **events** for exchange and communication will be organized; **mobility** of students and researchers will be supported; **higher education** through the development of an international PhD and Master program in photonics, lasers. We have summarized with charts the links between the different procedures in order to success our general objectives in appendix F.

Future perspectives

Refer to the power point "Cluster LAPHIA - future perspectives".

2. LABEL AND ASSOCIATED FUNDING IMPACT

Description of the scientific achievements

We had several short-term operational objectives:

1) Increase and strengthen the collaborations between teams
2) Trigger a pulling effect, allowing to bring new teams into the excellence perimeter of LAPHIA
3) Stimulate cooperations to achieve a critical mass in specific research areas: **Photonics and materials science, Innovative imaging, and lasers and high energy physics**.
4) Create the conditions to allow bright new ideas to emerge and bloom.
5) Increase the numbers of LAPHIA project routed to systems and applications- subjects, among the four fields identified for LAPHIA: Energy, Health, Non-destructive examination, laser processes.

We set the following organization tools to meet these objectives: for 1) and 2) we fund strategic & **collaborative projects**. Objective 3) was reached thanks to **risky projects**. We reached objectives 4) and 5) by funding application-oriented projects on short term and high pay off with patents pending **passport project**. We also set variety of **mobility actions**, from research-targeted mobilities, up to **invited Professor** (jointly with the education program) and student mobility.

Key figures: Up to now, **32** projects have **started** (**4** collaborative projects, **14** risky projects, **5** passport projects, **4** research mobility projects, **2** interlabEx projects, **1** SHS project, **2** "others" (MigaPhys & multi-material fibers)).

84 % are research projects, **16%** are technology transfer projects. Out of 32 projects, **50 %** are inter-lab projects (included min.2 labs from LAPHIA).

- **EMERGING PHOTONICS & MATERIALS**

A first key objective is the knowledge and control of photophysical properties of isolated nano-objects and more complex structures. It is fundamental to optimize their optical response for specific applications, such as non-conventional light sources, photonic materials, nano-optical sensors or biological nanolabels. This field includes the

[4] *The LAPHIA booklet is presented in appendix I.*

domain of nanophotonics and plasmonics. Understanding the optical properties of nanoscale materials and the behavior of light at the nanoscale to tailor and engineer of photonic devices. This progress at the nanoscale, help to develop a new generation of hybrid photonic structures, including organic, metallic and semi-conductor compounds, using a whole range of photonic engineering methods, with molecular and supramolecular synthesis, colloidal particle assembling techniques, laser and electric field structuring at different scales that will be compatible with their integration into functional device. **The challenge is to engineer and propose innovative and low cost method for multidimensional structured materials** compatible with photonic requirements for which the mesoscopic scale (≈100 nm) is of particular importance. One-dimensional structured material like crystal photonic fiber fibers are solutions that have already proved their value for high-power fiber lasers and shown great interest for **integrated hybrid photonics architectures**.

- **INNOVATIVE IMAGING**

This axe covers correlative (multi-modal) imaging, coupling for instance acoustic and photo-thermal, optical and electron microscopies, THz and X-ray... As an example, correlative microscopy approaches is developed in order to link the structural properties and the optical response of individual nano-objects, their assemblies and more complex photonic structures developed in this area as well as in the area "Photonic Materials and Systems"; Super-resolution methods, in particular the STED technique, with support of high-level numerical methods. We develop new nano-imaging methods operating at different spatial and temporal scales. They are mainly based on new STED microscopy and high-density single molecule modalities; Exploitation of novel sources, as high-energy THz fields, coherent X-rays, or coupling between laser excitation and the acoustic response of a medium.

- **LASER AND HIGH ENERGY PHYSICS**

Major developments worldwide aim to increase the average power of lasers in the near IR and IR, up to several hundred Watt, while keeping the perfect quality of current lasers operating in lowest order spatial mode. Few main methods are in competition: fiber lasers, and thin disk lasers. Novel optical materials, either with hosts as ceramics, or new rare earth dopants, are considered; innovative laser architectures, designed to optimize the thermal behaviour, and optical methods, to increase the average power. The objective is to develop lasers with high output powers. High Energy Density (**HED)** physics is new fast developing discipline with many promising applications Such states of the matter with pressures exceeding 1 Mbar can be created on mm scales with contemporary laser installations and their studies provide breakthrough understanding in many domains such as inertial fusion for energy, fundamental physics, and laser processing of materials. At one extreme, the **Laser MegaJoule**, and its associated **PETAL** petawatt laser, are large-scale systems, with enormous laser energies, but limited repetition rates. They give to this domain a worldwide visibility, and, by their future exploitation, should permit to the local LAPHIA scientists to play a key role in international collaborations aiming for major scientific endeavors, such as Controlled Inertial Fusion.

Publications comments

The LAPHIA community publishes **85%** of the papers related to laser and photonics in Aquitaine region. This proves that the teams involved in LAPHIA are representative of the Pole of excellence in photonics in Aquitaine. LAPHIA community publishes more than 900 publications per year (Ref: OST study). The OST study shows that there is a small increase of the publications with a high impact but the future indicators must confirm this.

The cluster impact is the common publications between teams from different laboratories.

With an average of 210 publications per year (international peer-reviewed journals only), we can note an increase of the publication quality between 2013 (8 publications with an IF > 10) and 2014 (16 publications with an IF > 10). 0 publications have an Impact Factor > 30 in 2013 whereas in 2014 4 of them have an Impact Factor > 30 (Nature Photonics and Chemical Society Reviews).

The performance indicators are presented in appendix H and the list of publications is presented in appendix J.

Collaborative project mid-term results

During this 3 years program, we have started **4** collaborative projects of 4 years duration. We present in the following section the mid-term results.

INPHOTARCH ("Integrated Photonic Architectures" – 25 researchers, 4 laboratories: ISM, ICMCB, CELIA, CRPP) aims at developing a new generation of hybrid (organic/inorganic) photonic structures, using molecular and supramolecular photonic engineering, laser and electric field structuring at different scales that will be compatible with their integration into functional devices. The originality of the project stems from our interdisciplinary and complementary expertise, which is further strengthened by successful international student exchange and scientific collaborations with Photonics centers - CREOL in UCF Florida and COPL in U. Laval Québec. *(Coordinator: Vincent Rodriguez - ISM)*

Two major impacting work-packages: 1) Laser Structuring and electric field structuring; 2) Addressable photonic molecular structures on unconventional designed interfaces

Scientific progress:

Direct Laser Writing (WP1a) Laser printing using fs pulse lasers is an extremely active field of research. The consortium is a pioneer in this field, along with a few other groups in the world, for implementing innovative 3D photonic structures in transparent bulk glass using direct fs laser writing. We have demonstrated that 3D fluorescent structures exhibiting both 2^{nd} and 3^{rd} order optical nonlinearities can be engraved with spatial resolution below 100 nm in glass substrates. Use of high repetition rate laser in silver containing glass, due to a combination of ionic migration of mobile ions and local redox processes, result in the formation of high local optical contrast due to the formation of silver clusters. For the first time, direct fs laser poling with second order nonlinear response has been demonstrated associated to the formation of a permanent embedded electric field.

Laser printing in 3D opens up a wide number of possibilities in terms of applications such as data archival as mentioned in "Advanced Materials" journal or the calibration of imaging platforms in biology or medicine (Argolight spin off of ICMCB and CELIA/LOMA). Our results have been recently extended to the glass surface for combining 3D and 2D structuring and future surface functionalization.

Electric field structuration (WP1b) We have demonstrated that µ-poling can be achieved by an imprinting process governing at the micrometer scale the implementation and the geometry of second order optical properties in glassy materials. µ-thick line or pixel patterns on a phospho-niobate bulk glass have been achieved with anisotropic SHG responses, allowing full geometry design (see e.g. Eiffel Tower SHG picture). Additionally, the ability to control glass surface reactivity at different length enables key properties required for future "smart substrates". We have taken advantage of thermal poling on a specific borosilicate glass composition to tailor physical and chemical properties of its surface, including its hydrophilicity. The resulting newly charged borate structure leads to a measurable change in the glass affinity to atmospheric water, being attracted to the poled anodic zone.

Functional molecules on charge embedded glasses (WP2a) Interfacing functional molecules with highly polar surfaces can be an approach to change inherent molecular properties and processes for photonic and/or catalytic applications.
Monolayers of several photoactive molecules have been developed by covalently attachment to poled glasses via a robust 4-step reaction scheme including a final "click" chemical reaction to functionalize the selected functionality.

The substrate activation by thermal poling (1-Full control of hydroxyl content by adjusting atmosphere humidity, 2-Spatial implementation of an internal electric field) is compared with the conventional UV-O_3 treatment. A highly original ensemble of optical and spectroscopic methods have been developed and employed (Vis-RAS, PM-IR-RAS, SHG, Fluorescence…) to characterize the functionalized substrates including the molecular orientation.

Nanopolaritonics (WP2b) We aim to develop a path-selective plasmonic switching device by hybridization of molecules and metallic elements. Computational simulation approach (FDTD) of basic designs have shown that V-shapes and Y-shapes are promising both in terms of their switching efficiencies and practical implementation. A multistep assembly strategy would lead to the target Y-shaped architecture : organic 3-branched molecules based on a truxene core are being synthetized in order to serve as assembling modules between three gold nanorods (obtained by seed- mediated growth method). Equally, the V-shape structures are also currently being engineered.

Highlights:

*> **Scientific outcome (to date):** More than 100 peer-reviewed publications; 16 invited talk and 60 oral communications in international conferences; 3 patents*
*> **A boost of the international partnerships and exchanges** between major photonics centers (ex. CREOL-UCF Florida, COPL-Québec). **International** launching of "Laboratoire International Associé: LUMACQ" between Laval Univ., INRS and the Bordeaux Univ.*
*> **Attractiveness:** 6 foreign students recruited in the framework of the project*
*> **Leverage effect:** An ANR R@action has been obtained by S.Danto on « Fiber and structured multi-materials ».*
- SPOT project (CRA) has been obtained in 2015.
*> **Collaborative research programs** have been set between LOMA, CELIA, ICMCB and the Argolight and Amplitude Systemes Companies*

The **TAINEPEC** project aims at experimentally and theoretically explore novel unusual optical properties that arise in hybrid nanosystems consisting of fluorescence emitters coupled to a metal nanostructure (SQE-MNS). We aim at designing, manufacturing and characterizing new optimized plasmonic nanostructures, which will be used to achieve strong coupling regime with quantum emitters and to perform fundamental quantum information experiments. (Coordinator: Brahim Lounis-LP2N)

Scientific progress:

Plasmonic superradiance studies were performed on nanohybrids consisting of gold nanoparticles decorated with different emitters (either organic fluorophores or quantum dots). Coating the particle with a homogeneous silica shell allow to control the distance between the plasmonic core and the emitters. Decay rates of nanohybrids are measured using time correlated single photon counting setup (for single nanohybrids detection) or with a streak camera for ensemble measurements. The figure shows the evolution of the average decay rate of a hybrid NP normalized by the decay rate of Atto532 in PVA as a function of the number of Atto532 per NP, and for different silica shell thicknesses d. The luminescence decay rate of the nanohybrid increases with the number of molecules, a clear signature of plasmonic superradiance.

New tools for numerical simulation of nanohybrids optical response: Plasmonic nanohybrids Hybrid systems made of quantum emitters and plasmonic nanoresonators offer a unique platform to implement artificial atoms with completely novel optical responses that are not available otherwise. However, the numerical modeling of hybrid dynamics presents a major challenge in computational electrodynamics, requiring the repeated calculation of the full photon Green function to iteratively solve coupled equations for the Maxwell's fields and the population operators. We have elaborated two powerful semi-classical formalisms based on the concept of electromagnetic resonance for analyzing hybridized states. The formalisms remove many limitations encountered in previous analytical treatments and allows a flexible and efficient study of complex nanoresonators with arbitrary shapes in an almost fully analytically way. The first formalism is valid for a single molecule. It allows an almost completely analytical treatment of hybrid doublets formed by a single two level system and a plasmonic resonator treated as a classical object using Green-extension technique based on an electromagnetic resonance extension. Because of analyticity, we obtain an intuitive description based on the coupling between the quantum emitters and the resonance modes of the nanoresonator. The second formalism treats the molecules as classical oscillators and can consider as many molecules as desired. The semi-analyticity of the method leads to a substantial reduction of the computational time. Our numerical calculations of the average of the absorption and scattering cross sections, over a number of different configurations, show that the system of the emitters reduces the scattering and the absorption of the incident light, for a certain range of frequencies. Finally, an analytical formula is derived for the calculation of the modes of the hybrid system.

Nanoscopy at low temperatures: Solid-state quantum systems are appealing platforms for the preparation of collective delocalized states formed by the entanglement of individual emitters. The development of simple and versatile nanoscopy techniques providing optical resolution of single quantum emitters at the nanometer scale is a challenging step towards the control and manipulation of their degree of entanglement. These techniques are also of prime importance for the realization of integrated solid-state devices for photonic quantum networks where quantum emitters are efficiently coupled to a plasmonic or a photonic nano-structure. In the frame of this project, we developed the first cryogenic super-resolution optical nanoscopy method, which is based on excited state saturation (ESSat) of individual quantum emitter. We showed that ESSat microscopy is a simple technique, which can achieve a 4 nanometer-resolution at extremely low laser intensities.
We also demonstrate that ESSat offers a unique opportunity to super-resolve two quantum emitters having overlapping optical resonances. This paves the way to thorough investigations of coherent interactions and entanglements between single quantum emitters separated by a few nanometers. This experimental technique will be useful for the study of many other systems involving collective quantum states such as light harvesting complexes, polymer conjugates, quantum dots molecules and hybrid systems.

Highlights:

> ***High impact publications*** in Nature Photonics (9 (2015) 658-662) and **Physical Review** (X 5 (2015) 021008)
> ***Patents:*** PCT/EP2014/071997, "Method of studying reactions between two or more molecules in a biological sample: Bouzdine/Lounis/Tamarat, Brevet « Procédé de Contrôle de Déplacement d'un Vortex d'Abrikosov » N° de dépôt 1558027, Août 2015
> ***Leverage effect:*** ANR "FASTNANO" (2014) & Région Electrovortex

EXOLAS project: Laser technology is based on the use of different materials that have limits in compactness, emission spectrum, lifetime or damage threshold. Nowadays, needs are huge in term of exotic wavelength generation (visible, mid-IR), compactness, robustness and mechanical or thermal stability. To compete at an international level, a multidisciplinary approach by gathering both optical area physicists and solid-state material chemists is required. We propose in the EXOLAS project a double entry to work on a new generation of laser systems and emitting materials in agreement with local industrial requirements. Building and improvement of laser cavities and, elaboration of cavity components (gain materials) will converge in an optimized solution to produce targeted wavelengths. (Coordinators: Veronique Jubera – ICMCB and Eric Cormier – CELIA)

Development of new architectures for exotic wavelength generation : Important scientific applications and in particular attoscience requires producing ultrashort pulses lasting no longer than few cycles. In this case, the architectures we have investigated are based on Optical Parametric Amplification (OPA) with second order susceptibility non linear crystals. A general scheme consists in a strong Yb-based pump laser, a supercontinuum stage and several amplification stages optically pumped by the IR pump laser. This setup features intrinsic optical synchronization of pump and signal as the signal is created directly from the pump through super continuum generation.

Focus on new optical components **-** New materials were prepared as single crystals (borates), ceramics (niobate) and glasses (heavy oxydes). All the grown crystals showed a high optical quality zone enabling to perform optical tests. Borates (3 cm long – 2 cm wide) are very interesting as they are monoclinic biaxial crystals as many of the commonly used laser and NLO crystals. Such crystals show different frames for the refraction indices, absorption and emission, and all these frames typically don't coincide with the crystallographic axes. The spectroscopic properties of different Yb, Eu or Pr-doped monoclinic borate compounds (LYB, LGB) were studied. Polarization effects were studied by measuring the zero line on Yb doped borates used as school monoclinic crystals (simple energy diagram of a unique crystallographic site). Different frames were defined to deduct the ideal configuration for laser tests. Eu-doped Y_3NbO_7 cubic materials were prepared as ceramic after sintering of the raw powder by SPS. Optical and structural characterizations revealed a strong influence of the SPS process on the properties. Variation of the thermal cycles, pressure showed modification on the homogeneity of the ceramic which have to be controlled. An encouraging 40% of transparency was obtained on this new red emitting material, in the visible range. Heavy oxides glasses are key compositions to extend the operational wavelength range in the midIR (second order and third order optical nonlinearities). Their characteristics (low phonon energy, high transparency in the IR, stability under high irradiation flux, capability to incorporate high rate of doping element) are also of great interest to reach important laser efficiency.

Based on first promising results on glassy materials (FELINS, SIAME, ANR HOLIGRALE and @Raction projects), this activity is actually developed through a new co-tutelle PhD thesis (Tea Skopak) between ICMCB and COPL. Associated to the gain materials, a complete innovative optical line should be architectured.

Electro-optical characterization **-** Optical and electrical properties are of big interest regarding the performance and limits, (degradation and failure) of laser and nonlinear crystals. The resistivity of such crystals is typically on the order of 10^6 - $10^{17}\Omega$·cm.

A commercial piece issued from high irradiation tests and others crystals grown for the EXOLAS project were prepared and provided for measurements.

The four consortium partners have been working on the suitable conditions in order to establish a protocol for electrical tests on dielectric crystals. This study has been started with silver thiogallate, $AgGaS_2$ (AGS), (Pr:LYB) and (Yb:LGB) single crystals. Both types of crystals were shaped along the optical axes in order to perform the electric-optical tests.

A suitable sample thickness has been found to be ≤ 2 mm. Among different metals such as Al, In, Cu, and Ag, deposited by different methods (E-beam evaporation, sputtering) Silver print was the best solution to obtain efficient contacts. I-V characterizations in dark and under illumination at 532 nm have been performed and photoconductivity effects have been evidenced (see figure below). The resistivity of the AGS crystal has been estimated to be about 40×10^9 Ω.cm at 300 K. Concerning the new borate crystals, there is no anterior report on their electrical properties. They exhibit an electrical resistivity of 1×10^9 Ω·cm.

Highlights:

> 53% (oral), 55% (articles) of consortium communication devoted to EXOLAS.
> 8 peripheric public/private contracts
> Education: **ERASMUS$^+$** (IT-ELLI)
> Invited Professors: **K. Richardson**, **C. Kränkel**
> Industrial contacts: **Fastlite, FEE GmbH**
> 1 pending patent

PETAPHYS project brings together the scientists and engineers of two partners of LAPHIA – CELIA and CEA/CESTA, in order to coordinate the actions related to planning and realization of the first stage of the operation of the high power laser PETAL so that it will be compatible with all safety requirements, with the characteristics of the diagnostic equipment and with the planned regular operation of PETAL together with the LMJ as an unique international user facility for the high energy density physics studies. (Coordinator: Vladimir Tikhonchuk – CELIA).

Scientific progress:

WP1 *(Electromagnetic pulse generation):* The mechanism of the electromagnetic pulse (EMP) generation incorporates an intense laser pulse focused on the target surface which creates a group of energetic electrons that partially escape and leave a positive charge on the target. A neutralization current is provided by the target holder after the end of the laser pulse. The holder with its mirror image with respect the ground operates as an antenna creating a strong EMP. The proof of concept of this scheme is a major scientific breakthrough which allowed us to develop measures of controlling and mitigating the EMP.

Measuring the charge ejected from the target is a challenge. We developed a specific experimental setup to measure the target charging and strength of the emitted magnetic field. This was tested it in experiments on the ECLIPSE laser in CELIA and the EQUINOX lasers in CEA.
These experiments confirmed and improved the theoretical model and demonstrated that the major factor defining the EMP strength in the laser energy on target and the laser pulse duration, while it is much less dependent on the target material and geometry. The EMP spectrum is controlled by the shape of the target support. The obtained results are important for development of the EMP mitigation and target optimization strategies. This work is still in progress.

Scientific spinoffs

This work resulted in three scientific publications and it contributed to the validation of a complete EMP simulation package providing an accurate prevision of the EMP tool. It is now a standard tool used at CEA for developing mitigation solutions for the PETAL facility.
An understanding of the processes of target charging and current generation has led to the development of a new platform of strong magnetic field generation. Magnetic fields exceeding 500 T have been measured in the experiments on the LULI200 facility.

WP2 *(High energy particles and radiation production in the PETAL experiments)***:** the calculation of the radionuclides inventory was proceeded in two steps. At first, the proton and electron sources were evaluated from the simulation of laser plasma interaction by using a Particle-In-Cell code. Then the proton and electron beam characteristics were transferred to a Monte Carlo code for evaluation of the x-ray radiation. The activation characteristics were calculated with the inventory code and used for determination of the radiation contamination, material contamination and delayed dose rates. The results of these simulations will be verified in the preparatory PETAL experimental campaigns.

WP3 *(High energy particles and radiation production in the PETAL experiments)*: the post of optical diagnostic is already designed and will be installed in 2016 on the PETAL chamber, see figure 5. It will allow to measure the laser focal sport with a resolution better than 20 µm. An x-ray image and spectral instrument has also been designed. It might be constructed and used if required. The activation and EMP diagnostics are also under preparation.

WP4 *(Preparation of PETAL experiments)***:** First laser shots have been performed. A record power of 1.2 PW in a 700 fs pulse has been reached. The PetaWatt beamline, compressor and focusing system are fully integrated on the LMJ facility. The first PETAL+ diagnostics, SPECTIX and SESAME will be delivered and tested next year. The year 2016 will be dedicated to the tuning of the experimental system up to the target chamber center. The PETAphys diagnostics will be activated. The goal is to achieve the first plasma experiment in December 2016. In parallel experimental campaigns on high power laser installations in Europe are planned for testing the diagnostic equipment and validation of the numerical simulation predictions.

Highlights:

> ***High impact publications:*** Phys Rev E (2014, 2015); New Journ. Phys. (2015); Phys Scripta (2014), Nuclear Fusion (to be submitted)…

> ***Several International conferences:*** *41st EPS Plasma Phys Conf,* Berlin 2014; *41st Int Conf on Research & Applications Plasmas,* Warsaw 2015; *9th Int Conf on Inertial Fusion Science and Applications*, Seattle 2015…

- **Risky project results:**

We present in this section the main results of some risky projects finished and those which are launched and almost finished (the entire list is presented in appendix G).

STED & STRUCT Yannick PETIT, LOMA / ICMCB 09/12/2012 → 08/12/2013 - K. Mishchik, Y. Petit, E. Brasselet, A. Royon, T. Cardinal, and L. Canioni, "Patterning linear and nonlinear optical properties of photosensitive glasses by structured light", **Optics Letters**, 40(2), 201-204 (2015) Y. Petit, K. Mishchik, N. Varkentina, N. Marquestaut, A. Royon, I. Manek-Hönninger, T. Cardinal, and L. Canioni "Dual-color control of direct laser writing in silver-containing phosphate glasses", **Optics Letters** 40(17), 4134-4137 (2015) K. Mishchik, Y. Petit, E. Brasselet, I. Manek-Hönninger, N. Marquestaut, A. Royon, T. Cardinal, and L. Canioni, "Femtosecond laser processing of silver-containing glass with optical vortex beams" Proc. SPIE 8974, **Advanced Fabrication Technologies for Micro/Nano Optics and Photonics** VII, 897405 (2014).	STED &STRUCT proposes a new approach for the synthesis of artificial photonic material, using direct laser writing call "STED-like" super-resolution method in inorganic materials. The goal is to reach the nanoscale laser inscription (<100 nm) for photonic applications. **Main results**: In this project, we demonstrated the creation of new original designs written by femtosecond laser irradiation with beam formed into optical vortex. These patterns are inaccessible by irradiation with laser beams of standard profile. For the first time to our knowledge, we demonstrate the achievement of writing patterns having linear optical properties but also nonlinear. Recent results in the literature only relate structuring linear optical properties. With this project, we go a step forward with one hand, the significant extension of the topologies of spatial distributions and secondly, the writing of non-linear optical properties. We open the route for the parallel writing by shaping laser beams using optical vortex. The project also opens a whole line of research through the realization of nonlinear photonic architectures.

ATAS Yann Mairesse - CELIA 02/2014 → 02/2015 - A publication is in progress (will be submitted in December 2015) - ANR "Misfits" obtained (2014) / ERC "Exciters" obtained (Dec.2015) - New collaborations: INRS Varennes, Québec; Few-Cycle optics, Ultrashort pulse compression company, Québec; FemtoEasy, Ultrafast measurement company, Bordeaux.	The ATAS Risky project aimed at investigating light-matter interaction by measuring the instantaneous response of a molecular system to a strong laser field on the attosecond timescale by implementing a transient absorption spectroscopy experiment. The principle of ATAS is to measure the absorption of an attosecond pulse by a gaseous compound, and to follow the ultrafast evolution of this absorption under the influence of a laser field. **Main results:** Postcompresion of laser pulses: 7fs 1 mJ ; Development of an actively stabilized interferometer ; Dual acquisition of CCD arrays at 1kHz repetition rate; Double XUV spectrometer for absorption with a reference. **Scientific achievements:** Attosecond lighthouse: characterization of the resonant and non-resonant attosecond pulse generation.

GigaPico - GHz repetition rate agile frequency comb for laser picosecond acoustic spectroscopy Giorgio Santarelli – LP2N/I2M/CELIA 10.2014 → 10.2015 **- Optics Letters** 40(23) - 2015 "Generation of picosecond laser pulses at 1030 nm with GHz-range continuously tunable repetition rate" - Adrien Aubourg, Jérôme Lhermite, Steve Hocquet, Eric Cormier, Giorgio	The aim of the Gigapico project is to design a novel agile laser source with an immediate revolutionary application in picosecond acoustics. The objective is to dramatically shorten the acquisition time in Brillouin resonance acoustic spectroscopy from few hours to few minutes. For this purpose, the laser source must deliver picosecond pulses with very high repetition rate (10-20 GHz) and easily tunable. Our solution to design such a laser source is to generate a frequency comb through phase and amplitude electro-optic modulations of a single-frequency laser diode. **Main results:** With a 2-stage ytterbium amplifier, the output power of the source has been raised up to 2.2 W. Pulse-peaking was performed thanks to another amplitude modulator driven by in house-made system generating very short electrical pulse (30

Santarelli - 2015: LabCom "Starlight" obtained with ALS	ps@2V). With the combination of these processes, the Gigapico source was able to deliver 1 ps pulses down to 800 MHz (from 16 GHz) with a peak power of few kW. In addition to the laser results accepted for publication in Optics Letters, preliminary results of the application in picosecond acoustics have been obtained. As stated before, these measurements are not yet publishable although representing a worldwide premiere. This experiment will be resumed shortly after improving the phase and amplitude noises of the laser.

- **Passport project results**

We present in this section the main results of some passport projects finished (the entire list is presented in appendix G).

PROXMI - Protein Xtal Multimodal Imaging Vincent RODRIGUEZ – ISM/Explora Nova 05/2014 → 06/2015 - **Patent** including academic partners (ISM and IECB) is being filed through the AST. The apparatus and the method tested in this project inform the user if the crystallization conditions tested in each well lead to the formation of crystals. - **AST maturation funds** obtained (2015)	All natural substance (molecule, macromolecule, protein, etc ..) are optically active (chiral) and thus have a response in second harmonic generation (SHG), unlike centrosymmetric systems (molecules, crystals) including as NaCl crystals that form in abundance in saline crystallization. The presences of these parasites crystals complicate discriminatory studies of protein crystallization in linear optics as is currently the case on the commercialized system "Xtal Focus" from Explora Nova. The SHG is adequate discriminatory diagnostic technique. Our system develops on PROXMI allowed us to place ourselves in conditions as close to the final prototype. So no images have been performed with this arrangement where we only collected the total SHG signal from the volume excited by femtosecond laser. The results were more than satisfactory. We have also conducted tests on some other systems (including an enzyme and DNA, both chiral in nature). In each case, a second harmonic response could be recorded confirming both that the crystallized proteins are detectable through the second harmonic generation in femtosecond regime more effective for imaging and less aggressive for these biological media. **Perspectives:** We will develop in September 2015 a compact, integrated prototype funded by AST and including the same stakeholders.

FOCI - FLUORIDE OPTICAL CERAMICS FOR INFRARED AND OTHER OPTICAL APPLICATIONS Alain LARGETEAU - ICMCB / CELIA / PODEO 11/2014 → 10/2015 **- Patent** *(submitted):* Optique en céramique transparente pour applications infrarouges en remplacement des optiques monocristallines Alain LARGETEAU , Mythili PRAKASAM, Inka MANEK-HÖNNINGER - **AST maturation funds** obtained (2015)	The prime objective was to replace IR lenses & other optics used for CO_2 lasers based on single crystal ZnSe and ZnS by fluoride transparent ceramics which have transparency from the visible to long wavelength infrared (LWIR). The aim of this study was to demonstrate the feasibility of the replacement of such windows made actually with single crystals by ceramics in future applications. We have followed a sequence of tasks such as (a) optimization of nanopowders (b) optimization of presintering and sintering parameters by spark plasma sintering (SPS) (c) Preparation of sample surfaces for optical characterization and (d) optical characterization. We have optimized the preprocessing of powders with equal grain size that yields similar results irrespective of the initial powder preparation methodology. In order to avoid multiple preprocessing steps and to increase the mechanical strength of CaF_2 by SPS, we have optimized the sintering parameters to yield transparent and mechanical strong ceramics at low temperatures under high vacuum. This optimized sintering parameters can be employed to obtain CaF_2 transparent ceramics of diameters > 20 mm at low temperatures **Perspectives:** The initial optical and mechanical characterization on

	CaF2 transparent ceramics has been promising and we are continuing further research in order to implement for industrial applications as required by FOCI's industrial partner M/S. PO.DE.O. with the help of AST.

Human Resources

- **Research and valorization/transfer section:** Up to now, **40**[5] recruitments (**9** PhD, **28** Post doc and **3** research engineers) have been made within LAPHIA projects. **78 %** of them have an international nationality. *All the performance indicators are presented in the appendix H.*

As the indicators highlighted, we have set up an international policy for the recruitments giving priority to the excellence of the profile (publications, support letters, awards, involvement in student organization), worldwide students and international mobility. Our aim is to attract **international talents** in laser and photonics in Bordeaux. The LAPHIA policy is impactful. Thanks to our efforts we succeeded in boosting the recruitment of international people. To encourage the supervisors to attract international profile, we set up the following rule: student who has made his PhD in the Bordeaux University is considered as ineligible for a Post doc LAPHIA. Master student trainees financed by the LAPHIA Education program also strengthen this dynamic.

- **Our recruitment process** is based on several steps:

a) Promotion / visibility: To attract talents, it has to be anticipated. Therefore, we promote the job opportunities overseas during international conferences and get potential contacts, we publish the offers in renowned international websites related to laser and photonics, we network (as an example, we have recruited Kim Ka Young from Yonsei University, one of our main partners)

→ *Each job offers by LAPHIA is published on the IdEx website (except when the candidate has been targeted)*

b) Interviews & selection process: A selection committee can be organized to interview the candidates; one member of the LAPHIA direction can be solicited.

c) Validation: The resume, motivation letter and support letters have to be sent to the Director of LAPHIA for validation of the profile following the selection criteria

d) Salary: Once the profile is selected, a discussion about the salary expectations between the Supervisor and the Direction takes place: This step is new as since January 2015, the Bordeaux University has published its "Charte de gestion" with a mandatory salary grid. The amount fixed for PhD and Post doc salary are different from those planned in the framework of the Cluster. Therefore we must have re adapted our salary policy (derogation: from 10% to 20%).

e) Administrative part: Once the profile is validated and the salary amount is fixed, the laboratory in collaborations with the HR IdEx department, financial service and the supervisor are in charge of the administrative part (*convention d'acceuil, FSD, visa, agreement…).* The delay for a new recruitment is min. 6 weeks (Preferably 8 weeks if the candidate comes from outside of European Union).

All PhD and Post doc can receive help from BACI (*Bureau d'Acceuil des chercheurs internationaux*) to find the accommodation, received information. Moreover, LAPHIA gives a budget for environment fees (facilities, computer, missions...) of around 5 k euros per year in order to create a confortable working environment.

Adjustment: In 2014, one of the LAPHIA PhDs has dismissed: V.Marakevitch has been recruited in CELIA laboratory on Oct. 25, 2013 in the framework of the EXOLAS collaborative project (Thesis title: *Ultrashort Middle Infrared Laser and Parametric Sources)*. For different reasons related to the personality (a shy person) and the working tasks (no communication, no report), she decided to leave the lab and dismissed on August 2014. In order to slow down the dynamism of the project, a new recruitment has been set up with G. Archipovaite in January 2015.

Two weak points have to be underlined: i) A lack of coherence regarding the salary policy because of the new "charte de gestion". We have to decide all together with the IdEx and LabEx the salary policy. A specific rule has to be set up for all IdEx programs. ii) There is no free French course for PhD and Post doc.

Our perspective for the second is to launch **3 or 4 chairs** "tenure track" for 3 years (450 k euros): to attract a renewed researcher to develop a high relevant research thematic with a benefice for the community. *For more details, please refer to the power point "Cluster LAPHIA – Future perspectives".*

[5] *Note: the replacement of V.Marakevitch has not been taken into this indicator – PhD Exolas Project following her dismissal (G.Archipovaite).*

Regarding the governance, a manager (AL.Bué) has been hired in March 2013 (half-time with the Cluster CPU from March 2013 to December 2014 and full-time since January 2015).

The HR policy of the University is scheduled long time in advance therefore the cluster history is too young to impact deeply the strategy. As a short-term example, IMS laboratory hired M. Simon JOLY (Sept.2013) in the team of L.Bechou to reinforce photonics in this laboratory. This new recruitment is due to the excellence perimeter of photonics and laser in Aquitaine. We can observe several recruitments in LP2N as it is a new laboratory in the campus with an expected growth of human resources during the first years. Since 2015, the Director of LAPHIA is invited to the Board of the Department "Science and Technology" in order to discuss with the Directors of the labs of the perspectives in future Human Resources.

- **List of the LAPHIA recruitments** (PhD, Post doc, Research Engineers) is presented in appendix C**.**

LAPHIA success story

Antoine Dubrouil received his PhD from the Bordeaux University and worked for Swinburne University in Australia as a laser technology consultant to upgrade their laboratory infrastructure to latest laser technology. His next stint was in Milan, Italy where he spent his time in fundamental research with the Politecnico di Milano, one of the world's best laser research institutes. Thanks to the LAPHIA risky project "AttoFlower", he has been recruited for a Post doc position in November 2013 at CELIA. Following this experience, he is now creating a start-up in ultrafast instrumentation in Bordeaux.

- **List of invited professors**[6]**:** Up to now, **48** professors have been invited in the framework of the Cluster LAPHIA (seminars, symposium, colloquium…). **75 %** of the invited professors come from international Universities. *The list is presented in appendix C.*

Financial means, leverage effect

- **LAPHIA grant**

1st period (2012/13 → 2015)	
*IdEx Grant for LAPHIA Cluster**	*Amount engaged by LAPHIA Cluster*
3,743 M €	***3,722 M €***

**Not included permanent salaries.*

- **LAPHIA expenses**

2012/13	***2014***	***2015***	***2012/13 → 2015***
LAPHIA expenses	*LAPHIA expenses*	*LAPHIA expenses*	***TOTAL LAPHIA expenses***
489 765 €	***836 856 €***	***~ 1, 350 M €*** *(On Nov.2015)*	***~ 2,677 M €*** *(On Nov.2015)*

For more details, please refer to the financial annual reports.

- **External funding**

2013 → 2015
TOTAL – External funding obtained by LAPHIA members (ANR, CRA, H2020, companies…)
10,462 M €*

**2013 → 2015: Not included LP2N information.*

→ To boost the leverage effect, the Board **initiated** new projects and applied to different calls, below are some examples:

- **Research**

2013: Région Aquitaine project "La Centrale" (not selected)

[6] *This indicator is based on the LAPHIA definition (different from ANR definition).*

2014: CPER (photonics part) (selected)
2015: LIA "LUMACQ" – CNRS (in progress)
2015: Amplitude Systemes & Fondation Bordeaux Univ. (3 months IR - Wendwesen Gebremichael)

- **Education**

2015: ETN « LASE2020 » – H2020 (not selected)
2016: ETN "Fun Glass": in progress

- **Valorization**

2015: Yonsei R&D Center-Innoteck-LAPHIA project is in progress

- **Student affairs**

2015: SPIE Bordeaux Student Chapter in optics selected + 1 mobility grant funded
2016: OSA Bordeaux Student Chapter: in progress

- **Events/Communication to a large audience**

2015: Région Aquitaine & CNAM for the International Year of Light program (selected)

→ To strengthen the dynamic and follow their research works, the LAPHIA PI applied to different calls that have been successful, below are some examples:

2014: GigaPico risky project → LabCom with ALS selected
2014: TAINEPEC collaborative project → ANR FASTNANO & Région Electrovortex selected
2014 & 2015: ATAS risky project →ANR Misfits selected and ERC "Exciters" obtained (Dec.2015)
2015: MOBILE risky project → MOTIF project (CRA) selected
2015: Multi-material fiber project → ANR PhosFyb selected
2015: NANO2BRAIN interlabEx project → 2 ANR projects (nanotubesInBrain) obtained
2015: Multivor risky project → A 10-month post-doc grant has been obtained from Europe, within the Erasmus Mundus Mobility Action (for A.Aleksanyan)
2015: Start-up project "FemtoEasy" → CNRS/IRA/AST/BPI
2015: FOCI and PROXMI passport projects → AST maturation funds obtained
2015: Raman-X passport project → ANR "LUCEL-X" selected
2015: INPHOTARCH collaborative project → SPOT project (CRA)
…

Impact of the Cluster on its ecosystem policy

- **Research:**

LAPHIA provides a financial incentive for teams to engage in novel trans-disciplinary collaborations in order to gain maximal added value from the complementarities in expertise with neighboring fields. Joint projects have thus been considered with most other Labex networks and IdEx of University of Bordeaux. The interlabEx projects supported are: "NANO2BRAIN" between BRAIN & LAPHIA; "MULTIMAT" between Lascarbx and LAPHIA; "HOBIT" between CPU and LAPHIA (Ref: InterlabEx section for more details about the projects). For information, the list of IdEx projects funded within the LAPHIA scientific perimeter is presented in appendix E (list non-exhaustive).

The perspectives are: i) to explore new trans-disciplinary collaborations with AMADEUS LabEx on materials, quote optical meta-materials, photonics for bio sensing, with TRAIL LabEx on translational imaging, correlative imaging techniques, with COTE labEx on laser processes in wood. Several seminars will be organized for the beginning of 2016: especially with AMADEUS, INSERM (3D printing of living tissue and photonics components) and CPU (scientific computing). ii) To launch the **digital Agenda 2.0.** This agenda aims to put Bordeaux to the forefront in the development of a "new generation of Technological Innovations in Communication, Computing and Cryptography" initiated by Philippe Bouyer, Lionel Canioni and Pascal Weil, and now lead by Philippe Bouyer and Gilles Zemor. This project proposes to draw the lines of future technological developments in information transmission, information storage and processing of information. Exceeding today's limitations will require a "revolution" for which optics and more fundamentally quantum physic can play a central role. These basic sciences can lead to high-performance computing by using elementary particles to reach an unmatched parallelism thanks to entanglements. Still considered as science fiction just a few years ago, these technologies now become an iconic development issue, as evidenced by new available products as well as the growing interest of large multinationals like Microsoft or Google. These new technologies require to rethink the fundamentals of computing, storage of information processing and transmission, both at hardware and software level. The societal impact of these technologies is considerable, both

ecologically and in terms of the evolution of society as evidenced by the many questions raised about internet use, privacy and protection of personal right. This agenda will therefore not only focus on scientific and technological aspects but also conduct a thorough reflection on the impact that will have these technological developments on society.

- **Education:**

LAPHIA has contributed in different ways to reinforce the impact on the ecosystem policy: for examples, it contributed to the launch of the IdEx education platform to link VET operated by PYLA and the Higher Education of the University. This topic was of a great importance and IdEx hired a project manager (MB.Vieules). In the framework of the new Master accreditation, a specific track within the Master of Physics is validated thanks to the excellence and the size of the ecosystem. A SPIE Student Chapter has been created in April 2015 and federates PhD and Master students from Bordeaux University and also Institute d'Optique Graduate School (IOGS) of Bordeaux. In 2015, we have co-organized the International Education and Training in Optics and Photonics Conference (ETOP 2015 from SPIE) with the LAPHIA symposium. We succeeded in attracting this event in France for the first time.

3. SOCIO-ECONOMIC IMPACT

Partnerships with stakeholders in the socio economic sector

One of the purposes of LAPHIA is to increase the transfer of the innovations that the labs generate towards the industrial worlds. These collaborations concern local companies and also larger national and international companies. Our local partners will act most of the time as true partners that participate at very early stages of the transfer projects. National and international partners usually intervene later at more advanced stages acting as our final clients.

Note: please refer to the valorization part for more details.

- **60 %** of passport projects have a socio-economic actor included in the consortium
- Work in partnership with Competitiveness Cluster « Route des Lasers » (involvement of a representative in our scientific council, involvement of a LAPHIA representative within their DAS meetings, co organization of the symposium 2013, launch of the industrial mentoring). For the 2nd period (delegate: Y.Deshayes) and co-organization of a conference in 2016 related to the aeronautic with the Pole (L.Canioni: co-chairman)
- Closer ties with Aerospace Valley in Toulouse (DAS Pharos), focus on photonics and aeronautics
- Fondation Bordeaux Université: Amplitude Systèmes
- Start-ups: A.Dubrouil (FemtoEasy); R.Royon (Isicore)
- Photonics 21 network (L.Canioni belongs to the Board of Stakeholder)
- SPIE « Photonics West » & SPIE Student Chapter
- Involvement of industrials in the LAPHIA symposium: Round table, talks, mentoring, … (examples: Corning, ExploraNova, Amplitude Systèmes, Poetis)
- Presentations of LAPHIA: DAS Pharos, Turbomeca-SAFRAN group, **CETIM** Directors (Centres Techniques des Industries Mécaniques), …

Key figure: **PATENTS** *(sources: CNRS & UBx):* In 2015, **13 patents** have been issued by LAPHIA members. We can note that several of them are directly linked and have been issued thanks to LAPHIA projects such as FOCI passport project, PROXMI passport project, HOBIT interlabEx project, INPHOTARCH collaborative project, multi- material fiber project…

Relations with SATT and, where applicable, the IRT or ITE as well as the other transfer arrangements falling under higher education institutions and research organizations

Aquitaine Science Transfer, SATT (Technological Transfer Acceleration Companies) of the Aquitaine Region, is the main contact for several LAPHIA partner laboratories for negotiating partnership research contracts. We collaborate with the SATT at different levels: **i)** Together with the SATT Aquitaine, we boost to ensure research meets the requirements of the industrial world and to guarantee a technology level high enough (TRL) to start a maturation project following a LAPHIA passport project. Up to now, **40 %** of LAPHIA passports projects (FOCI and PROXMI) have been pursuing thanks to a maturation support from SATT Aquitaine. ii) We follow closely and monitor LAPHIA development to evaluate the opportunity to protect the IP of the new technical solutions implemented. We are confident in the way that

major scientific discoveries in the fields of photonics lasers will result from their use. **iii)** We were assisted by SATT teams for drafting the consortium cluster agreement. In this framework, several meetings have been organized to define the role of each partner and the major points about the intellectual property and exploitation of results.

In order to create synergies and closer ties between actors involved in the national "Investissement d'Avenir" program, presentations with discussions (Oct. 8, 2013/Nov.6, 2014/March 17, 2015) have been made in front of the Board of Directors of **IRT St Exupery.** To date, the Cluster LAPHIA has no relationship with ITE (French Institutes for Energy Transition).

Actions undertaken for the diffusion of knowledge

Our dissemination takes place at several levels. Our results are presented to the scientific community through publication in scientific and technical journals (Photonics, Nature) having a large impact factor as well as in international conferences (Photonic West, IFSA…). We have planned several permanent events that are anchored. After 3 years of exercise and thanks to our communication policy, those events are now expected by researchers, engineers from companies and students. The **annual symposium** as well as the **scientific seminars**, dedicated to all the supporters of the challenges of LAPHIA, are the key events we have initiated for the dissemination of knowledge. Once a year, the Cluster organizes an international symposium in Bordeaux.

Up to now, **3 symposia** have been organized in Sept.2013, Sept. 2014 and July 2015 (the last one has been co-organized with the international education ETOP conference from SPIE). The objectives were to bring together the local community and international specialists who work in the fields of photonics/laser/imaging, to present the actual state of the art, and to exchange their meanings on the evolution of the relevant technologies. Key figures are presented below:

2013 symposium (Sept.2013)
140 attendees
29 talks (14 of them presented by external speakers)
25 posters presented with 3 awards
3 organized visits (labs, Laser Mega Joule, Cité de la Photonique)
2 industrial mentoring
1 summer school MILMI "entrepreneurship"
2014 symposium (Sept. 2014)
206 registrations
185 attendees
19 talks
3 courses
1 round table with industrials
1 Pint of LAPHIA organized by the students
36 posters and 5 awards
4 organized visits (labs, Laser Mega Joule, Cité de la Photonique, Alphanov)
2015 symposium *was collocated and run in parallel way with ETOP 2015 from 29 June to 3 July 2015*
180 registrations
120 attendees
1 workshop « Women in optics »
9 talks
"International year of light" projects presented
31 posters and 3 awards

The monthly seminars given by both researchers from Bordeaux and international guests address a wide variety of topics. They are an opportunity for everyone (researchers, industrials, students) to build a strong interdisciplinary culture in lasers and photonics. Topics and profiles of the speakers are evaluated by the seminar committee in order to reach a large audience. Therefore we ask the Professor to introduce the subject in the first 10-20 minutes in order to be understandable for the audience (typically undergraduates/graduated). The presentation is 45 minutes (15 minutes of questions). The seminar is scheduled a Thursday per month from 1:00 to 2:00 pm. After the seminar, we use to organize a laboratory visit and face-to-face meeting with LAPHIA researchers. Up to now, **29** seminars have been organized. We worked hard during the 3 years in order to increase the number of attendees (from 20 in 2013 to 75 in 2015) through the adaptation and reinforcement of our communication policy. We decided to offer the desert and coffees in order to create a friendly environment. In 2015, for the first time, we organized a colloquium on "single molecule microscopy" with keynotes speakers (Prof. M.Orrit- Leiden Institute of Physics and Prof. V.Sandoghdar- Director at Max Planck Institute for the Science of Light). We have realized our planned objectives in term of events.

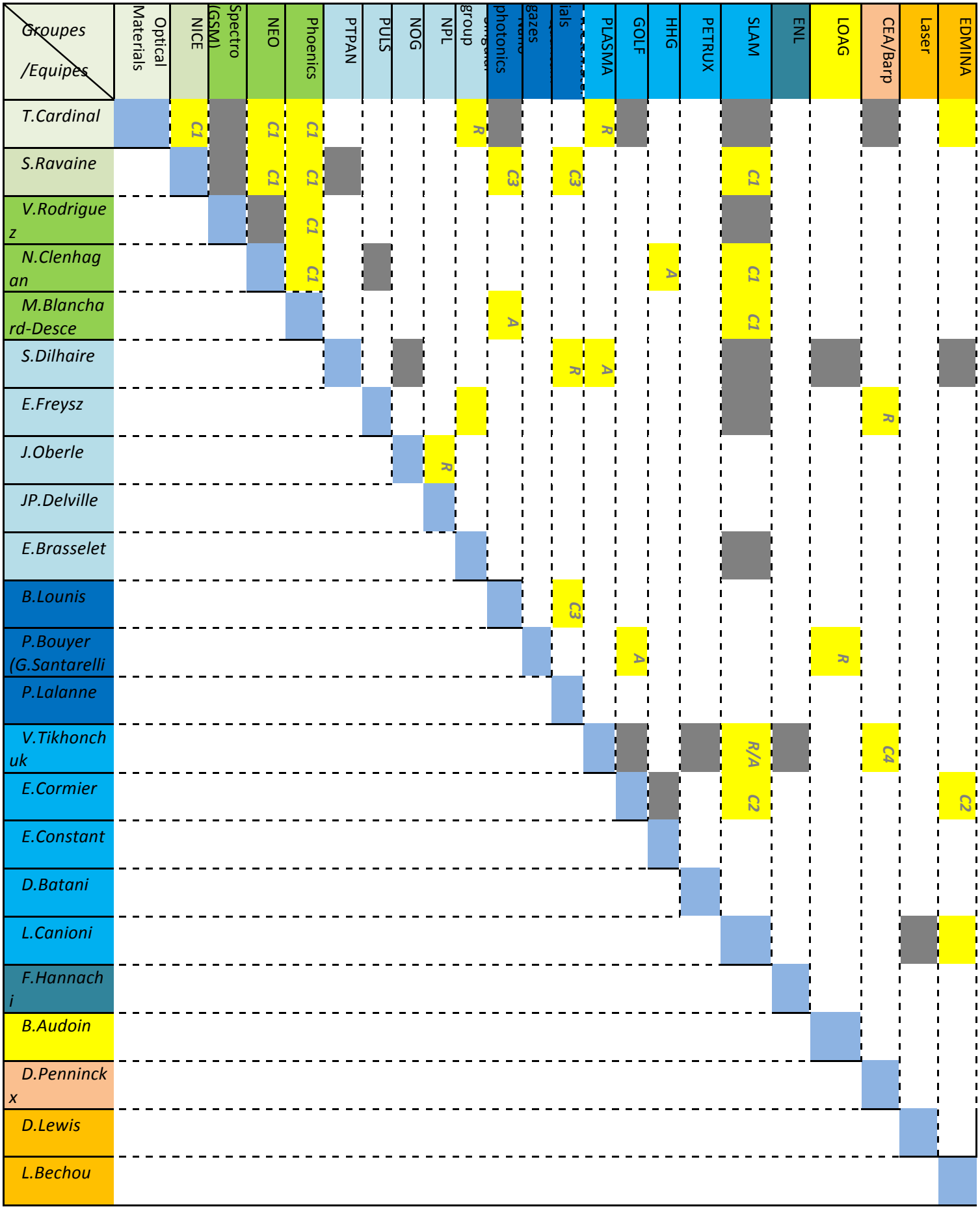
APPENDICES

A. Lab. partners

The Cluster LAPHIA is composed of 11 research units corresponding to 4 different trustees (Bordeaux University, CNRS, CEA, IOGS). The consortium is still the same since the starting date of the Cluster:

CELIA - UMR 5107 CNRS/CEA/université de Bordeaux
LOMA (ex CPMOH) - UMR 5798 CNRS/ université de Bordeaux
LP2N - UMR 5298 IOGS/CNRS/ université de Bordeaux
ICMCB - UPR 9048 CNRS
IMS - UMR 5218 CNRS/ université de Bordeaux /IPB
ISM - UMR 5255 CNRS/ université de Bordeaux
I2M (ex LMP, TREFLE) - UMR 5469, UMR 8508 CNRS/ université de Bordeaux /IPB / Arts et Métiers – Paristech
CRPP - UPR 8641 CNRS
CENBG - UMR 5797 CNRS/ université de Bordeaux
CEA CESTA - CEA
SPH (ex Episteme) – Co habilité par l'université de Bordeaux / Bordeaux Montaigne

B. Team-interactions



Légende/lecture du tableau	
C1	Collaborative project INPHOTARCH
C2	Collaborative project EXOLAS
C3	Collaborative project TAINEPEC
C4	Collaborative project PETAPHYS
R	Risky projects
P	Passport projects
A	Other (initiated by the Board / LAPHIA networking...)

Number

30	New collaborations thanks to LAPHIA
21	Existing collaborations (before LAPHIA)

22*	Research teams involved in LAPHIA Cluster *(*SPH team has not been taken into account)*

C. List – Invited Professors & LAPHIA recruitments

- *Invited Professors*

Name	Firstname	Name of the Univ.	Country
ABDOU AHMED	Marwan	IFSW Stuttgart	Germany
ANDERSON	Stephen G.	SPIE	USA
AZIZ	Hany	University of Waterloo	Canada
BAUDELET	Matthieu	CREOL - University of Central Florida	USA
BELESSA	Joël	Institut Lumière Matière - Univ. of Lyon1	France
BELLOUARD	Yves	Mechanical Engineering Dept. Eindhoven University of Technology	The Netherlands
BENABID	Fetah	Xlim – Limoges	France
BIRKL	Gerhard	Technische Universität Darmstadt	Germany
BOUDOUX	Caroline	École Polytechnique de Montréal	Canada
BOULANGER	Benoit	Institut Néel	France
BREVET	Pierre-François	Institut Lumière Matière - Univ. of Lyon1	France
CHANTELOUP	Jean-Christophe	Laboratoire Utilisation des Lasers Intenses (luli)	France
DEKORSY	Thomas	Konstanz Univ.	Germany
DEREN	P.	Wroclaw Univ.	Poland
DEREUX	Alain	Bourgogne Univ.	France
FREEGARDE	Tim	University of Southampton	UK
GANAPATHY	Senthil	ORC-University of Southampton	UK
GOUPALOV	Serguei	Jackson State University //Ioffe Institute-St. Petersburg	USA/Russia
HOFFMANN	Dieter	Darmstadt Univ.	Allemagne
JUODKAZIS	Saulius	Swinburne Univ. of Technology	Australia
KAZANSKY	Peter	ORC-University of Southampton	UK
KRÄNKEL	Christian	Hambourg University	Germany
LIPOVSKII	Andrey	St. Petersburg Academic University	Russia
LUITEN	André	University of Adelaide	Australia
MESSADECQ	Younes	University Laval	Canada
MINARDI	Francesco	Istituto Nazionale di Ottica-Sesto Fiorentino	Italy
MURUGAN	Senthil	ORC Southampton	UK
NAKATANI	Keitaro	ENS Cachan	France
NOLLMANN	Marcelo	Center for Structural Biochemistry	France
NOLTE	Stephan	Jena Fredrich University	Germany
ORRIT	Michel	Leiden Institute of Physics	The Netherlands
PARK	Seung-Han	Yonsei University	South Korea
PASENAU	Ludwig	Toulouse	France
PRZEMYSLAW		Wraclaw Univ.	Poland
RHEE	Y. J.	Korea Atomic Energy Research Institute (KAERI)	South Korea
RICHARDSON	Martin	Central Florida University	USA

RICHARDSON	Kathleen	Central Florida University	USA
ROCH	Jean-François	ENS Cachan	France
SAKHO	Ibrahima	Université Assance Seck de Ziguinchor	Senegal
SANDOGHDAR	Vahid	Max Planck Institute for the Science of Light	Germany
SUBRAN	Costel	CNOP	France
T.CASSIDY	Daniel	McMaster University (Ontario, CA)	USA
THERIEN	Michael J.	Duke University	USA
UDEM	Thomas	Max-Planck Institute for Quantum Optics, Garching	Germany
VALLEE	Réal	Laval University	Canada
VAN BALLMOOS	Peter	Institut de Recherche en Astrophysique et Planétologie de Toulouse	France
VILAR	Rui	Instituto Superior Técnico	Portugal
WILKINSON	James	ORC Southampton	UK

- *LAPHIA recruitments*

Starting year	Project acronym	Typology	Position (months)	NAME	Lab.	Thesis title/research subject	Supervisor(s)	Last Institution attended	Nationality
2012	Loss in plasmonic	Risky	Post doc (12 months)	BAI Qjang	LP2N	Theoretical study of absorption loss in plasmonics launchers	P.LALANNE	Nanjing Univ. (China)	Chinese
2012	STED and STRUCT	Risky	Post doc (12 months)	MISHCHIK Konstantin	LOMA	Development of STED-like Direct Laser Writing in prepared co-doped glasses	Y.PETIT	St Etienne (France)	Russian
2012	HiFRETCancer	Passport	Post doc (12 months)	RUAN Yi	LP2N	Détection d'interactions de molécules uniques à ultra-haute densité dans le cancer du sein	L.COGNET	Ecole Centrale Marseille (France)	Chinese
2012	JANAPA	Risky	Post doc (12 months)	SHUPYK Ivan	LOMA	Janus nanocomposites: Towards efficient production for photonics applications	J.OBERLE	SAS Genes'Ink (France)	Ukrainian
2013	INPHOTARCH	Collaborative	PhD	DESMOULIN Jean-Charles	ICMCB	Structuration multi-échelle de verres pour nouvelles fonctionnalités optiques	T.CARDINAL	ENSCI (France)	French
2013	INPHOTARCH	Collaborative	PhD	BOURIGA Meriem	ISM	Molecular modification of photoactive spacecharge embedded surfaces : Elaboration and spectroscopic studies	V.RODRIGUEZ/N.Mc CLENAGHAN	Univ. Paris Diderot (France)	Tunisian
2013	TAINEPEC	Collaborative	PhD	FAUCHE Pierre	CRPP	Etude de la superradiance plasmonique : des mesures d'ensemble à la particule unique	R.VALLEE	Paris Saclay (France)	French
2013	EXOLAS	Collaborative	PhD	KIM Ka Young	ICMCB	Obtaining and characterization of optical ceramics	V.JUBERA	Yonsei Univ. (South Korea)	Korean
2013	RAMAN X	Passport	PhD	HADJ-BACHIR Mokrane	CELIA	Laser à Electrons Libres X Raman	P.BALCOU	Bordeaux Unv.1 (France)	Algerian
2013	"From Scientists o Big Sciences"	Tranversal project SHS	PhD	KRASNODEBSKI Marcin	SPH	Epistémologie et histoire des sciences: des navires aux fusées. L'Institut du Pin et la chimie des résines en Aquitaine (1900-1970)	J.PIERREL/P.DURIS	Maastricht Univ. (The Netherlands) Faculté des Arts et Sciences Sociales	Polish
2013	MULTIVOR	Risky	Post doc (12 months)	ALEKSANYAN Artur	LOMA	Towards high-density multiple vortices light fields	E.BRASSELET	Yerevan State Univ.(Armenia)	Armenian
2013	INDIMONE	Risky	Post doc (12 months)	BAIDA Hatim	LP2N	Individual molecules as nanoprobes of their environment	B.LOUNIS	Bordeaux Univ (France)	Moroccan
2013	ATTOFLOWER	Risky	Post doc (12 months)	DUBROUIL Antoine	CELIA	Measuring Attosecond pulse profile in the time domain	E.CONSTANT	Politecnico di Milano (Italia)	French

2013	Visible Fiber	Risky	Post doc (12 months)	MAHE Hind	LOMA	Développement d'une source fibrée délivrant des impulsions nanosecondes accordables dans le domaine visible	E.FREYSZ	Centre Commun Lannionais d'Optique (France)	French
2013	PETAPHYS	Collaborative	Post doc	POYE Alexandre	CELIA	Electromagnetic pulse generation in high intensity laser-target interaction and its detection	V.TIKHONCHUK	Univ. Aix-Marseille (France)	French
2013	INPHOTARCH	Collaborative	Post doc (8 months)	YANG Guang	ISM	Electric field structuring	V.RODRIGUEZ	Rennes 1 Univ. (France)	Chinese
2013/2015	EXOLAS	Collaborative	PhD	MAKAREVICH Viktoryia/ARCHIPOVAITE Giedre Marija	CELIA	Ultrashort Middle Infrared Laser and Parametric Sources	E.CORMIER	Mogilev State Univ. (Biélorussie)// Vilnius Univ. (Lithuania)	Belarussian/Lithuanian
2014	GIGAPICO	Risky	Post doc (12 months)	AUBOURG Adrien	LP2N	High power electro-optical comb laser developments	G.SANTARELLI	Lab. Charles Fabry-Palaiseau (France)	French
2014	TAINEPEC	Collaborative	Post doc (12 months)	COMESANA Miguel	CRPP	Exploring Single quantum emitters interactions with Plasmonic structures	S.RAVAINE	Univ. Vigo (Spain)	Spanish
2014	INPHOTARCH	Collaborative	PhD	IVAKOVIC Petra	ISM/CRPP	Hybrid nanostructures for nanopolaritonics	M.BLANCHARD-DESCE/S.RAVAINE	Orléans Univ. (France)	Croatian
2014	PROXMI	Passport	IR (13,5 months)	KUNTZEL Thomas	ISM	Protein-Crystal Multimodal Imaging	V.RODRIGUEZ	ENSCP (France)	French
2014	TAINEPEC	Collaborative	PhD	BABY Reenu	LP2N	Exploring single quantum emitter interactions with plasmonic structures	P.TAMARAT	CUSAT (India)	Indian
2014	TAINEPEC	Collaborative	Post doc (12 months)	KOSIONIS Spyridon	LP2N	Theoretical nanoplasmonics	P. LALANNE	University of Patras (Greece)	Greek
2014	FOCI	Passport	IR (12 months)	PRAKASAM Mythili	ICMCB	Transparent ceramics for optical applications	A.LARGETEAU	Bordeaux Univ. (France)	Indian
2014	APLL CLOCK	Passport	Post doc (12 months)	PANDEY Deepak	LP2N	Atomic clock with coherence preserving measurements and phase lock	A.BERTOLDI	Bordeaux Univ. (France)	Indian
2014	MOBILE	Risky	Post doc (12 months)	SMETANINA Evgeniya	CELIA	MOdeling of laser induced Bulk space charge separation in tailored sILver-doped phosphatE glass materials	G.DUCHATEAU	Lomonosov Moscow State University (Russia)	Russian
2014	INPHOTARCH	Collaborative	Post doc (12 months)	YAMADA Atsushi	CRPP	Influencing light propagation on the nanoscale through molecular reorientation	R.VALLEE	Nagoya Univ.(Japon)	Japonese
2015	CHIRALIGHT	Risky	Post doc (12 months)	ALEKSANYAN Artur	LOMA	Optical sorting of material chirality by chiral light	E.BRASSELET	Bordeaux Univ. (France)	Armenian
2015	INPHOTARCH	Collaborative	Post doc (12 months)	BONDU Flavie	ISM	Sample and electrode preparations for the thermal poling treatments	M.DUSSAUZE	Bordeaux Univ (France)	French

2015	PETAPHYS	Collaborative	Post doc (12 months)	BOUTOUX Guillaume	CELIA	Définition de diagnostics pour la caractérisation de la tache laser PETAL et la validation des calculs réglementaires d'activation	D.RAFFESTIN/V.TIKHONCHUK	Bordeaux Univ (France)	French
2015	HOBIT	InterlabEx	Post doc (12 months)	FURIO David	IMS	Etudes sur les mesures de positions des composants optiques et sur les différents supports d'affichage pour la réalité augmentée	J.P.GUILLET	Bordeaux Univ (France)	Spanish
2015	NANO2BRAIN	InterlabEx	Post doc (12 months)	GAUDIN Antoine	LP2N	Single NANOtube and NANOdot imaging in living Brain environments	L.COGNET	Bordeaux Univ (France)	Canadian
2015	TULIMA	Risky	Post doc (12 months)	JANSEN Oliver	CELIA	Pair electron-positron generation with high intensity and high power laser	X.RIBEYRE	HHU Düsseldorf (Germany)	German
2015	INPHOTARCH	Collaborative	Post doc (12 months)	LEE Jangeung	CELIA	Optimization of DLW, by developing adapted and original approaches to compensate aberrations at the focus of high repetition rate ultrafast femtoseconde laser beams	L.CANIONI	Yonsei Univ. (South Korea)	Korean
2015	TOWARDS…	Risky	Post doc (12 months)	LOZAN Olga	LOMA	Nano Plasmonics Imaging	S.DILHAIRE	Bordeaux Univ. (France)	Moldovan
2015	NANO2BRAIN	InterlabEx	Post doc (12 months)	N. LAZAR Adina	ISM	FON synthesis and characterization	M.BLANCHARD DESCE	Institut du Cerveau et de la Moelle Epinière, Hôpital de la Salpêtrière (France)	Rumanian
2015	OPTISREDING	Risky	Post doc (12 months)	ONDIC Lukáš	LOMA	Optical Trapping of Nanoparticles in Gas Phase	Y.LOUYER	Academy of Sciences of the Czech Republic (Czech Republic)	Czech
2015	EXOLAS	Collaborative	IR (18 months)	BOLANOS Western	IMS	Sustainability study of crystal for exotic laser application	Y.DESHAYES	CIMAP-ENSICAEN (France)	Colombian
2015	EXOLAS	Collaborative	Post doc (18 months)	REDDY Allu Amarnath	CELIA	Laser tests and optical characterization of new active media	I.MANEK HONNINGER	Univ.of Aveiro (Portugal)	Indian
2015	MIGAPHYS	Other	Post doc (12 months)	ROTA RODRIGO Sergio	LP2N	Development of a laser source at 461 nm	G.SANTARELLI / E.CORMIER	Universidad Pública de Navarra (Spain)	Spanish
2015	MIGAPHYS	Other	Post doc (12 months)	PELISSON Sophie	LP2N	Gravity imaging with atom interferometry	B.CANUEL	QSTAR-INO (Italy)	French

It should be noticed that the Cluster LAPHIA has funded all the recruitments (except for JC.DESMOULIN: 50% is co-funded by Institut de Chimie-CNRS). Moreover, two recruitments within LAPHIA passports projects (PROXMI and FOCI) have been renewed thanks to a maturation project funded by SATT (11 months of Research Engineer: T.KUNTZEL & 18 months of Research Engineer: M.PRAKASAM). The employer of all LAPHIA recruitments is Bordeaux University except for JC.DESMOULIN, doctorate within Inphotarch project who has been recruited by CNRS at ICMC

Strategic Committee

LAPHIA – IdEx Bordeaux

November 6, 2015

GENERAL INFORMATION

Title of the project	LAPHIA : Laser & Photonics in Aquitaine
Keywords	Laser and high density energy, photonics & materials, innovative imaging
Partner units	LOMA, LP2N, CELIA, ISM, IMS, ICMCB, CRPP, I2M CENBG, CEA, Cesta, SPH
Starting date of the project	September 1st, 2012
Ending date of the probationary period	December 31st, 2015
Ending date of the project	December 31st, 2019
Web site	http://laphia.labex.u-bordeaux.fr/en/

Scientific coordinator	
Lionel CANIONI	CELIA

Board of Directors	
Lionel CANIONI	Director
Evelyne FARGIN	Deputy Director - Education
Philippe BALCOU	Deputy Director - Research
Philippe BOUYER	Deputy Director – Innovation & transfer technology

Strategic Committee	
Marta Fajardo	GoLP - IPFN / Instituto Superior Tecnico - Lisboa - Portugal
Luis Liz-Marzán	Scientific Director - CIC biomaGUNE - San Sebastian - Spain
Jean-Luc Adam	Director - SPM: Institut des sciences chimiques – Rennes - France
Jean-François Roch	Director – Laboratoire Aimé Cotton - ENS Cachan - France
Alain Barthélémy	Director - département photonique XLIM – Limoges - France
Martin Richardson	Director - Towns Institute – University Central Florida - USA
Ariel Levenson	Director – national program C'Nano - Paris – France; LPN-CNRS

1. GOVERNANCE AND ORGANIZATION

The governance of the LAPHIA cluster consists of a scientific coordinator, who is in very strong interaction with a board of four directors. The strong coupling existing between them is obviously a strength of LAPHIA, and certainly the key of its efficiency which is remarkable. For some specific actions, LAPHIA acts as a "mini funding agency" with the ability to give quick and strong support to innovative projects directly proposed by the researchers. The "risky" project system has already led to excellent science and innovation outputs, and should therefore be encouraged and supported by the University of Bordeaux IDEX.
After difficulties at the launch of LAPHIA, the selection process and the funding appears to be handled in a very professional way. A remarkably efficient project engineer works now at full time for LAPHIA. This is undoubtedly the key of the very strong improvements in both scientific and financial organization.
LAPHIA, through actions decided by the board of directors, has obviously played a major role in linking the laser physics research community in Bordeaux with the Mega-Joule laser project which will provide world class capabilities. New collaborative projects have been defined and have already scientific results. This result is to be applauded.
No strong weaknesses associated to the LAPHIA governance have been detected. We encourage the directors of LAPHIA to strengthen the interaction with the directors of the laboratories that are affiliated to LAPHIA, although their involvement in LAPHIA varies strongly depending on the research activities of each laboratory. This is nevertheless required in order to strengthen foreseen actions that will be linked with the recruitment of research staff on LAPHIA-supported "Chairs", either at junior or at senior level.

2. PRODUCTION EVALUATION

2.1 Quality of the scientific production

The core of the scientific strategy of LAPHIA is constituted by the four collaborative projects launched for 4 years. ***These collaborative projects are calibrated for strengthening strategic axis of the photonic cluster***. The integration of the overall scientific production over the perimeter of each collaborative project clearly points to the high quality of the involved teams. The projects are all at mid-term or so, and it is clearly too early for a quantitative evaluation of the LAPHIA impact.
As a partial assess of the projects progress the SC remarks:
- Collaborative Project : Integrated Photonic Architectures
INPHOTARCH involves 15 permanents from ISM, ICMB, CELIA and CRPP laboratories. It is a structuring and well balanced project between a boost of well established, before LAPHIA birth, and pertinent scientific activities on Laser and electrical field structuring, and new risky avenues on addressable photonic molecular structures. The latter, timely and ambitious, has promoted new collaborations within the LAPHIA Cluster. The already obtained results are scientifically convincing. The concern of the consortium to protect the results through 3 patents is welcomed by the CS, as it is the will to increase the international partnerships with reputed optical centers.
- Collaborative Project : TAINEPEC
TAINPEC involves 5 permanents that belong to two teams at LP2N and one at CRPP, they had never collaborated before this project. This ambitious project is well focused around two workpages. The first one aims at demonstrating and studying the superradiance of hybrid quantum emitters mediated by the plasmonic resonance of a hosting Au Nanoparticle. This project involves the complementary skills of three groups for the functionalization of NP, the optical study and the theoretical aspects. The second WP is devoted to the proposition and demonstration of a nanoscopic tool at low temperature.

Outstanding results were obtained in both directions, they are welcomed by the SC. The SC appreciates the enriching collaboration between the LP2N teams and encourages the consortium to further develop the interactions between the LP2N teams and the CRPP team.
- Collaborative Project : EXOLAS
EXOLAS involves 23 permanents from ICMB, CELIA, IMS and LOMA laboratories. The project aims at developing a full approach for laser systems solutions at wavelengths for which nowadays approaches fail achieving compact, high power and stable operation. EXOLAS gathers specialists on optics, material science and chemistry to tackle the numerous problems both from new material mid-long term solutions and/or new architecture short term approaches. The activities are well linked at the international level both for research and educational aspects. The SC draws the attention of the consortium on the risk of cleavage and lack of synergy between teams and activities coming from bottom-up and top-down approaches.
- Collaborative Project : PETAPHYS
PETAPHYS gathers 19 permanents that belong to CELIA and CEA/CESTA laboratories. The main goal of the consortium is to plan and coordinate the first stage of operation of high power PETAL laser, whose infrastructure is managed by the Equipex PETAL+. PETAPHYS has taken cleverly advantage from the delay in PETAL installation to prepare the start-up of the academic user facility. This includes diagnostic and control of electromagnetic environment, radiation security, metrology program and design of representative experiments. The SC particularly appreciated the approach for mobile diagnostic developed during this first step of the project, as well as the identification of the back radiation as the dominant source of damage. Clearly PETAPHYS plays a crucial role for the community of future users of the Megajoule laser.

2.2 Innovation & transfer technology strategy

LAPHIA Cluster implemented a clever strategy to boost technologic transfer. This is based on a twofold approach.
1) The launch of a “Passeport” call for projects, that aims at supporting research projects with high potential of innovation and bring to them the keys to be accelerated by the SATT or the Bordeaux University. This positioning close to the labs, that ensures detection efficiency and "proselyte" action, is fully adequate. It is worth noting that 60% of Passeport projects include a socio-economic partner in the consortium.
2) A close interaction with the Pole Route des lasers and the SATT, both for the selection of the Passeport projects, which helps for further steps in the prematuration-maturation chain (bottom-up dynamics) and to be aware of the industrial needs (top-down feeding).

The SC congratulates LAPHIA for the implementation of this well targeted strategy for innovation and technology transfer.
The SC encourages the IDEX Bordeaux to take advantage of these initiatives and to integrate a LAPHIA representative into its "Valorisation" management committee.
The SC recommends to LAPHIA that a partnership is sought with local actors of education to the entrepreneurship, such as the IOGS, with the aim of improve support for young researchers (PhD, Post-Doc) wishing to engage in the technology transfer and start-up process.

2.3 Formation *(Outreach, attractiveness, networking…)*

In terms of formation, the strategic objective is to set up an integrated graduate program in photonics with increased attractiveness for Masters and PhD students

The main achievements are at the international level, with educational networks that enhance the exchanges and the attractivity for students. This is the case of the ETN Lase2020 and the ERASMUS program IT-ELII for PhD's.
For Master programs, the SC noticed that student exchanges are strongly encouraged. In addition, visio-conferences on photonic materials are organized with U. Central Florida.
At the local level, new Master programs are under construction. It should be a good opportunity for LAPHIA to increase the visibility of education in photonics in Bordeaux.

2.4 International *(Outreach, attractiveness, networking…)*

Through a proactive action LAPHIA Cluster developed an efficient activity of promotion of international networking. Three emblematic actions were launched:
- LAPHIA promoted the creation of a Laboratoire International Associé (LIA) between Université de Bordeaux, CNRS and Université de Quebec
- LAPHIA actively participated to the creation of a Research center with the Yonsei University at Korea, and LG INNOTEK
- LAPHIA launched a series of Common Symposia with Darmstadt University, Jena Germany

Other actions concern educational networks that enhance the exchanges and the attractivity for students. This is the case of the ETN Lase2020 and the ERASMUS program IT-ELII.
One partial indicator of the international attractiveness is the high pourcentage of foreign students recruited via the PhD and Post-doctoral positions opened by the LAPHIA Cluster: 76% of the 42 positions.
This intense activity on international networking induces a considerable amount of additional administrative tasks. The SC encourages the prosecution of the international activity, but alerts LAPHIA's direction board on the risks of falling all these administrative tasks only on the scientific staff.

3. APPRECIATION OF THE CLUSTER'S CONTRIBUTION TO STRUCTURING THE GATHERED SCIENTIFIC STRENGTHS

- ***IN TERMS OF RESEARCH AND FORMATION***

Given the large number of research laboratories and scientists involved in LAPHIA, the first structuring effect is the definition of only 3, complementary, research themes: emerging photonics and materials, innovating imaging, and lasers and high-energy physics. The different types of financial supports implemented in LAPHIA (large collaborative projects, risky projects, and research mobility projects) are also very well adapted tools to structure scientific strengths.
In addition to the aspects already discussed in the previous section, the structuring effect of LAPHIA during the period under evaluation is obvious: 52 collaborations between teams were supported, among which 30 between teams that had never collaborated before. The SC also appreciates the proactive action of the Board that promoted and initiated 5 projects in parallel of these research calls: 3 inter-LabEx projects, 1 "Physics beyong EquipEx MIGA" project, and 1 "multimaterials fibers" project.
The annual LAPHIA symposium is a key structuring event for the dissemination of knowledge (57 talks, 91 posters, 150 attendees).

Concerning education, several student events have been supported, including Inter-Laboratories events for PhDs and Post Docs.

- *IN TERMS OF GOVERNANCE, SYNERGY, COMMON SCIENTIFIC PROGRAMMING, VISIBILITY…*

Structuring effects are well identified at all stages of the governance and animation of LAPHIA, especially in the Scientific Council where the directors of all laboratories are represented, in the Seminar Commitee composed of 6 researchers from different labs and in the Education Committee, newly created, with 4 members from different labs.

4. ADDED-VALUE RESULTING FROM THE LABELLING AND THE FUNDING AS AN "CLUSTER OF EXCELLENCE"

- *IN TERMS OF DEVELOPMENT, OUTREACH, VISIBILITY…*
- *REGARDING TO EACH UNIT PARTNERS AND REGARDING TO THE UNIVERSITY OF BORDEAUX*

- **Overall appreciation**

The SC had a very positive overall opinion on the benefits of the cluster on the academic activities related to Photonics and Laser in Bordeaux. LAPHIA Initiated synergy among the team partners which belong to 11 laboratories from Université de Bordeaux, CNRS, Institut d'Optique Graduate School and CEA leading to a number of transdisciplinary research projects. That appears to be a clear added-value of LAPHIA to gather the research around photonics, lasers, materials for photonics and imaging in Bordeaux area, to support cross-fertilization and to be a representative of the partners on the covered topics. Quantitative indicators were given which emphasized the significance of the collaboration outcomes.

Visibility of the local photonics research was improved by LAPHIA at the national and international levels. The annual international symposia, the creation of new formal connections with Centre Optique Photonique et Laser in Canada (U. Laval Québec, Ecole Polytechnique de Montréal) and Yonsei University in South Korea, the creation of a Canada/France joint research unit with the support of CNRS (CNRS-LIA) and the contribution to EU Networks (academic and research), all these initiatives were very successful.

LAPHIA also supported the technology transfer by founding the step between the lab idea and the prototype. That filled a gap in the helps already available for the pre-development of high tech product. On the formation side LAPHIA favored the connection between students and the industries, a very positive initiative. The idea of writing a proposal for the RISE call of H2020 is well considered.

With respect to the University of Bordeaux, LAPHIA contributed to its reputation of excellence cluster, increasing the scientific production and the intellectual property, increasing the connections with renowned foreign universities, re-enforcing the identity of a U Bordeaux as one of the strong academic centers for Laser and Photonics in Europe.

- **Strengths and potentials/opportunities**

Strength stands in the high quality and high scientific level of the team members, in the complementarity of Materials science with Photonics, in the presence of the world class laser facilities of CEA-CESTA in the local industrial context, in the established international connections (USA, Canada, Korea, ..). The fact that photonics is a KET for EU is a good opportunity.

The high visibility of Bordeaux all around the world is a plus.

- **Weaknesses and risks**

Management teams at the different level of the local organization (labs, cluster, Idex) could be in conflict and their decisions could be less effective if there is a lack of coordination in their respective policy. Lack of founding continuity could prevent to capitalise the achievements.

- **Recommendations**

Coordination between laboratories directorates and LAPHIA could be strengthened
Idex and LAPHIA should coordinate their initiatives in order to avoid overlap and to focus on complementarity.
Flexibility and the possibility of fast decisions should be preserved.
Positioning, at least at the national level (and EU level as well), should be provided with respect to other photonics clusters
The identity of LAPHIA should be strengthened among the partners and advertised in conferences and publications. But the multiplicity of the partners' affiliation may destroy the identity abroad: Laboratory, Cluster, Idex, University, CNRS, CEA!! Every structure wants to promote its own organization, that's a (French) difficulty.

5. FUTURE STRATEGIES AND ORIENTATIONS

For the second funding phase, LAPHIA intends to fund research chairs, at both junior and at senior level. The committee agrees with this goal in order to ensure a strong future for the science at the university of Bordeaux. Nevertheless we would like to point out that similar initiatives, led in other IDEX centers, have led to not fully convincing results in the scientific domain covered by LAPHIA. On the other hand, there is today a wealth of bright and motivated young candidates on the few permanent positions that are opened every year. One alternative scheme might be to support applications on innovative research projects, evaluated by LAPHIA and leading to a commitment that if recruited either at university or in a research organization (CNRS, CEA, …) the PI working in a LAPHIA affiliated laboratory will receive a specific funding intended for instance to purchase a crucial equipment for starting her/his project.

6. INTERNATIONAL POSITIONING OF THE CLUSTER

The panel congratulates the consortium for the above mentioned initiatives of selected partnerships in Canada, Korea and Germany. Furthermore, the research being undertaken expands beyond the scope of these selected partners, with strong ties to unique facilities worldwide.
The next step seems to be the recognition of the LAPHIA brand worldwide, in the same manner as CUDOS Arc Center of Excellence in Australia. We support the coordinators of LAPHIA in this goal, and recommend deepening a few of the presented strategies in order to succeed:

- Keeping investing in the website, which is already very attractive, by investment of a regular update with news and links to events (including hiring)
- the main avenue for acknowledging the existence of LAPHIA is creating a set of communication materials for presenters in international conferences with the LAPHIA label. This is being coordinated by the LAPHIA IdEx and should be supported by the researchers
- The brand will also be promoted through the high profile hiring of promising candidates from abroad
- Training in partnsership of some universities through formal Erasmus Mundus could be implemented, although we recognize the difficulties in timing given the current revision of the Université de Bordeaux curriculum

7. OVERALL OPINION AND RECOMMENDATIONS

The initial objective of forming a strong scientific base in the interdisciplinary areas that are covered by

LAPHIA is already a success. It has led to a recognized and innovative activity at the international level. We therefore encourage a strong support by the University of Bordeaux IDEX for the second funding phase.

The main challenge for the second funding phase will be to initiate new developments, such as support to junior or senior research chairs, without sacrificing the existing collaborative actions which have already led to remarkable outputs.

In what follows we summarize the SC overall recommandations.

Overall recommandations

Management :

To further improve the already very significant impact of LAPHIA, the coordination between laboratories directorates and LAPHIA should be strengthened.

It is also important that Bordeaux Idex and LAPHIA coordinate their initiatives in order to avoid overlap between funding actions and to focus on complementarity initiatives.

Collaborative projects :

The SC encourages the Board of LAPHIA to actively search with the project leaders of EXOLAS an improvement of the strategy and synergies between the teams involved in the different parts of the project and their approaches.

Innovation & transfert :

The SC encourages the IDEX Bordeaux to take advantage of LAPHIA initiatives and to integrate a LAPHIA representative into its "Valorisation" management committee.
The SC recommends to LAPHIA that a partnership is sought with local actors of education to the entrepreneurship, such as the IOGS, with the aim of improve support for young researchers (PhD, Post-Doc) wishing to engage in the technology transfer and start-up process.

Formation :

A remarkable training laser center has been developed with the support of LAPHIAS and with a strong commitment of the laser & optics industry. It is a quite unique initiative at French level with a strong potential for the training of students but also of employees through the « formation continue » system. Strategies for the development of this training centers should be discussed between all academic partners and the IDEX.

International:

The LAPHIA brand should be promoted through the high profile hiring of promising candidates from abroad. Also training in partnership of some universities through formal Erasmus Mundus could be implemented, although we recognize the difficulties in timing given the current revision of the Université de Bordeaux curriculum. Both aspects already engaged by LAPHIA Board should be poursued.
A benchmarking of international photonic Clusters could further improve the positioning strategy.

Due to the intense activity of LAPHIA on international networking a considerable amount of additional

administrative tasks is induced. The SC encourages the prosecution of the international activity, but alerts LAPHIA's direction board on the risks of falling all these administrative tasks only on the scientific staff. A help of IDEX Bordeaux with a CDD shared with another Cluster/Labex could be an efficient solution.

Added value of the Cluster:

Flexibility and the possibility of fast decisions should be preserved.

The identity of LAPHIA should be strengthened among the partners and advertised in conferences and publications. But the multiplicity of the partners' affiliation may destroy the identity abroad if the strategy is not integrated by laboratory directorates.

Future actions Chairs:

Succeed in hiring outstanding young or senior researchers, is not an easy task. All the more if the constraint of contributing to the cluster dynamics or at least to prevent from disturbing it is applied. The Chair program strategy should be deployed in a synergistic way with laboratories directorate. The SC could be involved in order to help with an external point of view for the strictly scientific aspects.

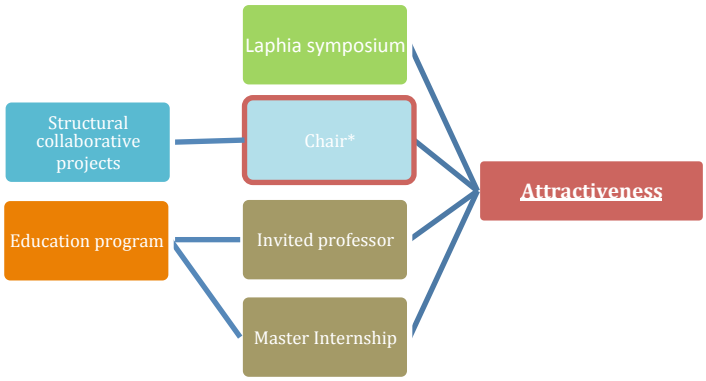
E. List of IdEx projects funded within the LAPHIA scope *(list non-exhaustive)*

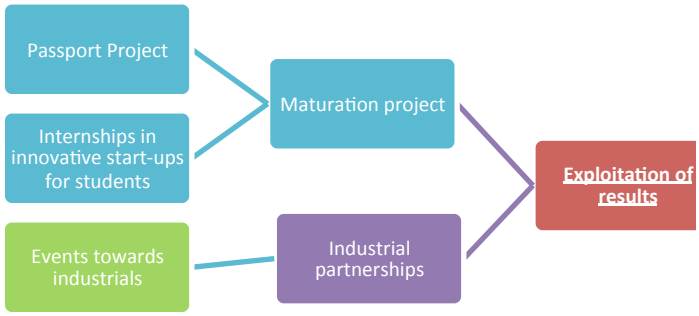
Programme	Objet / Titre du projet (nom du porteur si pas d'objet/titre)	Laboratoire / Structure	Responsable scientifique ou bénéficiaire - NOM	Référent (contact local, directeur de thèse, etc) - NOM
Professeurs invités 2014-2015	Lipovskii	UMR5255 Institut des Sciences Moléculaires (ISM)	Lipovskii	Marc
Post-Doc Internationaux Campagne 2013	Composite Fiber Devices	UPR9048 Institut de Chimie de la Matière Condensée de Bordeaux (ICMCB)	DANTO	Cardinal
Post-Doc Internationaux Campagne 2014	Development and optimization of the X-ray diagnostics for PETAL	UMR5107 Centre Lasers Intenses et Applications (CELIA)	Jakubowska	
Professeurs invités 2014-2015	Neuhauser	UPR8641 Centre de Recherche Paul Pascal (CRPP)	Neuhauser	Vallée
Professeurs invités 2014-2015	Nanopolaritonics	UPR8641 Centre de Recherche Paul Pascal (CRPP)	Neuhauser	Vallée
Professeurs invités 2014-2015	Shekhter	UMR5798 Laboratoire Onde et Matière d'Aquitaine (LOMA)	Shekhter	PISTOLESI
Professeurs invités 2014-2015	Laser Plasma Instabilities relevant to Shock Ignition in Laser Fusion	UMR5107 Centre Lasers Intenses et Applications (CELIA)	SKORIC	BATANI
Professeurs invités 2014-2015	Zigler	UMR5107 Centre Lasers Intenses et Applications (CELIA)	Zigler	Batani
Professeurs invités 2015-2016	Building of a clock laser for a Sr interferometer	UMR5298 Laboratoire Photonique, Numérique et Nanosciences (LP2N)	Prevedelli	Bertoldi
Professeurs invités 2015-2016	« Quantum Nanooptics »	UMR5298 Laboratoire Photonique, Numérique et Nanosciences (LP2N)	Sandoghdar	LOUNIS
Programme PEPS sur site Appel 2012	Communication entre nanoobjets et photoprocessus confinés au sein des polymersomes	UMR5255 Institut des Sciences Moléculaires (ISM)	MCCLENAGHAN	
Programme PEPS sur site Appel 2014	Propulsion de micro-nageurs par effet Marangoni	UMR5798 Laboratoire Onde et Matière d'Aquitaine (LOMA)	Bickel	
Programme PEPS sur site Appel 2014	Générateurs de vortex optiques intégrés hybrides organique/inorganique	UMR5798 Laboratoire Onde et Matière d'Aquitaine (LOMA)	BRASSELET	
Programme PEPS sur site Appel 2014	BBC theory for new opportunities emerging from manifold ordering (ferroelectricity, magnetism & superconductivity)	UPR9048 Institut de Chimie de la Matière Condensée de Bordeaux (ICMCB)	CANO	
AAP Commun SIRIC	Quantitative optical nanoscopy for personalized diagnosis of colon cancer: infrared nano-markers on tissue microarrays from patients	UMR5298 Laboratoire Photonique, Numérique et Nanosciences (LP2N)	COGNET	
Programme PEPS sur site Appel 2014	Interface physique-chimie-biologie pour comprendre les mécanismes de l'invasion tumorale	UMR5298 Laboratoire Photonique, Numérique et Nanosciences (LP2N)	NASSOY	
Programme PEPS sur site Appel 2015	Imagerie chimique nanométrique de peptides amyloïdes impliqués dans la maladie d'Alzheimer par spectroscopie Raman exaltée par effet de pointe	UMR5255 Institut des Sciences Moléculaires (ISM)	Bonhommeau	
Programme PEPS sur site Appel 2015	Puce optofluidique pour le tri sélectif de microparticules chirales	UMR5798 Laboratoire Onde et Matière d'Aquitaine (LOMA)	BRASSELET	
Cluster CPU	Hybrid Optical Bench for Innovative Teaching		Hachet	
Doctorat International Campagne 2012	Optomécanique angulaire macroscopique de systèmes photopolymérisables nanostructurés	UMR5798 Laboratoire Onde et Matière d'Aquitaine (LOMA)	HAKOBYAN	BRASSELET

Doctorat International Campagne 2013	Modélisation mathématique du dépôt de dose pour la photonthérapie et la protonthérapie	UMR5107 Centre Lasers Intenses et Applications (CELIA)	PICHARD	Dubroca
Doctorat International Campagne 2014	Probes for REmote ChemIcal SEnsing (PRECISE)	UMR5107 Centre Lasers Intenses et Applications (CELIA)	Abou Khalil	CANIONI , PETIT
Doctorat International Campagne 2015	Inhomogénéités dans les écoulements de suspensions non-newtoniennes	UMR5258 Laboratoire du Futur (LOF)	AHMADREZA	OVARLEZ
Doctorat International Campagne 2015	HYBRID METALLO-DIELECTRIC NANORESONATORS	UMR5298 Laboratoire Photonique, Numérique et Nanosciences (LP2N)	COGNEE	LALANNE
Doctorat International Bourses de mobilité pour les doctorants (supports & seule)	Elaboration et caractérisation de nouvelles fibres à base de verre d'oxydes lourds pour les lasers de puissance	UPR9048 Institut de Chimie de la Matière Condensée de Bordeaux (ICMCB)	SKOPAK	Fargin
Conférences internationales d'excellence	Symposium Laphia		Canioni	
Plateformes mutualisées (buisness development)	Marché subséquent 3 - Laphia plateforme Fibres	UMR5107 Centre Lasers Intenses et Applications (CELIA)	Canioni	
Projet ExtraBrain	ExtraBrain	UMR5298 Laboratoire Photonique, Numérique et Nanosciences (LP2N)	Cognet	
Structuration InterLabEx 2014	MultiMat	UMR5107 Centre Lasers Intenses et Applications (CELIA)	Bousquet	
Fond d'intervention particulière projets PIA	Abondement thèse PETAL+	UMR5107 Centre Lasers Intenses et Applications (CELIA)	BATANI	Ducret
Fond d'intervention particulière projets PIA	cofinancement Ecole d'été "Atoms and Plasmas in Super-Intense Fields"	UMR5107 Centre Lasers Intenses et Applications (CELIA)	BATANI	
Structuration InterLabEx 2013	Image and characterize the ECS organization in pathological brain tissues using carbon nanotube imaging	UMR5298 Laboratoire Photonique, Numérique et Nanosciences (LP2N)	Cognet	
Pre-maturation	Unité Neurale Implantable	UMR5298 Laboratoire Photonique, Numérique et Nanosciences (LP2N)	Bézard, Cognet	
BIS Euskampus (Pays Basque)	Workshop Laser		Canioni	

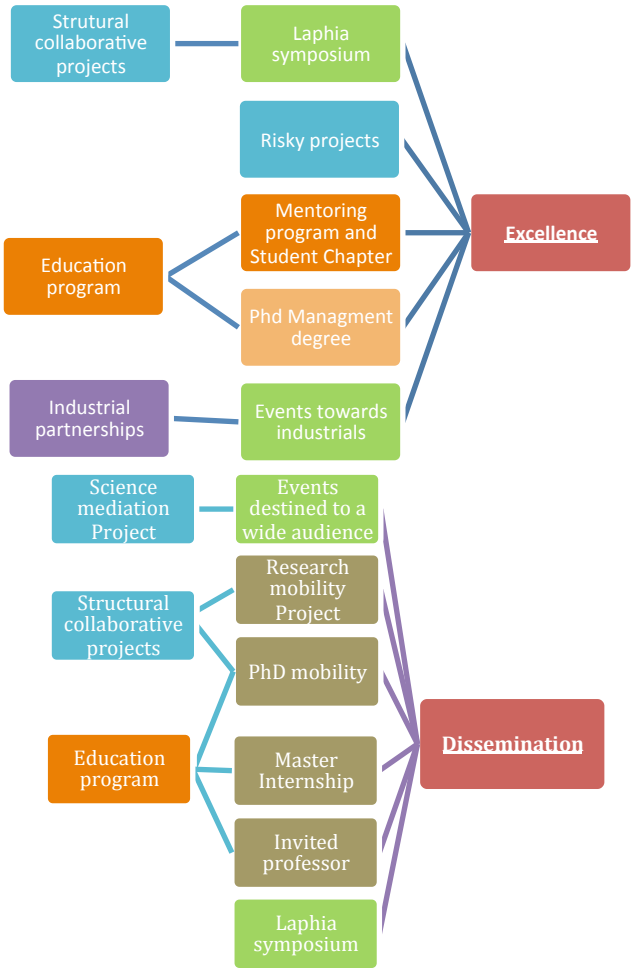
F – Conclusion - Charts

→ *Color table for the different LAPHIA actions*





**Note: Chair tools are part of the futures perspectives of the Cluster (period 2)*



International comparisons

Benchmarking has a great importance for us in order to have an overview of the international environment and renowned actors in laser and photonics. With only 3 years of existence, LAPHIA succeeded in set up several programs that contribute to the reputation and the attractiveness of the Bordeaux University. Moreover, excellent teams well renowned belong to the Cluster that helped to have legitimacy. The Centers presented hereafter have an average of 10 years experiences. Similar excellence programs on materials and photonic systems have been

proposed and founded around the world, like in Germany at the Karlsruhe Institute of Technology. The DFG-Center for Functional Nanostructures (cluster of excellence) is developing a dedicated program on structured materials for photonics. In Australia, an ambitious program (CUDOS) on photonic fiber has also been launched in Sydney and has been successful in the new ARC Centers of Excellence funding round until 2017. Around the word, different centers have targeted the photonic domain. One can cite in the US the University of Central Florida with the Florida Photonics Cluster (FPC), Tucson University or Lehigh University where the Center for Optical Technologies is working in close collaboration with the center for advanced materials and nanotechnologies. Finally, the Rochester node displays a similar configuration to Bordeaux, with the conjunction of the University of Rochester, the Institute of Optics, and the Laboratory for Laser Energetics. In Germany, the Munich node was recently recognized as an excellence center in the framework of the very similar “Excellence Initiative” program.

G – Presentations - Scientific results of the risky and passport projects

- ***Risky projects:***

JANAPA - JAnus NAnocomposites: Towards efficient production for Photonic Applications Jean OBERLE, LOMA 1/12/2012 → 30/11/2013 **Patent:** "Particules de TiO2 dissymétriques (particules de Janus) et leur procédé de synthèse par photodéposition", M. H. Delville, J. P. Delville, L. Vauriot, 19 December 2012, 1262371. Finalisation, fiabilisation et extension du procédé	Janus nanoparticles semiconductor metal are of great interest for many applications in photonics and in particular for photovoltaics. The project objective is twofold: to establish an optimized synthesis path and oriented these particles to obtain a collective effect for photonic applications. **Main results:** Finalize patented protocols for synthesis of metal / semiconductor nanohybrids; Significantly improve production yields up to 90% for creation of Janus particles (Silver / ZnO) from ZnO nanorods; Understand and greatly improve the dispersion and stability of particles in different phases in order to use them in different applications; Highlight the metal-semiconductor coupling in dynamics behavior of nanohybrids Ag / ZnO.

Loss in plasmonic Philippe LALANNE, LP2N/LOMA 01/11/2012 → 01/11/2013 Q. Bai, M. Perrin, C. Sauvan, J.-P. Hugonin, P. Lalanne, "Efficient and intuitive method for the analysis of light scattering by a resonant nanostructure", **Optics Express** 21, 22, pp. 27371-27382, 2013 O. Lozan, M. Perrin, B. Ea-Kim, J.M. Rampnoux, S. Dilhaire, and P. Lalanne "Anomalous light absorption around subwavelength apertures in metal films", **Phys. Rev. Lett** (2014). C. Sauvan, J.P. Hugonin, I.S. Maksymov and P. Lalanne, Theory of the spontaneous optical emission of nanosize photonic and plasmon resonators, **Phys. Rev. Lett** 110, 237401 (2013).	The excitation of surface plasmon is the basis for many applications in photonics. An important point is to understand the absorption properties of these waves at the vicinity of sub wavelength object. **Main results:** After a numerical and analytical study, we were able to produce a scattering nanostructure. The experimental results agree well with the different theoretical approaches. We predict and observe an abnormal absorption in the vicinity of a diffracting slot pierced in a metal sheet. in fact, the field in the metal, instead of decreasing with the distance to the slot, as expected, remains almost constant for distances of separation between 20 and 70 λ. Furthermore, a new modal theory to describe nano-resonators has been developed. The analytical solution of Maxwell's equations in an intuitive and simple approximative way is a challenge. We have just done it in the case of the study of the scattering of light by metal nanoresonators. This is one of the most difficult study because it must account for the absorption and dispersion of light. We were able to set up a new formalism which allows to easily and quickly calculate the physical optical quantities. Until then, every change of experimental injection conditions in numerical simulations required to redo the calculation entirely. In this project, the field scattered by the nanoparticle is described as a sum of standardized modes, they are computed once and for all because they do not depend on the injection conditions. This model due to its analyticity, is of major interest for understanding the optical response of nanoparticles.

Visible Fiber Light Eric FREYSZ, LOMA/CEA 11/2013 → 01/2014 [E. Hugonnot, P. Calvet, A. Mussot, G. Tison, A. Mahe and E. Freysz, Vector modulation instabilities in high-energy narrow-bandwidth nanosecond pulsed polarization-maintaining ytterbium-doped single-mode fiber amplifier, communication	In this Risky project, Eric Freysz and Emmanuel Huguenot with the help of a postdoctoral Miss Hind Mahe had the idea of using parametric amplification process directly into a birefringent fiber ytterbium amplifier pumped by a laser diode 976 nm. This demonstrated that according to the the polarization injection conditionsof a nanosecond oscillator up to 70% energy amplified could be transferred to visible bands. **Main results**: During this project, the first results of parametric amplification and conversion on visible band is obtained. A numerical model taking into account the various non-linear effects and non-linear phenomena in cascade predicts wavelengths generated based on experimental parameters. This tool is essential to optimize the white

à Photonics West (San Francisco, 2014)	source. The first results are encouraging because the spectral density obtained is 1-2 orders of magnitude greater than the state of the art and opens new perspectives in terms of application.

INDIMONE Philippe Tamarat, LP2N 09/2013 → 09/2014 Ivan S Veshchunov, Sergei V Mironov, William Magrini, Vasili S Stolyarov, AN Rossolenko, VA Skidanov, J-B Trebbia, Alexandre I Buzdin, Ph Tamarat, Brahim Lounis, « Direct Evidence of Flexomagnetoelectric Effect Revealed by Single Molecule Spectroscopy » , **Phys. Rev. Lett**. 115 (2015) 027601 **Patent:** Bouzdine/Lounis/Tamarat, « Procédé de Contrôle de Déplacement d'un Vortex d'Abrikosov » N° de dépôt 1558027, Août 2015	The basic objective of this project is to provide the first direct experimental evidence of an electrical charge accumulation at the center of a Abrikosov vortex in type II supraconductor. Ultra-sensitive nanoprobes such as fluorescent molecules have been used to determine the charge distributions of the vortices on a nanometer scale. The presence of an electrical charge to the core of the vortex strongly influences the inter-vortex interaction and the stability of vortex in dense networks. In addition to its strong impact on fundamental physics, such a discovery could open new opportunities in applications of high temperature superconductors for electronic devices. **Main results:** This risky project enabled the team of Brahim Lounis to perform world premieres: the realization of a magneto-optical microscope for imaging Abrikosov vortex in niobium (Type II superconductor) with excellent optical contrast. Finally, the project also showed that the local heating of the vortex lattice by the laser beam and the subsequent cooling can produce vortex formation of aggregates with high density, surrounded by a free zone of vortex. The size of these aggregates and the density of vortices inside can be effectively controlled by the power of the beam and the external magnetic field. This effect is a simple way for spatial manipulation of these vortices.

ATTOFLOWER Eric Constant, CELIA 11/2013 → 11/2014 Publication in "Nature Communications": Dubrouil, A and Hort, O and Catoire, F and Descamps, D and Petit, S and Mével, E and Strelkov, VV and Constant, E, « Spatio- spectral structures in high-order harmonic beams generated with Terawatt 10-fs pulses », Nature communications 5, 4637 (2014), http://dx.doi.org/10.1038/ncomms5637. - Start-up FemtoEasy (A.Dubrouil)	In this project, the objective was to develop new characterization techniques for attosecond pulses (characterization in the time domain) to study the possible evolution of this duration as a function on the distance travelled in vacuum. This Risky project involves the design of an interferometric system of attosecond resolution. XUV-IR pump probe experiment devoted to characterization of atto pulses. **Main results:** The development of an unlocked XUV-IR interferometer allowed us to get control the XUV -IR delay at attosecond time scale. Its characterization showed stability at the attosecond level (which had never been achieved in the laboratory before). The optimization of harmonic generation allowed us to obtain spatially resolved spectra in one-shot regime. These spatially resolved spectra showed many spectral and spatial features linked to spatiotemporal coupling (occurring at attosecond time scales and micrometric dimensions), which resulted in publication in the journal Nature Communications. M. Antoine Dubrouil, postdoc on this project launches a start up based on the technology developed during the project.

MULTIVOR Etienne Brasselet, LOMA 11/2013 → 11/2014 - A. Aleksanyan and E. Brasselet, "Spin-orbit	The project "Towards the high density optical vortex" is to develop liquid crystal phase masks which allow the generation of multiple vortex. These self-engineering phase masks operate via spin-orbit interaction of light which couples the polarization and the phase of a light field to produce optical phase singularities of high quality. One of the targeted

photonic interaction engineering of Bessel beams", submitted [LAPHIA funding is ackowledged]. - A. Aleksanyan and E. Brasselet, "Smart optical vortex coronagraphy using liquid crystal topological défects", to be submitted by the end of 2015 [LAPHIA funding is ackowledged]. > A 10-month post-doc grant has been obtained from Europe, within the Erasmus Mundus Mobility Action (for A.Aleksanyan).	application is to use the masks to improved coronagraphy optical vortex which is an astronomical imaging technique enabling observation of objects of low brightness in the vicinity of intense source. **Main results:** In this project, two main demonstration are highlighted: A) the ability to realized topological phase mask to the smaller scales required for vortex coronary and finally B) laboratory demonstration of the ability of these masks to detection of small object near to intense light source.

MOBILE - MOdeling of laser induced Bulk space charge separation in tailored sILver-doped phosphatE glass materials Guillaume Duchateau - CELIA/ICMCB 10/2014 → 10/2015 E. Smetanina, B. Chimier, Y. Petit, N. Varkentina, E. Fargin, L. Hirsch, T. Cardinal, L. Canioni, and G. Duchateau, "Modeling of Nanostructures Formation in Metal Doped Oxide Glasses Irradiated by a Train of Femtosecond Laser Pulses" - **Physical Review A** - Project "MOTIF" obtained (CRA)	This project is devoted to the development of a theoretical model of nanostructure formation of noble metallic clusters induced by a train of femtosecond laser pulses. The model includes photoionization and laser heating of the sample, diffusion, kinetic reactions and photo- dissociation of metallic clusters. The model was applied to reproduce the formation of nanostructures in silver-doped phosphate glass. The parameters of the silver nanostructures were obtained numerically under various incident pulse intensities and number of pulses. Numerical modeling shows charge migration, leading to a stable space charge separation that creates a strong static electric field buried in the irradiated area, quantitatively reproducing experimental observations. The model provides clear understanding of the interplay between involved physical and chemical processes and forms a theoretical basis for the design of new metallic nanostructures. **Main results:** In the framework of high-repetition-rate interactions, we identify that laser-induced space charge separation in the bulk is a remarkable consequence of thermally-assisted material modification, defect creation, local transport and particle trapping, and photo-chemical reactions: this leads to a buried static electric field in the material bulk, to local symmetry breaking and original effective second order nonlinear properties in tailored glassy materials. Preliminary results to evaluate the induced electric field in the bulk have also been obtained by solving the Gauss law. This knowledge will allow us to predict the second harmonic response of these nanostructures.

- ***Passport projects:***

HiFret Cancer Laurent COGNET - LP2N/Inst.Bergonié/Fluopharma 11/2012 → 10/2013 **- Patent:** L. Cognet & B. Lounis, US-provisional application 61/890 371 "A method of studying binding reactions", 10/31/2013 - G. Giannone, E. Hosy, JB. Sibarita, D. Choquet and L. Cognet « High content Super-Resolution Imaging of Live Cell by uPAINT. » **Methods Biol Mol** 950 (2013) 95-110 - P. Winckler, L. Lartigue, G. Giannone, F. De Giorgi, F. Ichas, J.-B. Sibarita, B.. Lounis and L. Cognet « Identification and super-resolution imaging of ligand-activated receptor dimers in live cells » **Sci. Rep**., 3 (2013) 02387 (open access sur Nature/srep/2013/130808)	In this project, we realized for the first time the high resolution imaging (below the diffraction limit) of receptor dimers in living cells, potentially decisive indicators in the screening stage and therapeutic choices for cancers. This was accomplished by combining uPAINT super resolution imaging and the FRET technique between individual molecules. We have significantly increased the detection statistic of individual molecules activated by their ligand on a living cell: namely several hundred thousand detected by our new method compared to a few dozen at best by the single molecule imaging. To get closer to realistic conditions of hospital, we are now planning to apply our method to oncological samples from the database of the Institute Bergonié, a necessary step to maturation of this method.

APPL-CLOCK - Atomic phase-locked for timekeeping Andrea Bertoldi - LP2N 11/2014 → 10/2015 - Phase locking a clock oscillator to a coherent atomic ensemble, R. Kohlhaas, A. Bertoldi, E. Cantin, A. Aspect, A. Landragin and P. Bouyer, **Phys. Rev**. X 5, 021011 (2015), http://dx.doi.org/10.1103/PhysRevX.5.021011, arXiv:1501.03709 - **EU Patent:** « Coherent spectroscopic methods with extended interrogation times and systems implementing such methods », A. Bertoldi, R. Kohlhaas, A. Landragin, and P. Bouyer (N. 14307085.2) - A Cotutelle with the Univ. of Southampton has been started and LP2N participates to an EURAMET	The sensitivity of an atomic interferometer increases when the phase evolution of its quantum superposition state is measured over a longer interrogation interval. In practice, a limit is set by the measurement process, which returns not the phase, but its projection in terms of population difference on two energetic levels. The phase interval over which the relation can be inverted is thus limited to the interval $[-\pi/2;\pi/2]$; going beyond it introduces an ambiguity in the read out, hence a sensitivity loss. In the project, we use coherence preserving measurements and phase corrections to phase lock of the clock oscillator to an atomic superposition state. We developed a protocol based to improve atomic clocks under local oscillator noise, and foresee the application to other atomic interferometers such as inertial sensors. **Main results:** Two main demonstrations are highlighted: A) the ability to realized a phase locking protocol that leads to atomic clock improvement B) A patent of a new method that can be extended to other types of quantum sensors

H. Performance indicators

Key result area	Performance Measure	Period 1				
X: *figures have to be updated (Publi. 2015: stop on Nov.2015)*		**2012/2013**	**2014**	**2015**	**2012/2013 > 2015**	
					Target	**Outcome**
Increase the research excellence through LAPHIA projects	**Number of projects selected**	**16**	**9**	**9**	**31**	**34**
	% Research (collaborative, risky, mobility, other)	*88%*	*67%*	*89%*	**81%**	***82%***
	% Valorization (passport)	*13%*	*33%*	*11%*	**19%**	***18%***
	Number of projects selected in the framework of LAPHIA AAP	**16**	**9**	**4**		**29**
	Number of risky projects	*8*	*4*	*3*	**15**	***15***
	Number of mobility projects	*1*	*2*	*1*	**6**	***4***
	Number of passport projects	*2*	*3*	*0*	**6**	***5***
	Number of collaborative projects	*4*	*0*	*0*	**4**	***4***
	Number of "other" projects	*1*	*0*	*0*		***1***
	Number of projects started	**15**	**8**	**9**	**31**	**32**

	% Research (collaborative, risky, mobility, other)	*87%*	*63%*	*100 %*		**84%**
	% Valorization (passport)	*13%*	*38%*	*0%*		**16%**
	% inter-lab projects (all project typologies)	53%	50%	44%		**50%**
	Number of applications received in the framework of LAPHIA AAP	**32**	**30**	**12**		**74**
	Global success rate (%)	*50%*	*30%*	*33%*	**30%**	***39%***
	Number of "risky" applications received in the framework of LAPHIA AAP	*22*	*21*	*9*		***52***
	Risky - success rate (%)	*36%*	*19%*	*33%*		***29%***
	Number of "mobility" applications received in the framework of LAPHIA AAP	*2*	*4*	*1*		***7***
	Mobility - success rate (%)	*50%*	*50%*	*100 %*		***57%***
	Number of "passport" applications received in the framework of LAPHIA AAP	*2*	*5*	*2*		***9***
	Passport - success rate (%)	*100%*	*60%*	*0%*	**50% min.**	***56%***
	Number of "collaborative" applications received in the framework of LAPHIA AAP	*5*	*0*	*0*		***5***
	Collaborative - success rate (%)	*80%*	*0%*	*0%*		***80%***
	Number "other" applications received in the framework of LAPHIA AAP	*1*	*0*	*0*		***1***
	"Other" - success rate (%)	*100%*	*0%*	*0%*		***100%***

Quality of research outputs	**Number of journal papers (RICL only --> international peer-reviewed journals)**	211	209	187		
	*Number of journal papers (RICL) with IF > **6***	36	31	34		
	*Number of journal papers (RICL) with IF > **10***	8	16	10		
	*Number of journal papers (RICL) with IF > **30***	0	4	3		
Scientific excellence of LAPHIA members	**Number of IUF** *(Institut Universitaire de France)*					**4**
	Number of *"Prix scientifiques attribués par l'Institut de France et ses académies"*					**1**
LAPHIA recruitments - International talents	**Number of new PhD/Post doc/Research Engineer recruited to the Cluster working on core cluster research projects**	**17**	**10**	**13**		**40**
	% of PhD, Post doc & Research Engineer with an international nationality			-		**78%**
				-		-
	Number of thesis initiated by LAPHIA	**7**	**2**	**0**	**12**	**9**
	Number of thesis initiated by LAPHIA (100% LAPHIA funding)	*6*	*2*	*0*		***8***
	Number of thesis initiated by LAPHIA (50% LAPHIA funding + 50% external funding)	*1*	*0*	*0*	**4**	***1***
	% PhD students with an international nationality	*71%*	*100 %*	*0*	**50%**	***78%***
	% of PhD funded (50% or >) by LAPHIA with a M2 graduated by another French universities	*57%*	*50%*	*0*		***56%***
	% of PhD funded (50% or >) by LAPHIA with a M2 graduated by an international University	*43%*	*50%*	*0*		***44%***

	Number of thesis defended	**0**	**0**	**0**		**0**

	Number of new postdoctoral researchers recruited to the Cluster working on core cluster research projects	**10**	**6**	**12**	**20**	**28**
	% of Post doc with an international nationality	*70%*	*83 %*	75%	**50 %**	***79%***
	% of international Post doc recruited abroad	*20%*	*50 %*	50%		***39%***
	Number of new research engineers recruited to the Cluster working on core cluster research projects	**0**	**2**	**1**	**9**	**3**
	% of Research engineer with an international nationality	*0*	*50 %*	*100%*	**50 %**	*67%*
	% of international IR recruited abroad	*0*	*0*	*0*		*0*
Increase the attractiveness/ Promotion	**Number of national and international events "co-funded" by the Cluster** *(summer schools or scientific conferences: Research and Training)*	**1**	**4**	**3**		**8**
Links with other disciplines	**Number of relevant interdisciplinary research projects supported by the Cluster**	**4**	**3**	**4**		**11**

Cluster scientific events (to federate the community and boost the networking)	**Number of symposia initiated and organized by LAPHIA**	**1**	**1**	**1**	**3**	**3**
	Number of talks	*29*	*19*	*9*		*57*
	Number of posters	*24*	*36*	*31*		*91*
	Number of " best poster awards"	*3*	*5*	*3*		*11*
	Number of attendees	*140*	*185*	*120*		*148*
	Number of seminars initiated and organized by LAPHIA	**13**	**7**	**9**	**30**	**29**
	Number of attendees (average)	25	50	70		
	Number of workshops organized by the collaborative projects' teams	/	2	2	**6**	**4**
Repeal-leverage effect	**External funding (€) obtained by LAPHIA members** *(ANR Definition)*	3,7 M	3 M	3,687 M		**10,387 M**

Increase the competitiveness of the innovation and transfer	**Number of passport projects started**	**2**	**3**	**0**		**5**
	% of passport projects with a socio-economic partner included in the consortium	*50%*	*67%*	*0*		**60%**
	% of passport projects to pre-industrial projects by SATT					**40%**
Technology transfer	**Number of LAPHIA projects** *(all typologies)* **who obtained a maturation funding** *(AST or other organisms)*					**4**
	Number of patents issued by LAPHIA members	**0**	**2**	**13**		**15**

Internationalization of training	**Number of interns recruited in the framework of LAPHIA Education Call**	**2**	**10**	5		17
	% international students	*0%*	*80%*	*100%*	**75%**	**76%**
	% of international students recruited abroad	*0%*	*70%*	*100%*		**71%**
	Number of internship applications received in the framework of LAPHIA AAP	**20**	**28**	**40**		**88**
	Number of views of the internship offer through SPIE website (from June to Dec. 2015)	**-**	**-**	**2259**		**-**
	Number of Master mobility scholarships supported in the framework of LAPHIA Education Call	**1**	**2**	**3**		**6**
	% incoming Master grant	*0%*	*0%*	*0%*		0%
	% outgoing Master grant	*100%*	*100%*	*100%*		100%
	Number of PhD mobility scholarships supported in the framework of LAPHIA Education Call	**3**	**2**	**2**		**7**
	% incoming PhD grant	*67%*	*50%*	*50%*		57%
	% outgoing PhD grant	*33%*	*50%*	*50%*		43%
	Number of Master students involved *(LAPHIA definition: Nombre d'étudiants en Master (toute université/école nationale/internationale confondue) participant activement au développement scientifique des axes du cluster LAPHIA. Ont été comptabilisés les stagiaires de Master (financés par LAPHIA dans le cadre de son appel à projets Education), les stagiaires de Master recrutés dans le cadre de projet de recherche LAPHIA et le stagiaire communication (volet gouvernance).*	-	**16**	*TBC*		

Attractiveness	**Number of invited Professors** *(ANR definition: Seront sommés le nombre de mois effectués par les professeurs ayant une invitation effective (contrat de travail), égale ou supérieure à 1 mois, financée entièrement ou partiellement par le LabEx (à l'exclusion des professeurs invités sur les « rompus de poste »).*	0	0	0	**0**	**0**
	Number of invited Professors *(LAPHIA definition: accueil de professeurs sur des séjours courts (quelques jours à 2 semaines) dans le cadre des séminaires mensuels, délégations étrangères, symposium annuel, prrgramme Fidex…)*					**48**

	% of invited Professors which come from an international university			-		**75%**
Follow up / Governance	**Number of Boards of Directors**	**33**	**36**	**33**		**102**
	Number of Scientific Councils	**5**	**4**	**3**		**12**
	% of attendees (year average)	*70%*	*78%*	*77%*		
	Number of Strategic Committee *(created in 2014)*	-	**1**	**1**		**2**
	Number of Education Committee *(created at the end of 2014)*	-	-	**11**		
	Number of Seminar Committee	-	**5**	**2**		**7**
Calls for proposals	**Number of call of proposals initiated by LAPHIA (Research/valorization/Education)**	**3**	**3**	**2**		**8**
	Number of national/international reviewers solicited for the evaluation of the LAPHIA applications	**0**	**10**	**13**		**23**
Website	**Number of sessions/visits of the LAPHIA website**	2763	5809	5856		
	% French visitors	73,07 %	72,61 %	78,7 %		
New interactions between LAPHIA teams/labs	**Number of new collaborations between teams thanks to LAPHIA (through LAPHIA projects, networking…)** *(Ref: appendix B)*					**30**

Impacts - Collaborative projects	Number of publications (RICL) in the scope of INPHOTARCH project	30	26	36		**92**
	Number of publications (RICL) in the scope of TAINEPEC project	19	21	12		**52**
	Number of publications (RICL) in the scope of EXOLAS project	8	4	6		**18**
	Number of publications (RICL) in the scope of PETAPHYS project	NA	2	3		**5**
	Number of patents issued within the 4 collaborative projects	-	1	4		**5**
	Number of patents related to EXOLAS project	-	-	1		**1**
	Number of patents related to INPHOTARCH project	-	-	2		**2**
	Number of patents related to TAINEPEC project	-	1	1		**2**
	Number of patents related to PETAPHYS project	-	-	0		**0**
Men/women ratio	% of women within LAPHIA members	12%		10%		**11%**
	Number of women PI of LAPHIA projects	1	0	1		**2**
	% of women PI of LAPHIA projects					**6%**
	% of women recruited by LAPHIA *(PhD + Post doc + research engineers + interns)*	26%	30%	28%		**28%**

I. LAPHIA Booklet

The LAPHIA booklet can be uploaded here (French and English versions):

http://laphia.labex.u-bordeaux.fr/en/Communication/LAPHIA-booklet/r965.html

I.Publications (RICL)

RICL of all LAPHIA members (excepted "Science Philosophie Humanité" (SPH) members)

RICL 2013

Autors	***Title***	**Journal**	**References**
F. Castet, V. Rodriguez, J.L. Pozzo, L. Ducasse, A. Plaquet, B. Champagne	*Design and characterization of molecular nonlinear optical switches*	Acc. Chem. Res.	46, 2656-2665.
B. Dacosta Fernandes, M. Spuch-Calvar, H. Baida, M. Tréguer-Delapierre, J. Oberlé, P. Langot, J. Burgin	*Acoustic Vibrations of Au Nano-Bipyramids and their Modification under Ag Deposition : a Perspective for the Development of Nanobalances*	ACS Nano	7(9) (2013) 7630-7639.
D. Batani, S. Hulin, E Ducret, E. d'Humieres, V. Tikhonchuk, J. Caron, J.-L. Feugeas, P. Nicolai, M. Koenig, S. Bastiani-Ceccotti, J. Fuchs, T. Ceccotti, S. Dobosz-Dufrenoy, C. Szabo-Foster, L. Serani, L. Volpe, C. Perego, I. Lantuejoul-Thfoin, E. Lefebvre, A. Compant La Fontaine, J.-L. Miquel, N. Blanchot, A. Casner, A. Duval, C. Reverdin, R. Wrobel, J. Gazave, J.-L. Dubois, D. Raffestin	*Development of the PETAL Laser Facility and its Diagnostic Tools*	Acta Polytechnica	53, 103 (2013).
K. Aissou, J. Shaver, G. Fleury, G. Pécastaings, C. Brochon, C. Navarro, S. Grauby, J.M. Rampnoux, S. Dilhaire, G. Hadziioannou	*Nanoscale Block Copolymer Ordering Induced by Visible Interferometric Micropatterning: A Route towards Large Scale Block Copolymer 2D Crystals*	Adv. Mater.	25 (2013) 213–217.
L. D. Marciasini, N. Richy, M. Vaultier, M. Pucheault	*Iron-Catalysed Borylation of Arenediazonium Salts to Give Access to Arylboron Derivatives via aryl(amino)boranes at Room Temperature*	Adv. Synth. Catal	355, 1083–1088
Céline Ribot; Mane-Si Laure Lee; Stéphane Collin; Shailendra Bansropun; Patrick Plouhinec; Didier Thenot; Simone Cassette; Brigitte Loiseaux; Philippe Lalanne	*Broadband and efficient diffraction*	Advanced Optical Materials	2013, 1, pp. 489-493
A. Désert, C. Hubert, Z. Fu, L. Moulet, J. Majimel, P. Barboteau, A. Thill, M. Lansalot, E. Bourgeat-Lami, E. Duguet and S. Ravaine	*Synthesis and Site-Specific Functionalization of Tetravalent, Hexavalent, and Dodecavalent Silica Particles*	Angew. Chem. Int. Ed.	52, 11068 –11072, (2013) - 10.1002/anie.201304273
J. Croissant, M. Maynadier, A. Gallud, H. Peindy N'Dongo, J. L. Nyalosaso, G. Derrien, C. Charnay, J.-O. Durand, L. Raehm, F. Serein-Spirau, N. Cheminet, T. Jarrosson, O. Mongin, M. Blanchard-Desce, M. Gary-Bobo, M. Garcia, J. Lu, F. Tamanoi, D. Tarn, T. M. Guardado-Alvarez, J. I. Zink	*Two-Photon-Triggered Drug Delivery in Cancer Cells via Nanoimpellers*	Angew. Chem. Int. Ed.	125, 14058-14062
T. Auguste, C. Fourcade-Dutin, A. Dubrouil, O. Gobert, O. Hort, E. Mével, S. Petit, E. Constant and D. Descamps,	*High-energy femtosecond laser pulse compression in single- and multi-ionization regime of rare gases : emperiment versus theory*	Appl. Phys B	111, 75 (2013)
F. Abicht, R. Prasad, G. Priebe, J. Bränzel, A. Andreev, P. V. Nickles, M. Schnurer, S. Jequier, G. Revet, V. Tikhonchuk, S. Ter-Avetisyan,	*Energetic beams of negative and neutral hydrogen from intense laser plasma interaction*	Appl. Phys. Lett	. 103, 253501 (2013)
M. Navarro-Cía, M. Natrella, F. Dominec, J. C. Delagnes, P. Kužel, P. Mounaix, C. Graham, C. C. Renaud, A. J. Seeds and O. Mitrofanov	*Terahertz imaging of sub-wavelength particles with Zenneck surface waves*	Appl. Phys. Lett	103, 221103 (2013)
G. Gallé, C. Etrillard, J. Degert, F. Guillaume, J.F. Létard, E. Freysz	*Study of the ultrafast photoswitching of spin crossover nanoparticles outside and inside their thermal hysteresis loop*	Appl. Phys. Lett.	102 (2013) 063302.
W. Hellel, A. Ould Hamouda, J. Degert, J.F. Létard, E. Freysz	*Switching of spin state complexes induced by the interaction of a laser beam with their host matrix*	Appl. Phys. Lett.	103 (2013) 143304.
C. Pradere, J.P. Caumes, J. Toutain, E. Abraham, B. Chassagne, J-C. Batsale	*Absolute self-calibrated room temperature terahertz powermeter*	Applied Optics	52 (2013) 2320-2324.
A. Börzsönyi, R. Chiche, E. Cormier, R. Flaminio, P. Jojart, C. Michel, K. Osvay, L. Pinard, V. Soskov, A. Variola, F. Zomer,	*External cavity enhancement of picosecond pulses with 28,000 cavity finesse*	Applied Optics	52, 8376-8380 (2013)

R. Yahiaoui, U.-C. Chung, S. N. Burokur, A. de Lustrac, C. Elissalde, M. Maglione, V. Vigneras and P. Mounaix.	*Broadband effective magnetic response of inorganic dielectric resonator-based metamaterial for microwave applications.*	Applied Physics A	October 2013 DOI 10.1007/s00339-013-8033-4
L. Lamaignère, G. Dupuy , A. Bourgea, A. Benoist, A. Roques, R. Courchinoux	*Laser damage growth in fused silica optics: multiramater modeling of large beamexperiments*	Applied Physics B	DOI 10.1007/s00340-013-5555-6
G.Machinet, G, Andriukaitis, P. Sévillano, J. Lhermite, D. Descamps, A. Pugzlys, A, Baltuska, E. Cormier	*High-gain amplification in Yb:CaF2 crystals pumped by a high-brightnesYb-doped 976 nm fiber laser*	Applied Physics B-Lasers and Optics	111, 495-500 (2013)
Olivier Lopez; Amale Kanj; Paul-Eric Pottie; Giovanni D. Rovera; Joseph Achkar; Christian Chardonnet; Anne Amy-Klein; Giorgio Santarelli	*Simultaneous remote transfer of accurate timing and optical frequency over a public fiber network*	Applied Physics B: Lasers and Optics	2013, 110 (1), pp. 3-6
David Elvira; Remy Braive; Grégoire Beaudoin; Isabelle Sagnes; Jean-Paul Hugonin; Izo Abram; Isabelle Robert-Philip; Philippe Lalanne; Alexios Beveratos	*Badband enhancement and inhibition of single quantum dot emission in plasmonic nano-cavities operating at telecommunications wavelengths*	Applied Physics Letters	2013, 103, pp. 061113
Marco Ravaro; Vishal Jagtap; Giorgio Santarelli; Carlo Sirtori; Lianhe Li; S.P. Khanna; Edmund Linfield; Stefano Barbieri	*Continuous-wave coherent imaging with terahertz quantum cascade lasers using electro-optic harmonic sampling*	Applied Physics Letters	2013, 102, pp. 091107
A. Zukauskas, M. Malinauskas, E. Brasselet	*Monolithic generators of pseudo-nondiffracting optical vortex beams at the microscale*	Applied Physics Letters	103 (2013) 181122.
F. Deneuville, B. Chimier, D. Descamps, F. Dorchies, S. Hulin, S. Petit, O. Peyrusse, J. Santos and C. Fourment	*Sub-picosecond and nanometer scale dynamics of aluminium target surface heated by ultrashort laser pulse*	Applied Physics Letters	102, 194104 (2013)
S. Driever, B. Bigourd, N. Fedorov, M. Cornet, M. Arnold, F. Burgy, S. Montant, S. Petit, D. Descamps, E. Cormier, E. Constant, A. Zaïr,	*Tunable 1.6-µm near infrared few-cycle pulse generation by filamentation*	Applied Physics Letters	102, 191119 (2013)
A. Morace, C. Bellei, T. Bartial, L. Willingale, J. Kim, A. Maksimchuk, K. Krushelnick, M.S. Wei, P.K. Patel, D. Batani, N. Piovella, R.B. Stephens, N. Beg,	*Improved Laser-to-Proton Conversion Efficiency in Isolated Reduced Mass Targets*	Applied Physics Letters	103, 054102 (2013).
M. Tasior, V. Hugues, M. Blanchard-Desce, D. T. Gryko	*V-shaped, strongly-emitting, π-expanded hydrophilic azacyanines – synthesis, linear and non-linear optical properties*	Asian J. Org. Chem	2, 669–673
H. Saathoff, S. Henin, K. Stelmaszczyk, M. Petrarca, R. Delagrange, Z. Q. Hao, J. Lüder, O. Möhler, Y. Petit, P. Rohwetter, M. Schnaiter, J. Kasparian, T. Leisner, J.-P. Wolf, L. Wöste	*Laser filament-induced aerosol formation*	Atmosph. Chem. and Phys	13, 4593–4604 (2013). doi:10.5194/acp-13-4593-2013
G. Seniutinas, L. Rosa, G. Gervinskas, E. Brasselet, S. Juodkazis	*3D nanostructures for laser nanomanipulation*	Beilstein Journal of Nanotechnology	4 (2013) 534-541.
J. Lopez, P. E. Martin, R. Kling	*Le micro usinage par laser et ses applications,*	Bulletin de la Société Suisse de Chronométrie	72, 39
H. Bachau, O. Budriga, M. Dondera and V. Florescu	*Above-threshold ionization of hydrogen and hydrogen-like ions by X-ray pulses*	Central European Journal of Physics	11, 1091 (2013).
C. Le Droumaguet, A. Sourdon, E. Genin, O. Mongin, M. Blanchard-Desce,	*Two Photon Polarity Probes built from Octupolar Fluorophores: Synthesis, Structure-Properties Relationships and Use in Cellular Imaging*	Chem. Asian J.	8, 2984-3001.
D. Firmansyah, A. I. Ciuciu, V. Hugues, M. Blanchard-Desce, L. Flamigni, D. T. Gryko	*Bright, color-tunable fluorescent dyes based on imidazo[1,2-a]pyridines capable of two-photon absorption*	Chem. Asian. J	, 8, 1279-1294
G. Ragazzon, P. Verwilst, S.A. Denisov, A. Credi, G. Jonusauskas, N.D. McClenaghan	*Ruthenium(II) complexes based on tridentate polypyridine ligands that feature long-lived room temperature luminescence*	Chem. Commun	49, 9110–9112.

S. Picard, E.J. Cueto-Diaz, E. Genin, G. Clermont, F. Acher, D. Ogden, M. Blanchard-Desce	*Tandem triad systems based on FRET for two-photon induced release of glutamate*	Chem. Commun	49, 10805-10807.
L. Harmand, R. Lambert, L. Scarpantonio, N.D. McClenaghan, D. Lastécouères, J.-M. Vincent	*A photoreducible copper(II)-tren complex of practical value: Generation of a highly reactive click catalyst*	Chem. Eur. J.	19, 16231-16329.
G. Szaloki, J.L. Pozzo,	*Synthesis of symmetrical and nonsymmetrical bisthienylcyclopentenes,*	Chem. Eur. J.	19, 11124-11132.
Benito Q., Fargues A., Garcia A., Maron S., Gacoin T., Boilot J.-P., Perruchas S. and Camerel F.	*Photoactive hybrid gelators based on a luminescent inorganic [Cu4I4] cluster core.*	Chem. Eur. J.	2013, vol. 19, n°47, p. 15831-15835. (FI = 5,69). DOI : 10.1002/chem.201303567
G. Gallé, G. Jonusauskas, M. Tondusson, C. Mauriac, J.F. Letard, E. Freysz	*Transient absorption spectroscopy of the [Fe(2 CH3-phen)3]2+ complex : study of the high spin <—> low spin relaxation of an isolated iron(II) complex*	Chem. Phys. Letters	556 (2013) 82-88.
K.M.Lange, R.Golnak, S.Bonhommeau, E.F.Aziz	*Ligand discrimination of myoglobin in solution: an iron L-edge study of the active centre*	Chemical Communications	2013, 49, 4163-4165.
N.Marquestaut, M.Dussauze, Y.Petit, A.Royon, V.Jubera, P.Veber, M.Couzi, V.Rodriguez, T.Cardinal, L.Canioni	*Raman and fluorescence correlative microscopy in polarized light to probe local femtosecond laser-induced amorphization of the doped monoclinic crystal LYB:Eu*	Chemical Physics Letters	2013, 578, 70-75.
Julien Claudon; N. Gregersen; Philippe Lalanne; Jean-Michel Gérard	*Harnessing light with photonic nanowires: fundamentals and applications to quantum optics*	ChemPhysChem	2013, 14, pp. 2393-2402
T. Forestier, M. Ferrié and S. Ravaine	*Synthesis of hematite/silica/polymer composite colloids with a tunable morphology*	Colloid. Polym. Sci	291, 187-192, (2013) 10.1007/s00396-012-2648-4
Heqi Lu; Romain Pacanowski; Xavier Granier	*Second-Order Approximation for Variance Reduction in Multiple Importance Sampling*	Computer Graphics Forum, Wiley-Blackwell,	2013, 32 (7), pp. 131-136
J. Néauport, D. André I. Iordanoff J. L. Charles	*Discrete element method to simulate brittle fracture. Application on silica glass indentation fracture with blunt indenter*	Computer Methods in Applied Mechanics and Engineering	Vol. 265, pp. 136-147
Belhoucif R., Velázquez M., Petit Y., Pérez O., Glorieux B., Viraphong O., De Marcillac P., Coron N., Torres L., Véron E., Kellou A., Veber P., Decourt R. and El Hafid H.	*Growth and spectroscopic properties of 6Li- and 10B enriched crystals for heat-scintillation cryogenic bolometers used in the rare events searches.*	CrystEngComm	2013, vol. 15, n°19, p. 3785-3792. (FI = 3,85). DOI : 10.1039/c3ce40176f
P.A. Panchenko, Y.V. Fedorov, O.A. Fedorova, G. Jonusauskas	*Comparative analysis of the PET and ICT sensor properties of 1,8-naphthalimides containing aza-15-crown-5 ether moieties*	Dyes and Pigments	98 -2013) 347-357.
M. Heim, C. Wattanakit, S. Reculusa, C. Warakulwit, J. Limtrakul, S. Ravaine and A. Kuhn	*Hierarchical Macro-mesoporous Pt Deposits on Gold Microwires for Efficient Methanol Oxidation*	Electroanalysis	25, 4, 888 – 894, (2013) - 10.1002/elan.201200490
P. Lozano, J. M. Bernal, G. Sanchez-Gomez, G. Lopez-Lopez, M. Vaultier	*How to produce biodiesel easily using a green biocatalytic approach in sponge-like ionic liquids*	Energy & Environmental Science	6, 1328-1338
S. Davis, R. Capdessus, E. D'Humières, A. V. Brantov, S. Bochkarev, V. Tikhonchuk,	*Numerical simulations of energy transfer in a laser driven collisionless shock,*	EPJ Web of Conf.	59, 15003 (2013)

B. Issenmann, A. Auberon, R. Wunenburger, J.P. Delville	*Acoustical spring effect in a compliant cavity*	Eur. Phys. J. E	36 (2013) 39.
P.G.Lacroix, I.Malfant, J.-A.Real, V.Rodriguez	*From Magnetic to Nonlinear Optical Switches in Spin-Crossover Complexes*	European Journal of Inorganic Chemistry	2013, 5-6, 615-627.
S. Paleari, D. Batani, T. Vinci, R. Benocci, K. Shigemori,Y. Hironaka, T. Kadono, A. Shiroshita, P. Piseri, S. Bellucci, A. Mangione, A. Aliverdiev	*A new target design for laser shock-compression studies of carbon reflectivity in the Megabar regime,*	European Journal of Physics D	67, 136 (
Guillaume Salomon; Lauriane Fouché; Pengjun Wang; Alain Aspect; Philippe Bouyer; Thomas Bourdel	*Gray molasses cooling of ^{39}K to a high phase-space density*	European Physical Society	2013, 104, pp. 63002
S. Hansen, S. Bastiani, C. Bowen, H.-K. Chung, C.J. Fontes, O. Peyrusse, Yu Ralchenko, A. Sasaki,	*Testing the reliability of non-LTE spectroscopic models for complex ions,*	High Energy Density Physics	9, 523 (2013).
S. P. Davis, R. Capdessus, E. D'Humieres, S. Jequier, I. Andriyash, V. Tikhonchuk,	*Numerical simulations of energy transfer in counter-streaming plasmas,*	High Energy Density Physics	9, 231 (2013)
S. Turck-Chièze, D. Gilles, M. Le Pennec, T. Blenski, F. Thiais, S. Bastiani-Ceccoti, C. Blancard, M. Busquet, T. Caillaud, J. Colgan, P. Cossé, F. Delahaye, J.-E. Ducret, G. Faussurier, C. J.Fontes , F. Gilleron, J. Guzik, J. W. Haris, D.P. Kilcrease, G. Loisel, N.H. Magee, J.C. Pain, C. Reverdin, V. Silvert, B. Villette, C.J. Zeippen	*Radiative properties of stellar envelopes: Comparison of asteroseismic results to opacity calculations and measurements for iron and nickel,*	High Energy Density Physics	9, 473
A. Aliverdiev, D. Batani, R. Dezulian,	*Influence of a laser profile in impedance mismatch techniques applied to carbon EOS measurement*	High Power Laser Science and Engineering 1	102 (2013).
T. Yasui, M. Jewariya, T. Yasuda, M. Schirmer, T. Araki, E. Abraham	*Real-time two-dimensional spatio-temporal terahertz imaging and application for functional terahertz imaging of moving object*	IEEE J. Selected Topics in Quantum Electron	19(1) (2013) 8600110.
El Moukhtari, Issam ; Pouget, Vincent ; Darracq, Frédéric ; Larue, Camille ; Perdu, Philippe ; Lewis, D.	*Negative Bias Temperature Instability Effect on the Single Event Transient Sensitivity of a 65 nm CMOS Technology*	IEEE Transactions on Nuclear Science	https://hal.archives-ouvertes.fr/hal-00880480
Glorieux B., Jubera V., Orlova A. I., Kamunov A. E., Garcia A., Pallier C. and Oleneva T. A.	*Phosphors based on $NaZr_2(PO_4)_3$-type calcium and strontium phosphates activated with Eu^{2+} and Sm^{3+}.*	Inorg. Mater.	2013, vol. 49, n°1, p. 82-88. (FI = 0,51). DOI : 10.1134/S0020168513010032
Gordon Wetzstein; Ivo Ihrke; Wolfgang Heidrich	*On Plenoptic Multiplexing and Reconstruction*	International Journal on Computer Vision (IJCV), Springer	2013, 101 (2), pp. 384-400
H. Ruf, C. Handschin, R. Cireasa, N. Thiré, A. Ferré, S. Petit, D. Descamps, E. Mével, E. Constant, V. Blanchet, B. Fabre and Y. Mairesse,	*nhomogeneous High Harmonic Generation in Krypton Clusters,*	IPhys. Rev. Lett.	110, 083902 (2013). (GOLF)
M. Muñoz Rojo, S. Grauby, J.M. Rampnoux, O. Caballero-Calero, M. Martin-Gonzalez, S. Dilhaire,	*Fabrication of Bi2Te3 nanowire arrays and thermal conductivity measurement by 3ω-scanning thermal microscopy*	J. Appl. Phys.	113 (2013) 054308.
A. Gallud, A. Da Silva, M. Maynadier, I. Basile, S. Fontanel, C. Lemaire, P. Maillard, M. Blanchard-Desce, O. Mongin, A. Morère, J.-O. Durand, L. Rhaem, M. Garcia, M. Gary-Bobo	*Functionalized nanoparticles for drug delivery, one- and two-photon photodynamic therapy as a promising treatment of retinoblastoma*	J. Clin. Exp. Ophthalmol.	4, 255-288
Th Crouzil, M. Perrin	*Dynamics of a chain of optically coupled micro droplets*	J. Europ. Opt. Soc. Rap. Public	8 (2013) 13079.
Cornu L., Gaudon M. and Jubera V.	*$ZnAl_2O_4$ as potential sensor : variation of luminescence with thermal history.*	J. Mater. Chem.	DOI : 10.1039/C3TC30964A
S. Banerjee, R.K. Das, P. Terech, A. de Geyer, C. Aymonier, A. Loppinet-Serani, G. Raffy, U. Maitra, J.-P. Desvergne, A. Del Guerzo	*Hybrid organogels and aerogels from co-assembly of structurally different low molecular weight gelators*	J. Mater. Chem. C	1, 3305-3316.

Ilin E. S., Marre S., Jubera V. and Aymonier C.	*Continuous supercritical synthesis of high quality UV-emitting ZnO nanocrystals for optochemical applications.*	J. Mater. Chem. C	DOI : 10.1039/C3TC30737A
Massera J., Petit L., Cardinal T., Videau J.-J., Hupa M. and Hupa L.	*Thermal properties and surface reactivity in simulated body fluid of new strontium ion-containing phosphate glasses.*	J. Mater. Sci.: Mater. Med.	DOI : 10.1007/s10856-013-4910-9
M. Perrier, M. Gary-Bobo, L. Lartigue, D. Brevet, A. Morère, M. Garcia, P. Maillard, L. Raehm, Y. Guari, J. Larionova, J.-O. Durand, O. Mongin, M. Blanchard-Desce,	*Mannose-functionalized porous silica coated magnetic nanoparticles for two-photon imaging or PDT of cancer cells*	J. Nanoparticle Research	15, 1602-1609
Bourhis K., Royon A., Papon G., Canioni L., Makria N., Petit L. and Cardinal T.	*Luminescence properties of micrometric structures induced by direct laser writing in silver containing phosphate glass.*	J. Non-Cryst. Solids	DOI : 10.1016/j.jnoncrysol.2013.01.041
P.M. Mayer, D. Staedter, V. Blanchet, P. Hemberger, et A. Bodi,	*Comparing Femtosecond Multiphoton Dissociative Ionization of Tetrathiafulvene with Imaging Photoelectron Photoion Coincidence Spectroscopy*	J. of Chem. Phys.	117, 2753 2759 (2013).
J. Suarez, F. Guzman, B. Pons and L. F. Errea	*Hxuv-acl_8. , Excitation cross sections for Li3, Ne10+ and Ar18+ +H(1) collisions of interest in fusion plasma diagnostics,*	J. of Phys. B : Atomic. Molecular and Optical Physics	46, 095701 (2013).
Y. M. Poronik, G. Clermont, M. Blanchard-Desce, D. T. Gryko	*Non-linear optical chemosensors for sodium ion based on rhodol chromophore*	J. Org. Chem	78, 11721–11732.
Y. Leydet, P. Batat, G. Jonusauskas, S. Denisov, J.C. Lima, J. A. Parola, N.D. McClenaghan, F. Pina	*Impact of water on the cis-trans photoisomerization of hydroxychalcones*	J. Phys Chem. A	117, 4167–4173.
S. Grauby, E. Puyoo, J.M. Rampnoux, E. Rouvière, S. Dilhaire	*Si and SiGe Nanowires: fabrication process and thermal conductivity measurement by 3-scanning thermal microscopy*	J. Phys. Chem. C	117 (2013) 9025-9034.
H. Abramczyk, B. Brozek-Pluska, M. Tondusson, E. Freysz	*Ultrafast dynamics of metal complexes of tetrasulphonated phthalocyanines at biological interfaces : comparison between photochemistry in solutions, films, noncancerous and cancerous human breast tissues,*	J. Phys. Chem. C	117 (2013) 4999-5013.
B. Dacosta Fernandes, A. Le Beulze, F. Moroté, J. Oberlé, M. Tréguer-Delapierre, J. Burgin, P. Langot	*Electon-Phonon Scattering in 2D Silver Nano-Triangles*	J. Phys. Chem. C,	117 (2013) 22041–22045.
Massera J., Bourhis K., Petit L., Couzi M., Hupa L., Hupa M., Videau J.-J. and Cardinal T.	*Effect of the glass composition on the chemical durability of zinc-phosphate-based glasses in aqueous solutions.*	J. Phys. Chem. Solids	2013, vol. 74, n°1, p. 121-127. (FI = 1,59). DOI : 10.1016/j.jpcs.2012.08.010
J.J. Santos, D. Batani, S.D. Baton, F. N. Beg, T. Ceccotti, A. Debayle, F. Dorchies, J.-L. Feugeas, C. Fourment, L. Gremillet, J.J. Honrubia, S. Hulin, A. Morace, Ph. Nicolaï, F. Pérez, H. Sawada, H.-P. Schlenvoigt, V.T. Tikhonchuk, X. Vaisseau, B. Vauzour, M. Wei,	*Supra-thermal electron beam stopping power and guiding in dense plasmas*	J. Plasma Phys.	79, 429 (2013)
Boukhris A., Hidouri M., Glorieux B. and Ben Amara M.	*$Na_2BaMg(PO_4)_2$: synthesis, crystal structure and europium photoluminescence properties.*	J. Rare Earths	2013, vol. 31, n°9, p. 849-856. (FI = 1,34). DOI : 10.1016/S1002-0721(12)60369-X
G. Duchateau, G. Geoffroy, A. Belsky, N. Fedorov, P. Martin, S. Guizard,	*Interaction of intense femtosecond laser pulses with KDP and DKDP crystals in the short wavelength regime*	Journ. Phys.: Condensed Matter	25, 435501 (2013)
C. Mézel, G. Duchateau, G. Geneste, B. Siberchicot,	*A model for multiphoton absorption in dielectric materials induced by short laser pulses at moderate intensities,*	Journ. Physics: Cond. Matter	25, 235501 (2013)

R. Sobierajski, M. Jurek, J. Chalupsky, J. Krzywinski, T. Burian, S. Dastjani Farahani, V. Hajkova, M. Harmand, L. Juha, D. Klinger, R.A. Loch, C. Ozkan, J.B. Pełk, K. Sokolowski-Tinten, H. Sinn, S. Toleikis, K. Tiedtke, T. Tschentscher, H. Wabnitz and J. Gaudin	*Experimental set-up and procedures for the investigation of XUV free electron laser interactions with solids*	Journal of Instrumentation	8, P02010
B. M. Mirdan, D. Batani, L. Volpe, A. M. Villa, M. Bussoli, R. Jafer, M. Veltcheva, P. Procaccini and V. Conte,	*Dental Hard Tissue Ablation Using Picoseconds Pulsed Laser Emitting at 532 and 266 nm Wavelength*	Journal of Laser Micro/Nanoengineering	,8, 192 (2013).
B. Yang, E. Brasselet	*Arbitrary vortex arrays realized from optical winding of frustrated chiral liquid crystals*	Journal of Optics	15 (2013) 044021.
Mark J. Fernée; Philippe Tamarat; Brahim Lounis	*Cryogenic Single-Nanocrystal Spectroscopy: Reading the Spectral Fingerprint of Individual CdSe Quantum Dots*	Journal of Physical Chemistry Letters	2013, 4, pp. 609-618
Laura Oudjedi; A. Nicholas G. Parra-Vasquez; Antoine Godin; Laurent Cognet; Brahim Lounis	*Metrological Investigation of the (6,5) Carbon Nanotube Absorption Cross Section*	Journal of Physical Chemistry Letters	2013, 4, pp. 1460
V.Rodriguez, M.Couzi, F.Adamietz, M.Dussauze, G.Guery, T.Cardinal, P.Veber, K.Richardson, P.Thomas	*Hyper-Raman and Raman scattering in paratellurite TeO2*	Journal of Raman Spectroscopy	2013, 44, 739-745.
HE Ahmed, Y Liu, B Bousquet, M. Baudelet, M. Richardson.	*Investigation of Historical Egyptian Textile using Laser-Induced Breakdown Spectroscopy (LIBS)-a case study*	Journal of textile and apparel, technology and management	Vol. 8, Issue 2 (summer 2013)
Raetz S., Dehoux T., Audoin B	*Directivity patterns of a tilted volume photoacoustic source demonstrate acoustic beam steering by light refraction*	Journal of the Acoustical Society of America	Vol. 134, No. 6, pp. 4381-4392, 2013.
Juan G. Duque; Laura Oudjedi; Jared Crochet; Sergei Tretiak; Brahim Lounis; Stephen K. Doorn; Laurent Cognet	*Mechanism of Electrolyte-Induced Brightening in Single-Wall Carbon Nanotubes*	Journal of the American Chemical Society	2013, 135, pp. 3379
A. Vaupel, N. Bodnar, B. Webb, L. Shah, M. Hemmer, E. Cormier, M. Richardson,	*Hybrid master oscillator power amplifier system providing 10 mJ, 32 W, and 50 MW pulses for optical parametric chirped-pulse amplification pumping*	Journal of the Optical Society America B	30, 3278-3283 (2013)
P. Massé, S. Mornet, E. Duguet, M. Tréguer Delapierre, S. Ravaine, A. Iazzolino, J-B. Salmon and J. Leng	*Synthesis of Size-Monodisperse Spherical Ag@SiO2 Nanoparticles and 3-D Assembly Assisted by Microfluidics*	Langmuir	29, 6, 1790−1795, (2013) - 10.1021/la3039335
Y. Petit, S. Joly, P. Segonds, B. Boulanger,	*Recent advances in monoclinic crystal optics*	Laser & Photonics Rev	7(6), 920-937 (2013) / DOI 10.1002/lpor.201200078
D. Batani, S. Paleari, T. Vinci, R. Benocci, K. Shigemori, Y. Hironaka, T. Kadono and A. Shiroshita,	*Advances in the Investigation of Shock-Induced Reflectivity of Porous Carbon*	Laser and Particle Beams	31, 457-464 (2013).
M. Trtica, D. Batani, R. Redaelli, J. Limpouch, V. Kmetik, J. Ciganovic, J. Stasic, B. Gakovic and M. Momcilovic	*Titanium surface modification using femtosecond laser with 1013–1015 W/cm2 intensity in vacuum*	Laser and Particle Beams	31, 29
Lancia, L.; Fourment, C.; Fuchs, J.; Feugeas, J.-L.; Nicolaï, Ph.; Bastiani-Ceccotti, S.; Gauthier, M. Hulin, S.; Nakatsutsumi, M.; Rabec-Le-Gloahec, M.; Santos, J. J.; Schurtz, G.,	*Simultaneous measurement of self-generated magnetic fields and electron heat transport in dense plasma,*	Laser and Particle Beams	31, 653 (2013)
J. Fuchs, B. Albertazzi, J. A. Ruiz, S. Atzeni, A. Benuzzi-Mounaix, C. Boniface, E. Brambrink, A. Ciardi, E. D'Humières, L. A. Gizzi, M. Harmand, S. Hulin, P. McKenna, J. L. Miquel, M. Koenig, A. Ravasio, S. J. Rose, M. Roth, V. Tikhonchuk, N. Woolsey	*Review of high energy density physics activity in Europe,*	Laser Review	41, 39 (2013)

J.Novak, S.Novak, M.Dussauze, E.Fargin, F.Adamietz, J.D.Musgraves, K. Richardson	*Evolution of the structure and properties of solution-based Ge23Sb7S70 thin films during heat treatment*	Materials Research Bulletin	2013, 48 (3), 1250-1255.
K.Bourhis, A.Royon, G.Papon, M.Bellec, Y.Petit, L.Canioni, M.Dussauze, V.Rodriguez, L.Binet, D.Caurant, M.Treguer, J.-J.Videau, T.Cardinal	*Formation and thermo-assisted stabilization of luminescent silver clusters in photosensitive glasses*	Materials Research Bulletin	2013, 48 (4), 1637-1644
N.Nowak, T.Cardinal, F.Adamietz, M.Dussauze, V.Rodriguez, L.Durivault-Reymond, C.Deneuvilliers, J.-E.Poirier	*Influence of niobium and titanium introduction on optical and physical properties of silicate glasses*	Materials Research Bulletin	2013, 48 (4), 1376-1380.
M. Krayushkin, A. Bogacheva, K.S. Levchenko, O. Kobeleva, T.Valova,V. Barachevskii, J.L. Pozzo, M. Struchkova, P. Shmelin, M. Kalik,	*Synthesis of photochromic 6-aryl-substituted bis(benzothiophenyl)perfluorocyclopentenes by Suzuki-Miyaura cross-coupling*	Mendeleev Comm.	23, 78-80.
Gregory Giannone; Eric Hosy; Jean-Baptiste Sibarita; Daniel Choquet; Laurent Cognet	*High content Super-Resolution Imaging of Live Cell by uPAINT.*	Methods Biol Mol	2013, 950, pp. 95-110
Mbaye, Nogaye ; Pouget, Vincent ; Darracq, Frédéric ; Lewis, D.	*Characterization and modeling of laser-induced single-event burn-out in SiC power diodes*	Microelectronics Reliability	https://hal.archives-ouvertes.fr/hal-00880471
Royon, Arnaud ; Bourhis, Kevin ; Béchou, Laurent ; Cardinal, Thierry ; Canioni, Lionel ; Deshayes, Yannick	*Durability study of a fluorescent optical memory in glass studied by luminescence spectroscopy*	Microelectronics Reliability	https://hal.archives-ouvertes.fr/hal-00932228
El Moukhtari, Issam ; Pouget, Vincent ; Larue, Camille ; Darracq, Frédéric ; Lewis, D. ; Perdu, Philippe	*Impact of negative bias temperature instability on the single-event upset threshold of a 65 nm SRAM cell*	Microelectronics Reliability	https://hal.archives-ouvertes.fr/hal-00880459
Suhir, E. ; Bechou, L.	*Saint-Venant's principle and the minimum length of a dual-coated optical fiber specimen in reliability (proof) testing*	Microelectronics Reliability	https://hal.archives-ouvertes.fr/hal-00937728
*Leroy C. M., Cardinal T., Jubera V., Aymonier C., Tréguer-*Delapierre M., Boissière C., Grosso D., Sanchez C., Viana B. and Pellé F.	*Luminescence properties of ZrO2 mesoporous thin films doped with Eu3+ and Agn.*	Microporous Mesoporous Mater.	2013, vol. 170, p. DOI 10.1016/j.micromeso.2012.11.014
J. M. Bernal, P. Lozano, E. Garcia-Verdugo, M. I. Burguete, G. Sanchez-Gomez, G. Lopez-Lopez, M. Pucheault, M. Vaultier, S. V. Luis	*Supercritical synthesis of biodiesel*	Molecules,	17, 8696-8719
Cecile Leduc; Satyabrata Si; Jérémie Gautier; Martinho Soto-Ribeiro; B. Wehrle-Haller; Alexis Gautreau; Gregory Giannone; Laurent Cognet; Brahim Lounis	*A highly specific gold nanoprobe for live-cell single-molecule imaging*	Nano Letters	
Ungureanu, B. Kolaric, J. Chen, R. Hillenbrand and R.A.L. Vallée	*Far-field disentanglement of modes in hybrid plasmonic-photonic crystals by fluorescence nano-reporters"*	Nanophotonics	2, 3, 173-185, (2013) - 10.1515/nanoph-2013-0004
O. Pascu, L. D. Marciasini, S. Marre, M. Vaultier, M. Pucheault, C. Aymonie	*Continuous coflow synthesis of hybrid Palladium nanocrystals as catalysts for borylation reaction*	Nanoscale	5, 12425-12431
M.J. Fernée, C. Sinito, Y. Louyer, P. Tamarat, B. Lounis	*The ultimate limit to the emission linewidth of single nanocrystals*	Nanotechnology	24 (2013) 465703.
S. Picard, E. Genin, G. Clermont, V. Hugues, O. Mongin, M. Blanchard-Desce	*Octupolar chimeric compounds built from quinoline caged acetate moieties. A novel approach for 2-photon uncaging of biomolecules*	New J. Chem.	37, 3899-3913.
M. Olazabal-Loumé, Ph. Nicolaï, G. Riazuelo, M. Grech, J. Breil, S. Fujioka, A. Sunahara, N. Borisenko, V. Tikhonchuk,	*Simulations on laser imprint reduction using underdense foams and its consequences on the hydrodynamic instability growth,*	New J. Phys.	15, 085033 (2013).
R. H. H. Scott, F. Perez, M. J. V. Streeter, E. L. Clark, J. R. Davies, H.-P. Schlenvoigt, J. Santos, S. Hulin, K. L. Lancaster, F. Dorchies, C. Fourment, B. Vauzour, A. A. Soloviev, S. Baton, S. J. Rose and P. A. Norreys	*Fast electron beam measurements from relativistically intense, frequency-doubled laser-solid interactions,*	New Journal of Physics	15, 093021

T. Yabuuchi, R. Mishra, C. McGuffey, B. Qiao, M. S. W. H. Sawada, Y. Sentoku, T. Ma, D. P. Higginson, K. U. Akli, D. Batani, H. Chen, L. A. Gizzi, M. H. Key, A. J. M. H. S. McLean, P. A. Norreys, P. K. Patel, R. B. Stephens, Y. Ping, W. Theobald, C. Stoeckl and F. N. Beg,	*Impact of extended preplasma on energy coupling in kilojoule energy relativistic laser interaction with cone wire targets relevant to fast ignition,*	New Journal of Physics	15, 015020
Bruno Chanteau; Olivier Lopez; Wei Zhang; Daniele Nicolodi; Bérengère Argence; Frédéric Auguste; Michel Abgrall; Christian Chardonnet; Giorgio Santarelli; Benoît Darquié; Yann Le Coq; Anne Amy-Klein	*Mid-infrared laser phase-locking to a remote near-infrared frequency reference for high precision molecular spectroscopy*	New Journal of Physics	2013, 15, pp. 073003
H. Jouin and F. A. Gutierrez,	*Calculations of neutral fractions and angular Distributions for H(1s) and H+ impinging on Al(111) at grazing incidence*	Nucl. Instrum. and Meth. in Phys. Res. B	317, 28 (2013).
J.-E. Ducret, S. Bastiani-Ceccotti, D. Batani, N. Blanchot, E. Brambrink, A. Casner, T. Ceccotti, A. C. L. Fontaine, E. d'Humières, S. Dobosz-Dufrénoy, A. Duval, J. Fuchs, S. Hulin, M. Koenig, I. Lantuéjoul-Thfoin, E. Lefebvre, J.-R. Marquès, J.-L. Miquel, C. Reverdin, L. Serani, C. Szabo-Foster and R. Wrobel,	*The PETAL plus project: X-ray and charged particle diagnostics for plasma experiments at LMJ-PETAL*	Nuclear Instruments & Methods in Physics Research Section A	720, 141
L. Giot, J. A. Alcantara-Nunez, …, J.-E. Ducret et al.,	*Isotopic production cross sections of the residual nuclei in spallation reactions induced by Xe-136 projectiles on proton at 500 A MeV*	Nuclear Physics A	899, 116
Guglielmo M. Tino; Fiodor Sorrentino; D. Aguilera; Baptiste Battelier; Andrea Bertoldi; Quentin Bodart; K. Bongs; Philippe Bouyer; C. Braxmaier; L. Cacciapuoti; Naceur Gaaloul; N. Gürlebeck; M. Hauth; S. Herrmann; M. Krutzik; A. Kubelka; Arnaud Landragin; A. Milke; A. Peters; E. M. Rasel; E. Rocco; C. Schubert; T. Schuldt; K. Sengstock; A. Wicht	*Precision Gravity Tests with Atom Interferometry in Space*	Nuclear Physics B - Proceedings Supplements	2013, 243-244, pp. 203
Frank Ospald ; Wissem Zouaghi ; René Beigang ; Carsten Matheis ; Joachim Jonuscheit ; Benoit Recur ; Jean-Paul Guillet ; Patrick Mounaix ; Wouter Vleugels ; Pablo Venegas Bosom ; Laura Vega González ; Ion López ; Rafael Martínez Edo ; Yehuda Sternberg ; Marijke Vandewal	*Aeronautics composite material inspection with a terahertz time-domain spectroscopy system*	Opt. Eng.	53(3), 031208 (Dec 16, 2013). doi:10.1117/1.OE.53.3.031208
S. Novak, L. Scarpantonio, J. Novak, M.D. Prè, A. Martucci, J.D. Musgraves, N.D. McClenaghan, K. Richardson	*Incorporation of luminescent CdSe/ZnS core-shell quantum dots and PbS quantum dots into solution-derived chalcogenide glass films*	Opt. Mater. Express	3, 729–738.
G.Papon, Y.Petit, N.Marquestaut, A.Royon, M.Dussauze, V.Rodriguez, T.Cardinal, L.Canioni	*Fluorescence and second-harmonic generation correlative microscopy to probe space charge separation and silver cluster stabilization during direct laser writing in a tailored silver-containing glass*	Optical Materials Express	2013, 3 (11), 1855-1861.
J. Fournier, P. Grua, J. Néauport, E. Fargin V. Jubera, D. Talaga, A. Del Guerzo G. Raffy, S. Jouannigot	*Temperature dependence of luminescence for different surface flaws in high purity silica glass*	Optical Materials Express	Vol. 3, No. 1, pp. 1-10
W.T.Shoulders, J.Novak, M.Dussauze, J.D.Musgraves, K.Richardson	*Thermal poling behavior and SHG stability in arsenic-germanium sulfide glasses*	Optical Materials Express	2013, 3 (6), 700–710.
L Canioni, Y Bellouard, Y Cheng, T Cardinal	*Feature issue introduction: Progress in Ultrafast Laser Modifications of Materials*	Optical Materials Express	3 (10), 1789-1791, 2013
A. Jolly, B. Chassagne J.C. Jolly	*Resonant photo-thermal conversion for sub-terahertz imaging*	Optics Communications	Optics Communications 311 (2013) 325–331
P. Beaure d'Augères E. Hugonnot A. Mussot A. Kudlinski	*Amplification of ultrashort optical pulses in a two-pump fiber optical parametric chirped pulse amplifier*	Optics Express	Vol. 21, N°10, pp. 12197-12203

Philippe Hamel; Patricio Grinberg; Christophe Sauvan; Philippe Lalanne; Alexandre Baron; Alejandro Yacomotti; Isabelle Sagnes; Fabrice Raineri; Kamel Bencheikh; Juan Ariel Levenson	*Coupling light into a slow-light photonic-crystal waveguide from a free-space normally-incident beam*	Optics Express	2013, 21, pp. 15144-15154
Qiang Bai; Mathias Perrin; Christophe Sauvan; Jean-Paul Hugonin; Philippe Lalanne	*Efficient and intuitive method for the analysis of light scattering by a resonant nanostructure*	Optics Express	2013, 21, pp. 27371
Varkentina, Nadezda ; Cardinal, Thierry ; Moroté, Fabien ; Mounaix, Patrick ; André, Pascal ; Deshayes, Yannick ; Canioni, Lionel	*Examination of femtosecond laser matter interaction in multipulse regime for surface nanopatterning of vitreous substrates*	Optics Express	https://hal.archives-ouvertes.fr/hal-00909676
M. Jewariya, E. Abraham, T. Kitaguchi, Y. Ohgi, M. Minami, T. Araki, T. Yasui	*Fast three-dimensional terahertz computed tomography using real-time line projection of intense terahertz pulse*	Optics Express	21 (2013) 2423.
J. Chalupsky, T. Burian, V. Hajkova, L. Juha, T. Polcar, J. Gaudin, M. Nagasono, R.Sobierajski, M. Yabashi and J. Krzywinski,	*Fluence scan : unexplored property of a laser beam,*	Optics Express	21, 26363 (2013).
Haitao Liu; Philippe Lalanne	*General properties of the surface charge pattern of one-dimensional metallic gratings*	Optics Express	2013, 21, pp. 16753-16762
R. Royon, J. Lhermite, L. Sarger, E. Cormier	*High power, continuous-wave ytterbium-doped fiber laser tunable from 976 to 1120 nm*	Optics Express	21, 13818-13823 (2013)
P. Deslandes, M. Perrin, J. Saby, D. Sangla, F. Salin, E. Freysz	*Picosecond to femtosecond pulses from high power self mode–locked ytterbium rod-type fiber laser*	Optics Express	21 (2013) 10731–1073
N. Darbois J. Néauport, P. Blaineau R. Laheurte P. Darnis O. Cahuc	*Relations between subsurface damage depth and surface roughness of grinded fused silica*	Optics Express	Vol. 21, N°25, pp. 30433-30443
Ph. Cormont L. Lamaignère J.L. Rullier, P. Combis L. Gallais C. Hecquet	*Removal of scratches on fused silica optics by using a CO2 laser*	Optics Express	Vol. 21, No. 23, pp. 28272-28289
P. Calvet E. Hugonnot, C. Valentin Y. Quiquempois G. Bouwmans L. Bigot Q. Coulombier M. Douay K. Delplace A. Mussot	*Top-hat beam output of a single-mode microstructured optical fiber: Impact of core index depression*	Optics Express	Vol. 21, N°20, pp. 23250-23260
R. Catrin J. Néauport C. Maunier P. Cormont D. Taroux, P. Le Gros	*Using STED and ELSM confocal microscopy for a better knowledge of fused silica polished glass interface*	Optics Express	Vol. 21, N°24, pp. 29769-29779
Petit Y., Royon A., Marquestaut N., Dussauze M., Fargues A., Veber P., Jubera V., Cardinal T. and Canioni L.	*Two-photon excited fluorescence in the LYB:Eu monoclinic crystal : towards a new scheme of single-beam dual-voxel direct laser writing in crystals.*	Optics Express 2013	, vol. 21, n°1, p. 822-833. (FI = 3,52). DOI : 10.1364/OE.21.000822
I. Massiot; Clément Colin; Christophe Sauvan; Philippe Lalanne; Pere Roca I Cabarrocas; Jean-Luc Pelouard; Stéphane Collin	*Multi-resonant absorption in ultra-thin silicon solar cells with metallic nanowires*	Optics Express,	2013, 21 (S3), pp. A372-A381
T. Cassidy, Daniel ; Rehioui, O. ; K. Hall, Chadwick ; Bechou, L. ; Deshayes, Y. ; Kohl, A. ; Fillardet, T. ; Ousten, Y.	*High-power diode laser bars and shear strain*	Optics Letters	https://hal.archives-ouvertes.fr/hal-00979994
E. Brasselet	*Optical angular momentum conversion in a nanoslit: comment*	Optics Letters	38 (2013) 3890.
E. Brasselet	*Optical vortices from closed-loop subwavelength slits*	Optics Letters	38 (2013) 2575-2577.
Riad Yahiaoui, Jean Paul Guillet, Frédérick de Miollis, and Patrick Mounaix	*Ultra-flexible multiband terahertz metamaterial absorber for conformal geometry applications*	Optics Letters	Vol. 38, Issue 23, pp. 4988-4990 (2013).
MA Prantil, E. Cormier, JW Dawson, DJ. Gibson, MJ. Messerly, CPJ. Barty	*Widely tunable 11 GHz femtosecond fiber laser based on a nonmode-locked source*	Optics Letters	38, 3216-3218 (2013)
L. Kotov, M. Likhachev, MM. Bubnov, O. Medvedkov, MV. Yashkov, AN. Guryanov, J. Lhermite, S. Fevrier, E. Cormier	*75 W 40% efficiency single-mode all-fiber erbium-doped laser cladding pumped at 976 nm*	Optics Letters	38, 2230-2232 (2013)

G. Machinet, P. Sevillano, F. Guichard, R. Dubrasquet, P. Camy, JL. Doualan, P. Moncorgé, P. Georges, F. Druon, D. Descamps, E. Cormier,	*High-brightness fiber laser-pumped 68 fs-2.3 W Kerr-lens mode-locked Yb:CaF2 oscillator*	Optics Letters	38, 4008-4010 (2013)
R.E.F.Silva, F. Catoire, P. Rivière, H. Bachau and F. Martin	*Correlated Electron and Nuclear Dynamics in Strong Field Photoionization of H2*	Phys. Rev. Lett.	110, 113001 (2013).
A. Marocchino, M. Tzoufras, S. Atzeni, A Schiavi, Ph. Nicolaï, J. Mallet, V. Tikhonchuk, and J.-L. Feugeas,	*Comparison for non-local hydrodynamic thermal conduction models,*	Phys. Plasmas	20, 022702 (2013)
A. Vallet, X. Ribeyre, V. Tikhonchuk	*Finite number spherical shock wave, application to shock ignition,*	Phys. Plasmas	20, 082702 (2013)
Lafon, M.; Ribeyre, X., Schurtz, G.	*Optimal conditions for shock ignition of scaled cryogenic deuterium-tritium targets,*	Phys. Plasmas	20, 022708 (2013)
E. D'Humières, A. Brantov, V. Yu. Bychenkov, V.T. Tikhonchuk,	*Optimization of laser-target interaction for proton acceleration*	Phys. Plasmas	20, 023103 (2013)
A. Debayle, L. Gremillet, J.J. Honrubia, and E. D'Humières,	*Reduction of the fast electron angular dispersion by means of varying-resistivity structured targets,*	Phys. Plasmas	20, 013109 (2013).
M. Schnurer, F. Abicht, R. Prasad, M. Borghesi, G. Priebe, J. Bränzel, A. Andreev, P. V. Nickles, S. Jequier, V. Tikhonchuk, S. Ter-Avetisyan,	*Charge steering of laser plasma accelerated fast ions in a liquid spray – creation of MeV negative ion and neutral atom beams*	Phys. Plasmas	20, 113105 (2013)
X. Ribeyre, S. Gus'kov, J.-L. Feugeas, Ph. Nicolaï, V.T. Tikhonchuk,	*Dense plasma heating and Gbar shock formation by a high intensity flux of energetic electrons,*	Phys. Plasmas	20, 062705 (2013)
A. Giulietti, A. Andre, S. Dufrenoy, D. Giulietti, T. Hosokai, P. Koester, H. Kotaki, L. Labate, T. Levato, R. Nuter, N.C. Pathak, P. Monot, L.A. Gizzi,	*Space- and time-resolved observation of extreme laser frequency upshifting during ultrafast-ionization*	Phys. Plasmas	20, 082307 (2013)
G. Duchateau,	*Strong nonlinear electron multiplication without impact ionization in dielectric nanoparticles embedded in optical materials*	Phys. Plasmas	20, 022306 (2013)
I.A. Andriyash, E. D'Humieres, V.T. Tikhonchuk, and Ph. Balcou,	*Betatron emission from relativistic electrons in a high intensity optical lattice*	Phys. Rev.	ST-AB 16, 100703 (2013)
C. Couratin, X. Fabian, B. Fabre, B. Pons, X. Flechard, E. Lienard, G. Ban, M. Breitenfeldt, P. Delahaye, D. Durand, A. Mery, O. Naviliat-Cuncic, T. Porobic, G. Quemener, D. Rodriguez, N. Severijns, J-C. Thomas and S. Van Gorp,	*Electron shakeoff following the β+ decay of trapped 35Ar+ ions*	Phys. Rev. A	88, 041403(R) (2013).
B. Viquerat, J. Degert, J.F. Létard, E. Freysz	*Relaxation oscillations during the laser induced spin state transition of [Fe(PM-BiA)2(NCS)2] complex*	Phys. Rev. B	87 (2013) 024303.
R. Nuter, V. T. Tikhonchuk,	*Prepulse suppression and optimization of backward Raman amplification with a chirped pump laser beam,*	Phys. Rev. E	87, 043109 (2013)
R. Capdessus, E. D'Humières, V. T. Tikhonchuk,	*Influence of ion mass on laser energy absorption and synchrotron radiation at ultra-high laser intensities*	Phys. Rev. Lett	. 110, 215003 (2013)
H. Chraïbi, J. Petit, R. Wunenburger, J.P. Delville	*Excitation of Fountain and Entrainment Instabilities at the Interface between Two Viscous Fluids Using a Beam of Laser Light*	Phys. Rev. Lett.	111 (2013) 044502.
X. Urbain, N. D. Ruette, V. M. Andrianarijaona, M. F. Martin, L. F. Menchero, L. F. Errea, L. Méndez, I. Rabadan and B. Pons,	*New Light Shed on Charge Transfer in Fundamental H+ + H2 Collisions*	Phys. Rev. Lett.	111, 203201 (2013).
F. Sylla, A. Flacco, S. Kahaly, M. Veltcheva, A. Lifschitz, V. Malka, E. D'Humieres, V. Tikhonchuk,	*Short intense laser pulse collapse in near-critical plasma,*	Phys. Rev. Lett.	110, 085001 (2013)
PM. Leguay, A. Lévy, B. Chimier, F. Deneuville, D. Descamps, C. Fourment, C. Goyon, S. Hulin, S. Petit, O. Peyrusse, JJ. Santos, P. Combis, B. Holst, V. Recoules, P. Renaudin, L. Videau, F. Dorchies	*Utrafast Short-Range Disordering of Femtosecond-Laser-Heated Warm Dense Aluminium*	Physical Review Letters	111, 245004 (2013)

H. Ruf, C. Handschin, R. Cireasa, N. Thiré, A. Ferré, S. Petit, D. Descamps, E. Mevel, E. Constant, V. Blanchet, B. Fabre and Y. Mairesse	*Inhomogeneous High Harmonic Generation in Krypton Clusters*	Physical Review Letters	110, 083902 (2013)
Y.A.Tobon, L.Kabalan, S.Bonhommeau, N.Daro, A.Grosjean, P.Guionneau, S.Matar, J.-F.Létard, F.Guillaume	*Vibrational properties of the spin crossover complexes [Fe(NH2Trz)3](X)2.nH2O investigated by means of Raman scattering and DFT calculations*	Physical Chemistry Chemical Physics	2013, 15, 18128-18137.
Y. Huismans, E. Cormier, C. Cauchy, PA. Hervieux, G. Gademann, A. Gijsbertsen, O. Ghafur, P. Johnsson, P. Logman, T. Barillot, C. Bordas, F. Lepine, MJJ. Vrakking	*Macro-atom versus many-electron effects in ultrafast ionization of C-60*	Physical Review A	88, 013201 (2013)
J. Gaudin, N. Medvedev, J. Chalupsky, T. Burian, S. Dastjani-Farahani, V. H´ajkova, M. Harmand, H. O. Jeschke, L. Juha, M. Jurek, D. Klinger, J. Krzywinski, R. A. Loch, S. Moeller, M. Nagasono, C. Ozkan, K. Saksl, H. Sinn, R. Sobierajski, P. Sovak, S. Toleikis, K. Tiedtke, M. Toufarova, T. Tschentscher, V. Vorlicek, L. Vysin, H. Wabnitz and B. Ziaja,	*Photon energy dependence of graphitization threshold for diamond irradiated with an intense XUV FEL pulse,*	Physical Review B	88, 060101
J. Gaudin, N. Medvedev, J. Chalupský, T. Burian, S. Dastjani-Farahani, V. Hájková, M. Harmand, H.O. Jeschke, L. Juha, M. Jurek, D. Klinger, J. Krzywinski, R. A. Loch, S. Moeller, M. Nagasono, C. Ozkan, K. Saksl, H. Sinn, R. Sobierajski, P. Sovák, S. Toleikis, K. Tiedtke, M. Toufarova, T. Tschentscher, V. Vorlíček, L. Vyšín, H. Wabnitz, B. Ziaja	*Photon energy dependence of graphitization threshold for diamond irradiated with intense XUV FEL pulse*	Physical Review B	88, 060101(R)
Bertrand Yuma; Stéphane Berciaud; Jean Besbas; Jonah Shaver; Silvia M. Santos; Saunab Gosh; R. Bruce Weisman; Laurent Cognet; Mathieu Gallart; Marc Ziegler; Bernd Hönerlage; Brahim Lounis; Pierre Gilliot	*Biexciton, single carrier, and trion generation dynamics in single-walled carbon nanotubes*	Physical Review B (Condensed Matter)	2013, 87, pp. 205412
Thomas Vanderbruggen; Ralf Kohlhaas; Andrea Bertoldi; Simon Bernon; Alain Aspect; Arnaud Landragin; Philippe Bouye	*Feedback Control of Trapped Coherent Atomic Ens*	Physical Review Letters	2013, 110, pp. 210503
C. Loussert, U. Delabre, E. Brasselet	*Manipulating the orbital angular momentum of light at microscale with nematic disclinations in a liquid crystal film*	Physical Review Letters	111 (2013) 037802.
M. El Ketara, E. Brasselet	*Observation of self-induced optical vortex precession*	Physical Review Letters	110 (2013) 233603.
Vadim Puller; Brahim Lounis; Fabio Pistolesi	*Single molecule detection of nanomechanical motion*	Physical Review Letters	2013, 110 (12), pp. 125501 (1-5)
G. Tkachenko, E. Brasselet	*Spin controlled optical radiation pressure*	Physical Review Letters	111 (2013) 033605.
Christophe Sauvan; Jean-Paul Hugonin; Ivan Maksymov; Philippe Lalanne	*Theory of the spontaneous optical emission of nanosize photonic and plasmon resonators*	Physical Review Letters	2013, 110, pp. 237401
E. Brasselet, G. Gervinskas, G. Seniutinas, S. Juodkazis	*Topological shaping of light by closed-path nanoslits*	Physical Review Letters	111 (2013) 193901.
P. Béjot, E. Cormier, E. Hertz, B. Lavorel, J. Kasparian, JP. Wolf, O. Faucher	*High-Field Quantum Calculation Reveals Time-Dependent Negative Kerr Contribution*	Physical Review Letters	110, 043902 (2013)
P. M. Leguay, A. Lévy, B. Chimier, F. Deneuville, D. Descamps, C. Fourment, C. Goyon, S. Hulin, S. Petit, O. Peyrusse, J. Santos, P. Combis, B. Holst, V. Recoules, P. Renaudin, L. Videau and F. Dorchies	*Ultrafast Short-Range Disordering of Femtosecond-Laser-Heated Warm Dense Aluminium,*	Physical Review Letters	111, 245004
H.Vigouroux, E.Fargin, B.LeGarrec, M.Dussauze, V.Rodriguez, F.Adamietz, J.Ravaux, R. Podor, S.Lotarev, V.Sigaev, D.Vouagner, D.DeLigny, B.Champagnon	*In situ study of the crystallization mechanism in LiNbO3-SiO2 glasses*	Physics and Chemistry of Glasses	2013, 54 (2), 84-88.
M. Passoni, C. Perego, A. Sgattoni and D. Batani,	*Advances in Target Normal Sheath Acceleration theory*	Physics of Plasmas	20, 060701
L. Volpe, D. Batani, A. Morace and J. J. Santos,	*Collisional and collective effects in 2D model for fast-electron transport in refluxing regimes*	Physics of Plasmas	20, 013104 (2013).

L. Volpe, D. Batani, G. Birindelli, A. Morace, P. Carpeggiani, M. H. Xu, F. Liu, Y. Zhang, Z. Zhang, X. X. Lin, F. Liu, S. J. Wang, P. F. Zhu, L. M. Meng, Z. H. Wang, Y. T. Li, Z. M. Sheng, Z. Y. Wei, J. Zhang, J. Santos and C. Spindloe	*Propagation of a short-pulse laser-driven electron beam in matter*	Physics of Plasmas	20, 033105
D'Humières, E.; Antici, P.; Glesser, M.; Boeker, J.; Cardelli, F.; Chen, S.; Feugeas, J. L.; Filippi, F.; Gauthier, M.; Levy, A.; Nicolaï, P.; Pépin, H.; Romagnani, L.; Scisciò, M.; Tikhonchuk, V. T.; Willi, O.; Kieffer, J. C.; Fuchs,	*Investigation of laser ion acceleration in low-density targets using exploded foils*	Plasma Phys. Control. Fusion	55, 124025 (2013)
O. Klimo and V. T. Tikhonchuk,	*Laser plasma interaction studies in the context of shock ignition— the regime dominated by parametric instabilities*	Plasma Phys. Control. Fusion	55, 095002 (2013)
P. Koester, L. Antonelli, S. Atzeni, J. Badziak, F. Baffigi, D. Batani, C. A. Cecchetti, T. Chodukowski, F. Consoli, G. Cristoforetti, R. D. Angelis, G. Folpini, L. A. Gizzi, Z. Kalinowska, E. Krousky, M. Kucharik, L. Labate, T. Levato, R. Liska, G. Malka, Y. Maheut, A. Marocchino, P. Nicolai, T. O'Dell, P. Parys, T. Pisarczyk, P. Raczka, O. Renner, Y. Rhee, X. Ribeyre, M. Richetta, M. Rosinski, L. Ryc, J. Skala, A. Schiavi, G. Schurtz, M. Smid, C. Spindloe, J. Ullschmied, J. Wolowski and A. Zaras	*Recent results from experimental studies on laser-plasma coupling in a shock ignition relevant regime,*	Plasma Phys. Control. Fusion	55, 124045 (2013).
T. Leisner, D. Duft, O. Möhler, H. Saathoff, M. Schnaiter, S. Henin, K. Stelmaszczyk, M. Petrarca, R. Delagrange, Z. Hao, J. Lüder, Y. Petit, P. Rohwetter, J. Kasparian, J.–P. Wolf, and L. Wöste	*Laser induced plasma - cloud interaction and ice multiplication under cirrus cloud conditions*	PNAS	110(25), 10106-10 (2013).
A.-L. Wirotius, E. Ibarboure, L. Scarpantonio, M. Schappacher, N.D. McClenaghan, A. Deffieux	*NEHydrosoluble dendritic poly(ethylene oxide)s with zinc tetraphenylporphyrin branching points as photosensitizers*	Polym. Chem.	,2013, 4, 1903-1912.
R. H. H. Scott, E. L. Clark, F. Pérez, M. J. V. Streeter, J. R. Davies, H.-P. Schlenvoigt, J. J. Santos, S. Hulin, K. L. Lancaster, S. D. Baton, S. J. Rose and P. A. Norreys	*Measuring fast electron spectra and laser absorption in relativistic laser-solid interactions using differential bremsstrahlung photon detectors*	Review Of Scientific Instruments	84, 083505
Bonnet T., Comet M., Denis-Petit D., Gobet F., Hannachi F., Tarisien M., Versteegen M. and Aléonard M.M.	*Response Functions of Fuji Imaging Plates to monoenergetic protons in the energy range 0.6-3.2 MeV*	Review of Scientific Instruments	84, 013508 (2013)
Bonnet T., Comet M., Denis-Petit D., Gobet F., Hannachi F., Tarisien M., Versteegen M. and Aléonard M.M.	*Response functions of Imaging Plates to photons, electrons and 4He particles»*	Review of Scientific Instruments	84, 103510 (2013),
Leonardo Ricci; Luca Matteo Martini; Matteo Franchi; Andrea Bertoldi	*A current-carrying coil design with improved liquid cooling arrangement*	Review of Scientific Instruments,	2013, 84, pp. 065115
D. Batani, and G. Gorini,	*Controlled Thermonuclear Fusion*	Reviews in Advanced Sciences and Engineering 2,	186 (2013).
Pascale Winckler; Lydia Lartigue; Gregory Giannone; Francesca De Giorgi; François Ichas; Jean-Baptiste Sibarita; Brahim Lounis; Laurent Cognet	*Identification and super-resolution imaging of ligand-activated receptor dimers in live cells*	Scientific Reports	2013, 3, pp. 2387
E. Campioli, C. Rouxel, M. Campanini, L. Nasi, M. Blanchard-Desce, F. Terenziani	*Enforcing Luminescence at Organic Nanointerfaces: Luminescence Spatial Confinement and Amplification in Molecular-Based Core-Shell Nanoparticles*	Small	9, 1982–1988
L. Criante, F. Bracalente, L. Lucchetti, F. Simoni, E. Brasselet	*Electrically tunable optoelastic interaction range of nematic colloids*	Soft Matter	9 (2013) 5459-5463.
J. El Haddad, M. Villot-Kadri, A. Ismaël, G. Gallou, K. Michel, D. Bruyère, V. Laperche, L. Canioni, B. Bousquet	*Artificial neural network for on-site quantitative analysis of soils using laser induced breakdown spectroscopy.*	Spectrochimica Acta Part B	79–80 (2013) 51–57
O. Mongin, M. Sankar, M. Charlot, Y. Mir, M. Blanchard-Desce,	*Strong enhancement of two-photon absorption properties in synergic "semi-disconnected" multiporphyrin assemblies designed for combined imaging and photodynamic therapy*	Tet. Lett.	54, 6474–6478.

S. Delbaere, E.V. Tulyakova, E. Marmois, G. Jonusauskas, E.N. Gulakova, Y.V. Fedorov, O.A. Fedorova	*Metal-ion induced FRET in macrocyclic dynamic tweezers*	Tetrahedron 69	(2013) 8178-8185.
M.Dussauze, P.Johansson, A.Matic, C.P.Varsamis, D.Cavagnat, P.Vinatier, Y.Hamon, E.I.Katmitsos	*Lithium boron-oxynitride amorphous thin films: Synthesis and structure by infrared spectroscopy and ab-initio calculations*	The Journal of Physical Chemistry C	2013, 117, 7202-7213.
S.Bonhommeau, P.Deria, M.G.Glesner, D.Talaga, S.Najjar, C.Belin, L.Auneau, S.Trainini, M.J.Therien, V.Rodriguez	*Raman spectroscopic investigation of individual single-walled carbon nanotubes helically wrapped by ionic, semiconducting polymers*	The Journal of Physical Chemistry C	2013, 117, 14840-14849
Sarkisov P. D., Paleari A., Sigaev V. N., Lotarev S. V., Golubev N. V., Stefanovich S. Y., Champagnon B., Vouagner D., Cousi M. and Fargin E.	*Structure of low-silica glasses in the K2O-Nb2O5-SiO2 system.*	Theor. Found. Chem. Eng.	2013, vol. 47, n°1, p. 1-9. (FI = 0,37). DOI : 10.1134/S0040579513010065
P.Němec, V.Nazabal, M.Dussauze, H.-L.Ma, Y.Bouyrie, X.-H.Zhang	*Ga–Ge–Te amorphous thin films fabricated by pulsed laser deposition*	Thin Solid Films	2013, 531, 454–459.
Josette El Haddad, Bruno Bousquet, Lionel Canioni, Patrick Mounaix.	*Review in terahertz spectral analysis*	Trends in Analytical Chemistry	Vol. 44, 98-105 , 2013

RICL 2014

Autors	*Title*	Journal	Reference
Marquestaut N., Canioni L., Cardinal T., Petit Y., Mounaix P., Royon A	*Three-dimensional silver nanoparticles formation using femtosecond laser irradiation in phosphate glasses: analogy with photography.*	Adv. Funct. Mater	2014. (FI = 10,43). DOI : 10.1002/adfm.201401103
E. Secret, M. Maynadier, A. Gallud, A. Chaix, E. Bouffard, M. Gary-Bobo, N. Marcotte, O. Mongin , K. El Cheikh, V. Hugues, M. Auffan, C. Frochot, A. Morère, P. Maillard, M. Blanchard-Desce, M. J. Sailor, M. Garcia , J.-O. Durand, F. Cunin	*Two-Photon Excitation of Porphyrin-Functionalized Porous Silicon Nanoparticles for Photodynamic Therapy*	Adv. Mater	**2014**, *26*, 7643-7648
Chenu S., Véron E., Genevois C., Matzen G., Cardinal T., Etienne A., Massiot D. and Allix M.	*Tuneable nanostructuring of highly transparent zinc gallogermanate glasses and glass-ceramics*	Adv. Opt. Mater	2014, vol. 2, n°4, p. 364–372. DOI : 10.1002/adom.201400007
C. Loussert, S. Iamsaard, N. Katsonis, E. Brasselet	*Subnanowatt opto-molecular generation of localized defects in chiral liquid crystals*	Advanced Materials	26(25) 4242-4246 (2014).
Emilie Génin; **Zhenghong Gao**; Juan Varela; Jonathan Daniel; Talia Bsaibess; Isabelle Gosse; Laurent Groc; **Laurent Cognet**; Mireille Blanchard-Desce	*Hyper-bright Near-Infrared Emitting Fluorescent Organic Nanoparticles for Single Particle Tracking*	Advanced Materials	2014, 26 (14), pp. 2258-2261
J. Néauport "D. André I. Iordanoff J- L. Charles	*The GRANOO workbench: a new tool for developping discrecte elements simulations and its application to tribological problem*	Advances in Engineering Software	Vol. 74, pp. 40-48
El Haddad, Josette; De Miollis, Frederick; Bou Sleiman, Joyce; Canioni, Lionel; Mounaix, Patrick; Bousquet, Bruno;	*Chemometrics applied to quantitative analysis of ternary mixtures by Terahertz spectroscopy*	Analytical chemistry	86 10 4927-4933 (2014)
V. Lebrun, A. Tron, L. Scarpantonio, C. Lebrun, J.-L. Ravanat, J.-M. Latour, N. D. McClenaghan, O. Sénèque	*Efficient Oxidation and Destabilization of $Zn(Cys)_4$ Zinc Fingers by Singlet Oxygen*	Angew. Chem. Int. Ed.	2014, *53*, 9365–9368.
H. Zheng, R. Vallée, R.M. Almeida, T. Rivera and S. Ravaine	*Quasi-total omnidirectional light absorption in nanostructured gold films*	Appl. Phys. A	, 117, 471–475, (2014) - 10.1007/s00339-014-8684-9
R. Cattoor, I. Manek-Hönninger, M. Tondusson, P. Veber, T.K. Kalkandjiev, D. Rytz, L. Canioni, M. Eichhorn	*Wavelength dependence of the orientation of optic axes in KGW*	Appl. Phys. B	116 (2014) 831-836.
K. Jakubowska, W. Skrzeczanowski, et al.,	*Principle component analysis of the spectroscopic and neutron parameters characterizing PF-1000 device plasmas*	Appl. Phys. B	**117**, 389 (2014)
A. De Luca, R. Dhama, A. R. Rashed, C. Coutant, S. Ravaine, P. Barois, M. Infusino and G. Strangi,	*Double strong exciton-plasmon coupling in gold nanoshells infiltrated with fluorophores*	Appl. Phys. Lett	104, 103103, 1-4, (2014) - 10.1063/1.4868105
M. Chambonneau, R. Diaz, P. Grua, J.-L. Rullier, G. Duchateau, J.-Y. Natoli, L. Lamaignère,	*Origin of the damage ring pattern in fused silica induced by multiple longitudinal modes laser pulses,*	Appl. Phys. Lett.	021121 (2014)
E. Abraham, M. Bessou, A. Ziéglé, M-C. Hervé,L. Szentmiklósi, Zs. Kasztovszky, Z. Kis, M. Menu	*Terahertz, X-ray and neutron computed tomography of an Eighteenth Dynasty Egyptian sealed pottery*	Appl. Physics A	117 (2014) 963-972
Yahiaoui, Riad ; Chung, U-Chan ; Burokur, Shah Nawaz ; De Lustrac, A. ; Elissalde, Catherine ; Maglione, Mario ; Vigneras, Valerie ; Mounaix, Patrick	*Broadband effective magnetic response of inorganic dielectric resonator-based metamaterial for microwave applications*	Applied Physics A: Materials Science and Processing	March 2014, Volume 114, Issue 3, pp 997-1002
AG Stepanov, S Henin, Y Petit, L Bonacina, J Kasparian, J-P Wolf	*Erratum to: Mobile source of high-energy single-cycle terahertz pulses*	Applied Physics B	115 (2), 293-293 (2014)
F Jessen, M Knufinke, SC Bell, P Vergien, H Hattermann, P Weiss, M Rudolph, M Reinschmidt, K Meyer, T Gaber, D Cano, A Günther, S Bernon, D Koelle, R Kleiner, J Fortágh	Trapping of ultracold atoms in a 3He/4He dilution refrigerator	Applied Physics B	116 p 665-671 (2014)
M. Chambonneau R. Diaz P. Grua J.-L. Rullier L. Lamaignère "G. Duchateau J.-Y. Natoli"	*Origin of the ring pattern in the damage morphology induced by multiple longitudinal modes laser pulses in fused silica at 1064 nm*	Applied Physics Letters	Vol. 104, 021121, pp.1-4

C. M. Brenner, A. P. L. Robinson, K. Markey, R. H. H. Scott, R. J. Gray, M. Rosinski, O. Deppert, J. Badziak, D. Batani, J. R. Davies, S. M. Hassan, K. L. Lancaster, K. Li, I. O. Musgrave, P. A. Norreys, J. Pasley, M. Roth, H-P. Schlenvoigt, C. Spindloe, M. Tatarakis, T. Winstone, J. Wolowski, D. Wyatt, P. McKenna, and D. Neely	*High energy conversion efficiency in laser-proton acceleration by controlling laser-energy deposition onto thin foil targets*	Applied Physics Letters	104, 081123 (2014)
F. Simoni, S. Lalli, L. Lucchetti, F. Criante, E. Brasselet	*Enhanced optoelastic interaction range in liquid crystals with negative dielectric anisotropy*	Applied Physics Letters	104(1) (2014) 011112.
C. Loussert, E. Brasselet	*Multiple chiral topological states in liquid crystals from unstructured light beams*	Applied Physics Letters	10 (2014) 121108.
Anthony Jouanin; Jean-Paul Hugonin; Mondher Besbes; **Philippe Lalanne**	*Improved light extraction with nano-particles offering directional radiation diagrams*	Applied Physics Letters	2014, 104, pp. 021119
C. Loussert, K. Kushnir, E. Brasselet	*Q-plates micro-arrays for parallele processing of the photon orbital angular momentum*	Applied Physics Letters,	104(5) 2014) 051911.
O. Favrat B. Mangote I. Tovena-Pecault J. Néauport	*Study of organic contamination induced by outgassing materials. Application to the LMJ optics*	Applied Surface Science	Vol. 293, pp. 132-137
D. Rouède, P. Coumailleau, E. Schaub, J.-J. Bellanger, M. Blanchard-Desce, F. Tiaho	*Myofibrillar misalignment correlated to triad disappearance of mdx mouse gastrocnemius muscle probed by SHG microscopy,*	Biomedical Optics Express	2014, *5*, 858-875.
Antoine Godin; Brahim Lounis; Laurent Cognet	*Super-resolution microscopy approaches for live cell imaging*	Biophys. J	J., 2014
S. Kar, G. Prakash, J. Swetha, E. Freysz, A. K. Sood	*Time resolved terahertz spectroscopy of low frequency electronic resonances and optical pump-induced terahertz photoconductivity in reduced graphene oxide membrane*	Carbon	80 (2014) 762
, R. Beniazza, R. Lambert, L. Harmand, F. Molton, C. Duboc, S. Denisov, G. Jonusauskas, N. D. McClenaghan, D. Lastécouères, J.-M. Vincent	*Sunlight-Driven Copper-Catalyst Activation Applied to Photolatent Click Chemistry*	Chem. Eur. J	2014, *20,* 13181–13187. ("Hot paper")
H. D.S. Guerrand, L. D. Marciasini, M. Jousseaume, M. Vaultier, M. Pucheault	*Borylation of Unactivated Aryl Chlorides under Mild Conditions by Using Diisopropylaminoborane as a Borylating Reagent*	Chem. Eur. J	2014, 5573–5579
M. Grzybowski, V. Hugues, M. Blanchard-Desce, D. T. Gryko	*Two-photon induced fluorescence in novel π-expanded diketopyrrolopyrroles*	Chem. Eur. J	2014, accepté.
Y. Nicolas, F. Allama, M. Lepeltier, J. Massin, F. Castet, L. Ducasse, L. Hirsch, Z. Boubegtiten, G. Jonusauskas, C. Olivier, T. Toupance	*New Synthetic Routes towards Soluble and Dissymmetric Triphenodioxazine Dyes Designed for Dye-Sensitized Solar Cells*	Chem. Eur. J.	20(13) (2014) 3678-3688.
J. Croissant, D. Salles, M. Maynadier, O. Mongin, V. Hugues, M. Blanchard-Desce,* X. Cattoën, M. Wong Chi Man, A. Gallud, M. Garcia, M. Gary-Bobo,* L. Raehm, J.-O. Durand	*Mixed Periodic Mesoporous Organosilica Nanoparticles and Core-Shell Systems, Application to in Vitro Two-Photon Imaging, Therapy and Drug Delivery*	Chem. Mater	2014, *26*, 7214-7220
F. Guillaume, Y.A. Tobon, S. Bonhommeau, J.F. Létard, L. Moulet, E. Freysz	*Photoswitching of the spin crossover polymeric material $[Fe(Htrz)_2(trz)](BF_4)$ under continuous laser irradiation*	Chem. Phys. Letters	604 (2014) 105-109
A. Ould-Hamouda**,** H. Tokoro, S. Ohkoshi, E. Freysz	*Time resolved study of the photo-reversible phase transition induced in flakes of Ti_3O_5 nanoparticles at room temperature*	Chem. Phys. Letters	608 (2014) 106-112.
Liu J., Detrembleur C., Grignard B., De Pauw-Gillet M.-C., Mornet S., Tréguer-Delapierre M., Petit Y., Jérôme C. and Duguet E	*Gold nanorods with phase-changing polymer corona for remotely near-infrared-triggered drug release*	Chem.--Asian J	2014, vol. 9, n°1, p. 275-288. (FI = 3,93). DOI : 10.1002/asia.201301010
Mark J. Fernée; Philippe Tamarat; Brahim Lounis	*Spectroscopy of single nanocrystals*	Chemical Society Reviews	2014 43 (4), 1311-1337
B. Doistau, A. Tron, S.A. Denisov, G. Jonusauskas, N.D. Mc Clenaghan, G. Gontard, V. Marvaud, B. Hasenknopf, G. Vives	*Terpy-Pt-salphen)2 switchable luminescent molecular tweezers*	Chemistry - A European Journal	20 (2014) 15799
F.Castet, B.Champagne, F.Pina, V.Rodriguez	*A Multistate pH-Triggered Nonlinear Optical Switch*	ChemPhysChem	2014, DOI: 10.1002/cphc.201402190

F.Castet, M.Blanchard-Desce, F.Adamietz, Y.M.Poronik, D.T.Gryko, V.Rodriguez	*Experimental and Theoretical Investigation of the First-order-Hyperpolarizability of Octupolar Merocyanines Dyes*	ChemPhysChem	2014, DOI: 10.1002/cphc.201402083
P. Batat, C. Grauby-Heywang, S. Selektor, D. Silantyeva, V. Arslanov, N. McClenaghan, G. Jonusauskas,	*Artificial iono- and photosensitive membranes based on an amphiphilic aza-crown substituted hemicyanine*	ChemPhysChem	2014, 15, 2823–2833.
D. Aguilera; H. Ahlers; **Baptiste Battelier**; A. Bawamia; **Andrea Bertoldi**; R. Bondarescu; K. Bongs; **Philippe Bouyer**; C. Braxmaier; L. Cacciapuoti; C. Chaloner; M. ChwaVon Klitzing; R. Walser; T. Wendrich; A. Wenzlawski; P. Weßels; A. Wicht; E. Wille; M. Williams; P. Windpassinger; N. Zahzam	*STE-QUEST - Test of the Universality of Free Fall Using Cold Atom Interferometry*	Classical and Quantum Gravity	2014, 31, pp. 115010
Laurent Cognet, Brahim Lounis, Daniel Choquet	*Tracking receptors using individual fluorescent and nonfluorescent nanolabels*	Cold Spring Harbor protocols	2014, 2(207) .
Boris Raymond; Gaël Guennebaud; Pascal Barla; Romain Pacanowski; Xavier Granier	*Optimizing BRDF Orientations for the Manipulation of Anisotropic Highlights*	Computer Graphics Forum	John Wiley & Sons Ltd, 2014
P. Lozano, J. M. Bernal, A. Lajarin, D. Romera, E. Garcia-Verdugo, G. Sanchez-Gomez, M. Pucheault, M. Vaultier, M. Isabel Burguete, S. V. Luis	*A Green Approach for Producing Solvent-free Anisyl Acetate by Enzymecatalyzed Direct Esterification in Sponge-like Ionic Liquids Under Conventional and Microwave Heating*	Curr. Green Chem	2014, 145-154.
Laurent Cognet; Cécile Leduc**; Brahim Lounis**	*Advances in live-cell single-particle tracking and dynamic super-resolution imaging*	Current Opinion in Chemical Biology,	2014, 20C, pp. 78-85
E. Hugonnot "A. Mussot L. Stroïazzo A. Kudlinski"	*Experimental demonstration of a flat-gain-band dual-pump fiber optical parametric amplifier operating at 1μm with a microstructured optical fiber*	Electronics Letters	Vol. 50, No. 2, pp. 107–108
M. Blanchard-Desce	*Hyper-bright" molecular-based fluorescent nanoparticles made from polar chromophores for bioimaging purposes: a bottom-up approach*	EPA Newsletter	Juin 2014, pp.27-32.
S. William Reginald, V. Schmitt and R.A.L. Vallée,	*Scalability of transport parameters with pore sizes in isodense disordered media",*	EPL,	107, 64003(1-6), (2014) - 10.1209/0295-5075/107/64003
K. Ben Hadj Hassen, K. Gaubert, M. Vaultier, M. Pucheault, S. Antoniotti	*Comparison of homogeneous and heterogeneous Ga(III)-catalysis in the cycloisomerisation of 1,6-enynes*	Green Chemistry Letters and Reviews	2014, DOI:10.1080/17518253.2014.927534.
Calvez, D. ; Roqueta, F. ; Jacques, S. ; Bechou, L. ; Ousten, Y. ; Ducret, S.	*Crack Propagation Modeling in Silicon: A Comprehensive Thermomechanical Finite-Element Model Approach for Power Devices*	IEEE Transactions on Components Packaging and Manufacturing Technology Part B	DOI:10.1109/TCPMT.2013.2293094 P360 - 366
, S. Denisov, Y. Cudré, P. Verwilst, G. Jonusauskas, M. Marín-Suárez, J. Fernandez-Sanchez, E. Baranoff, N.D. McClenaghan,	*Direct observation of reversible electronic energy transfer involving an iridium centre*	Inorg. Chem.	2014*, 53,* 2677-2682
Guéry G., Cardinal T., Fargues A., Rodriguez V., Dussauze M., Cavagnat D., Thomas P., Cornette J., Wachtel P., Musgraves J. D. and Richardson K.	*Influence of hydroxyl group on IR transparency of tellurite-based glasses.*	Int. J. Appl. Ceram. Technol	2014, vol. 5, n°2, p. 178-184. (FI = 1,21). DOI : 10.1111/ijag.12044
G.Guery, T.Cardinal, V.Rodriguez, M.Dussauze, D.Cavagnat, A.Fargues, P.Thomas, J.Cornette, P.Wachtel, J.D.Musgraves, K.Richardson	*Influence of hydroxyl group on IR transparency of tellurite-based glasses*	International Journal of Applied glass Science	2014, DOI:10.1111/ijag.12044
G. Szaloki, G. Sevez, J. Berthet, J.-L. Pozzo, S. Delbaere	*A Simple Molecule-Based Octastate Switch*	J. Am. Chem. Soc	2014, *136*, 13510-13513.

A. De Luca, A. Iazzolino, J.B. Salmon, J. Leng, S. Ravaine, A.N. Grigorenko and G. Strangi,	*Experimental evidence of exciton-plasmon coupling in densely packed dye doped coreshell nanoparticles obtained via microfluidic technique*	J. Appl. Phys	116, 104303 (1-5), (2014) - 10.1063/1.4895061
Papon G., Marquestaut N., Petit Y., Royon A., Dussauze M., Rodriguez V., Cardinal T. and Canioni L.	*Femtosecond single-beam direct laser poling of stable and efficient second-order nonlinear optical properties in glass.*	J. Appl. Phys	2014, vol. 115, n°11, p. 113103 (8 p.). (FI = 2,18). DOI : 10.1063/1.4869058
G. Duchateau, M.D. Feit, S.G. Demos	*Transient material properties during defect-assisted laser breakdown in deuterated potassium dihydrogen phosphate crystals*	J. Appl. Phys.	1. 103506 (2014)
B. E. Peigney, O. Larroche, V. Tikhonchuk,	*Fokker Planck kinetic modeling of suprathermal α particles in a fusion plasma*	J. Comp. Phys.	416 (2014).
P. Fauché, S. Ungureanu, B. Kolaric and R.A.L. Vallée,	*Emitters as probes of a complex plasmo-photonic mode*	J. Mater. Chem. C	., 2, 10362–10368, (2014) - 10.1039/c4tc01787k
A. I. Ciuciu, D. Firmansyah, V. Hugues, M. Blanchard-Desce, D. T. Gryko, L. Flamigni	*Non-classical, donor-acceptor-donor chromophores. A strategy for high two-photon brightness*	J. Mater. Chem. C	2014, *2*, 4552-4565
Massera J., Vassallo-Breillot M., Törngren B., Glorieux B. and Hupa L.	*Effect of CeO_2 doping on thermal, optical, structural and in vitro properties of a phosphate based bioactive glass*	J. Non-Cryst. Solids	2014, vol. 402, p. 28-35. (FI = 1,71). DOI : 10.1016/j.jnoncrysol.2014.05.006
Omrani R. O., Krimi S., Videau J.-J., Khattech I., El Jazouli A. and Jemal M.	*Structural and thermochemical study of $Na_2O–ZnO–P_2O_5$ glasses.*	J. Non-Cryst. Solids	2014, vol. 390, p. 5-12. (FI = 1,71). DOI : 10.1016/j.jnoncrysol.2014.02.020
Omrani R. O., Krimi S., Videau J.-J., Khattech I., El Jazouli A. and Jemal M.	*Structural investigations and calorimetric dissolution of manganese phosphate glasses.*	J. Non-Cryst. Solids	2014, vol. 389, p. 66-71. (FI = 1,71). DOI : 10.1016/j.jnoncrysol.2014.02.006
A. Ferré, D. Staedter, F. Burgy, M. Dagan, D. Descamps, N. Dudovich, S. Petit, H. Soifer, V. Blanchet and Y. Mairesse	*High-order harmonic transient grating spectroscopy of SF_6 molecular vibrations,*	J. of Phys. B	At. Mol. Opt. Phys. **47**, 124023 (2014). (GOLF)
M. Cornet, J.Degert, E.Abraham, E. Freysz	*Terahertz Kerr effect in Gallium Phosphide crystal*	J. Opt. Soc. Am. B	31(7) (2014) 1648-1652.
F. Catoire and H. Bachau	*Study of the dynamics of He2 2+ induced by a strong IR field by means of the Resolvent technique*	J. Phys B	At. Mol. Opt. Phys. **47**, 124028 (2014).
S. Driever, K. B. Holzner, J. C. Delagnes, N. Fedorov, M. Arnold, D. Bigourd, E. Cormier, E. Constant and A. Zair	*Near infrared few cycle pulses for high harmonic generation*	J. Phys. B	04013 doi:10.1088/0953-4075/47/20/204013
O. Peyrusse, B. Deschaud, D. Rolles	*A superconfiguration approach to multi-electron ionization of Xe under strong X-ray irradiation*	J. Phys. B	011001 (2014)
West, Brandi; Sit, Alicia; Mohamed, Sabria; Joblin, Christine; Blanchet, Valerie; Bodi,Andras; Mayer, Paul	*Dissociation of the Anthracene Radical Cation: A Comparative Look at iPEPICO and Collision-Induced Dissociation Mass Spectrometry Results.*	J. Phys. Chem. A	A 118, 9870 (2014).

West, Brandi; Useli-Bacchitta, Francesca; Sabbah, Hassan; Blanchet, Valerie; Bodi, Andras; Mayer, Paul; Joblin, Christine	*Photodissociation of Pyrene Cations: Structure and Energetics From C16H10+ to C14+*	J. Phys. Chem. A	A 118, 7824 (2014).
R. Arenal, L. Henrard, L. Roiban, O. Ersen, J. Burgin, and M. Treguer-Delapierre	*Local Plasmonic Studies on Individual Core–Shell Gold–Silver and Pure Gold Nano-Bipyramids*	J. Phys. Chem. C	2014, 118, 25643–25650
Cremoux T., Dussauze M., Fargin E., Cardinal T., Talaga D., Adamietz F. and Rodriguez V.	*Trapped molecular and ionic species in poled borosilicate glasses : toward a rationalized description of thermal poling in glasses.*	J. Phys. Chem. C	2014, vol. 118, n°7, p. 3716-3723. (FI = 4,83). DOI : 10.1021/jp4101015
P. Berczynski, Yu. Kravtsov, V. Tikhonchuk,	*Gaussian beam evolution in nonlinear inhomogeneous media*	Journ. Plasma Phys.	197 (2014).
Abi Ghanem M., Dehoux T., Zouani O., Gadalla A., Durrieu M.C., Audoin B.,	*Remote opto-acoustic probing of single-cell adhesion on metallic surfaces. Journal of biophotonics*	Journal of biophotonics	Vol. 7, No. 6, pp. 453–459, 2014.
Guillet, Jean Paul; Recur, BenoËŠÄ±t; Frederique, Louis; Bousquet, Bruno; Canioni, Lionel; Manek-HÃ¶nninger, Inka; Desbarats, Pascal; Mounaix, Patrick;	*Review of Terahertz tomography techniques*	Journal of Infrared, Millimeter, and Terahertz Waves	35 4 382-411 (2014)
J. Chen, E. Lacaze, E. Brasselet, S. Harutyunyan, N. Katsonis, B. L. Feringa	*Textures of cholesteric droplets controlled by photo-switching chirality at the molecular level*	Journal of Material Chemistry C	2 (2014) 8137-8141
Patricia Hee, Randi Christensen, Yannick Ledemi, John C. Wren, **Marc Dussauze, Thierry Cardinal, Evelyne Fargin**, Scott Kroeker **and Younès Messaddeq**	*Properties and structural investigation of gallophosphate glasses by Ga-71 and P-31 nuclear magnetic resonance and vibrational spectroscopies*	Journal of Materials Chemistry	, 2, 37, p7906, 2014.
Pierre Vermeulen; Laurent Cognet; Brahim Lounis	*Photothermal microscopy: optical detection of small absorbers in scattering environments*	Journal of Microscopy	2014, 254 (3), pages 115–121
Riad Yahiaoui, Keisuke Takano, Fumiaki Miyamaru, M Hangyo, Patrick Mounaix	*Terahertz metamolecules deposited on thin flexible polymer: design, fabrication and experimental characterization*	Journal of Optics	16 9 94014 (2014)
P.A. Panchenko, A. N. Sergeeva, O.A. Fedorova, Yu.V. Fedorov, R. I. Reshetnikov, A.E. Schelkunova, M.A. Grin, A. F. Mironov, G. Jonusauskas	*Spectroscopical Study of Bacteriopurpurinimide–Naphthalimide Conjugates for Fluorescent Diagnostics and Photodynamic Therapy*	Journal of Photochemistry and Photobiology B	133 (2014) 140-144.
A. Ferré, D. Staedter, F. Burgy, M. Dagan, D. Descamps, N. Dudovich, S. Petit, H. Soifer, V. Blanchet, Y. Mairesse	*High-harmonic transient grating spectroscopy of SF_6* molecular vibrations	Journal of Physics B	124023 (2014)
D. Denis-Petit, M. Comet, T. Bonnet, F. Hannachi, F. Gobet, M. Tarisien, M. Versteegen, G. Gosselin, P. Morel, V. Méot, J.-Ch. Pain, F. Gilleron, A. Frank, V. Bagnoud, A. Blazevic, F. Dorchies, O. Peyrusse, W. Cayzac, M. Roth.	*Identification of X-ray spectra in the Na-like to O-like rubidium ions in the range 3.8-7.3 Å*	Journal of Quantitative Spectroscopy & Radiative Transfer	148 (2014) 70
Laurent Belcour, Romain Pacanowski, Marion Delahaie, Aude Laville-Geay, and Laure Eupherte	*BRDF Measurements and Analysis of Retroreflective Materials.*	Journal of the Optical Society of America	31(12):2561{2572, December 2014a.
Florian Bigourdan; Jean-Paul Hugonin; **Philippe Lalanne**	*Aperiodic-Fourier modal method for the analysis of body-of-revolution photonic structures*	Journal of the Optical Society of America A,	2014, 31, pp. 1303-1311
S. Vidal, J. Degert, M. Tondusson, E. Freysz, J. Oberlé,	*Optimized terahertz generation via optical rectification in ZnTe crystals*	Journal of the Optical Society of America B	31(1) (2014) 149-153.
A. Le Beulze, E. Duguet, S. Mornet, J. Majimel, M. Tréguer-Delapierre, S. Ravaine, I. Florea and O. Ersen	*New Insights into the Side-Face Structure, Growth Aspects, and Reactivity of Ag_n Nanoprisms*	Langmuir	, 30, 1424−1434, (2014) - 10.1021/la4039705
V. Hanus, L. Drska, E. d'Humieres, and V. Tikhonchuk	*Numerical study of positron production with short-pulse high-intensity lasers*	Laser and Particle Beams	171 (2014)
G. Geoffroy, G. Duchateau, N. Fedorov, P. Martin, S. Guizard	*Influence of electron Coulomb explosion on photoelectron spectra of dielectrics irradiated by femtosecond laser pulses*	Laser Phys	24 086101 (2014)

G. Geoffroy, G. Duchateau, N. Fedorov, P. Martin and S. Guizard	*Investigation of the Coulomb repulsion influence in electron photo-emission from dielectric materials induced by femtosecond laser pulses at moderate intensities,*	Lasers Physics	086101 doi:10.1088/1054-660X/24/8/086101
R. Kammel, R. Ackermann, J. Thomas, J. Götte, S. Skupin, A. Tünnermann, S. Nolte	*Enhancing precision in fs-laser material processing by simultaneous spatial and temporal focusing*	Light: Science & Applications	169 (2014)
J. Altet, J.L. Gonzalez, D. Gomez, X. Perpina, W. Claeys, S. Grauby, S. Dilhaire, et al.	*Electro-thermal characterization of a differential temperature sensor in a 65 nm CMOS IC: Applications to gain monitoring in RF amplifiers*	Microelectronics Journal	45(5) (2014) 484-490
Rebai, Mohamed Mehdi ; Darracq, Frédéric ; Guillet, Jean-Paul ; Elise, Bernou ; Sanchez, Kevin ; Perdu, Philippe ; Lewis, Dean	*A comprehensive study of the application of the EOP techniques on bipolar devices*	Microelectronics Reliability	54 (9-10) 2014
A. Désert, C. Hubert, A. Thill, O. Spalla, J-C. Taveau, O. Lambert, M. Lansalot, E. Bourgeat-Lami, E. Duguet and S. Ravaine	*Regioselective Coating of Tetrapod-like Clusters with Silica*	Mol. Cryst. Liq. Cryst	604, 1, 27-32, (2014) - 1080/15421406.2014.967651
F. Simoni, F. Bracalente, E. Brasselet, L. Criante, L. Lucchetti	*Electrical Tuning of Optoelastic Interaction in Nematic Colloids*	Molecular Crystals and Liquid Crystals	95(1) (2014) 21-28.
Mark J. Fernée; Chiara Sinito; Philippe Tamarat; Brahim Lounis	State selective pumping reveals spin-relaxation pathways in CdSe quantum dots	Nano Lett	2014, 14 (8), pp 4480–4485
T. M. Guardado-Alvarez, Lekshmi Sudha Devia, J.-M. Vabre, T. Pecorelli, B. J. Schwartz, J.-O. Durand, O. Mongin, M. Blanchard-Desce, J.I. Zink	*Photo-Redox Activated Drug Delivery Systems Operating under Two-Photon Excitation in the Near-IR*	Nanoscale	2014, *6*, 4652-4658
M. Muñoz Rojo, J. Martın, S. Grauby, T. Borca-Tasciuc, S. Dilhaire, M. Martin-Gonzalez	*Decrease in thermal conductivity in polymeric 1 P3HT nanowires by size-reduction induced by crystal orientation: new approaches towards 5 organic thermal transport engineering*	Nanoscale	6(14) (2014) 7858-7895.
A. Dubrouil, O. Hort, F. Catoire, D. Descamps, S. Petit, E. Mével, V. Strelkov, E. Constant	*Spatio-spectral structures in high order harmonic beams generated with Terawatt 10-fs pulses*	Nature Commun	Vol. 5, 4637, August 2014.
G. Tkachenko, E. Brasselet	*Helicity-dependent three-dimensional optical trapping of chiral microparticles*	Nature Communications	5 (2014) 4491
G. Tkachenko, E. Brasselet	*Optofluidic sorting of material chirality by chiral light*	Nature Communications	5 (2014) 3577.
D. Hakobyan, E. Brasselet	*Left-handed optical radiation torque*	Nature Photonics	8 (2014) 610-614
Daniele Nicolodi; Bérengère Argence; Wei Zhang; Rodolphe Le Targat; **Giorgio Santarelli**; Yann Le Coq	*Spectral purity transfer between optical wavelengths at the 10^{-18} level*	Nature Photonics	2014, 8 (3), pp. 219-223
A. Ferré, C. Handschin, M. Dumergue, F. Burgy, A. Comby, D. Descamps,B. Fabre, G. A. Garcia, R. Geneaux, L. Merceron, E. Mevel, L. Nahon, S. Petit, and B. Pons, D. Staedter, S. Weber, T. Ruchon, V. Blanchet, and Y. Mairesse,	*A table-top ultrashort light source in the extreme-ultraviolet for circular dichroism experiments*	Nature Photonics	doi:10.1038/nphoton.2014.314
Michael Murrell; Raphael Voituriez; Jean-François Joanny; Pierre Nassoy; Cécile Sykes; Margaret Gardel	*Liposome adhesion generates traction stress*	Nature Physics	2014, 10 (2), pp. 163-169
M. Negro, H. Ruf, B. Fabre, F. Dorchies, M. Devetta, D. Staedter, C. Vozzi, Y. Mairesse, S. Stagira.	*CO_2 exploding cluster dynamics probed by XUV fluorescence*	New Journal of Physics	16 (2014) 073004
J. Bell, I. Samb, P.Y. Toullec, O. Mongin, M. Blanchard-Desce, V. Michelet, I. Leray	*Ultra-Sensitive and Selective Hg2+ Chemosensor derived from substituted 8-Hydroxyquinoline Analogues*	New. J. Chem.	2014, *38*, 1072-1078
Q. Ducasse, B. Jurado, M. Aiche, L. Mathieu, T. Tornyi, A. Gorgen, J.N. Wilson, G. Barreau, I. Companis, S. Czajkowski, F. Giacoppo, F. Gunsing, M. Guttormsen, A.C. Larsen, M. Lebois, J. Matarranz, T. Renstrøm, S. Rose, S. Siem, I. Tsekhanovich, G.M. Tveten, T.W. Hagen, M. Wiedeking, O. Serot, G. Boutoux, P. Chau, V. Meot and O. Roig	*Neutron-induced Cross Sections of Actinides via the Surrogate-reaction Method*	NUCLEAR DATA SHEETS	233-236 (2014),

L. Mathieu, I. Companis, M. Aiche, P. Schillebeeckx, J. Heyse, G. Barreau, G. Boutoux, S. Czajkowski, F. Gunsing, B. Jurado, G. Kessedjian, A. J. M. Plompen, I. Tsekhanovitch	*Development of ionization chambers for the simultaneous measurement of the neutron induced capture and fission cross section of 233U*	NUCLEAR DATA SHEETS	368-371 (2014),
P. Norreys, D. Batani, S. Baton, F. Beg, R. Kodama, Ph. Nilson, P. Patel, F. Perez, J. J. Santos, R. Scott, V. T. Tikhonchuk, M. Wei, and J. Zhang	*Fast electron energy transport in solid density and compressed plasma*	Nuclear Fusion	1. 54 (2014) 054004 (22pp)
D. Batani, S. Baton, A. Casner, S. Depierreux, M. Hohenberger, O. Klimo, M. Koenig, C. Labaune, X. Ribeyre, C. Rousseaux, G. Schurtz, W. Theobald, V. T. Tikhonchuk	*Physical issues in shock ignition*	Nuclear Fusion	54 (2014) 054009 (29pp)
Atzeni S., Ribeyre X., Schurtz G., Schmitt A. J., Canaud C., Betti R. and Perkins L. J.,	*Shock ignition of thermonuclear fuel. Principles and modelling*	Nuclear Fusion	054008 (2014)
M. Tabak, P. Norreys, V. T. Tikhonchuk, K. A. Tanaka	*Alternative ignition schemes in inertial confinement fusion*	Nuclear Fusion	054001 (2014)
A. Jarnac, M. Durand, Y. Liu, B. Prade, A. Houard, V. Tikhonchuk, A. Mysyrowicz	*Study of laser induced plasma grating dynamics in gases,*	Opt. Comm.	**312** 35-42 (2014)
P. Gaikwad, S. Ungureanu, R. Backov, K. Vynck and R.A.L. Vallée	*Photon transport in cylindrically-shaped disordered meso-macroporous materials*	Opt. Express	22, 7, 7503-7513, (2014) - 10.1364/OE.22.007503
S. Strelkov, E. Mével and E. Constant	*Short pulse carrier-envelope phase absolute single-shot measurement by photoionization of gazes with a guided laser beam*	Opt. Express	6239 (2014).
K. Cassou, S. Daboussi, O. Hort, O. Guilbaud, D. Descamps, S. Petit, E. Mével, E. Constant, S. Kazamias	*Enhanced high harmonic generation driven by high intensity laser in argon gas-filled hollow core waveguide*	Opt. Lett.	Vol. 39, No. 13, p. 3770, July 2014
M. Cornet, J. Degert, E. Abraham, E. Freysz	*Terahertz-field-induced second harmonic generation through Pockels effect in zinc telluride crystal*	Opt. Letters	(2014) 5921
H. Zheng, R. Vallée, R.M. Almeida, T. Rivera and S. Ravaine	*Quasi-omnidirectional total light absorption in nanostructured gold surfaces*	Opt. Mater. Express	4, 6, 1236-1242, (2014) - 10.1364/OME.4.001236
Traum C., Inácio L., Félix C., Segonds P., Peña A., Debray J., Boulanger B., Petit Y., Montemezzani G., Goldner P. and Ferrier A.	*Direct measurement of the dielectric frame rotation of monoclinic crystals as a function of the wavelength.*	Opt. Mater. Express	2014, vol. 4, n°1, p. 57-62. (FI = 2,92). DOI : 10.1364/OME.4.000057
R. Catrin J. Neauport D. Taroux Ph. Cormont C. Maunier S. Lambert	*Magnetorheological finishing for removing surface and subsurface and subsurface defects of fused silica optics*	Optical Engineering	Vol. 53, n°9, 092010, pp. 1-7
Frank Ospald, Wissem Zouaghi, René Beigang, Carsten Matheis, Joachim Jonuscheit, Benoit Recur, Jean-Paul Guillet, Patrick Mounaix, Wouter Vleugels, Pablo Venegas Bosom, Laura Vega González, Ion López, Rafael Martínez Edo, Yehuda Sternberg, Marijke Vandewal	*Aeronautics composite material inspection with a terahertz time-domain spectroscopy system*	Optical Engineering	53 3 031208-031208 (2014)
Rekia Belhoucif, Matias Velázquez, Yannick Petit, Olivier Plantevin, Marcos A Couto dos Santos, Frédéric Adamietz, Vincent Rodriguez, Michel Couzi, Olivier Pérez, Oudomsack Viraphong, Philippe Veber, Dominique Denux, Rodolphe Decourt, Djamel Ouadjaout	*Anisotropy of the spectroscopic, optical and thermo-mechanical properties of Li 6 Eu 1-x Gd x (BO 3) 3 crystals optimized for heat-scintillation cryogenic bolometers*	Optical Materials Express	4 (10), 2042-2065 (2014)
A. Jolly F.S. Gokhan, R. Bello, P. Dupriez	*SBS management in Yb-fiber-amplifiers using multimode seeds and pulse-shaping*	Optics Express	Vol. 22, No. 17 | DOI:10.1364/OE.22.020326 |
Abbas A., Guillet Y., Rampnoux J.M., Rigail P., Mottay E., Audoin B., Dilhaire S	*Picosecond time resolved opto-acoustic imaging with 48 MHz frequency resolution*	Optics Express	Vol. 22, No. 7, pp. 7831--7843, DOI 10.1364/OE.22.007831, 2014.

Recur, Benoît ; Balacey, Hugo ; Bou Sleiman, Joyce ; Perraud, Jean-Baptiste ; Guillet, Jean-Paul ; Kingston, Andrew ; Mounaix, Patrick	*Ordered subsets convex algorithm for 3D terahertz transmission tomography*	Optics Express	Vol. 22, Issue 19, pp. 23299-23309 (2014) http://dx.doi.org/10.1364/OE.22.023299
J. Burgin, S. Si, M.H. Delville, J.P. Delville	*Enhancing optofluidic actuation of micro-objects by tagging with plasmonic nanoparticles*	Optics Express	22(9) (**2014)** 10139-10150.
Oleg Mitrofanov, Filip Dominec, Petr Kužel, John L Reno, Igal Brener, U Chung, Cathy Elissalde, Mario Maglione, Patrick Mounaix	*Near-field probing of Mie resonances in single TiO 2 microspheres at terahertz frequencies*	Optics express	22 19 23034-23042 (2014)
S. Haddadi; Philippe Hamel; G. Beaudoin; Isabelle Sagnes; Christophe Sauvan; **Philippe Lalanne**; Juan Ariel Levenson; Alejandro Yacomotti	*Photonic crystal molecules: tailoring the coupling strength and sign*	Optics Express	2014, 22, pp. 12359
Bin Yang; Frédéric Przybilla; Michael Mestre; Jean-Baptiste Trebbia; Brahim Lounis	*Large parallelization of STED nanoscopy using optical lattices*	Optics Express,	2014, 22 (5), pp. 5581-5589
R. Diaz M. Chambonneau R. Courchinoux P. Grua J. Luce J.-L. Rullier L. Lamaignère J.-Y. Natoli	*Influence of longitudinal mode beating on laser induced damage in fused silica*	Optics Letters	Vol. 39, No. 3, pp. 674-677
P. Calvet E. Hugonnot "C. Valentin P. Gouriou Y. Quiquempois G. Bouwmans L. Bigot Q.Coulombier M. Douay K. Delplace A. Mussot"	*Top-Hat beam output with 100 µJ temporally-shaped narrow-bandwidth nanosecond pulses from a linearly polarized all-fiber system*	Optics Letters	Vol. 39, No. 16, pp. 4780-4783
P. Beaure d'Augerès J. Dubertrand E. Hugonnot "D. Bigourd A. Mussot"	*Ultra-broad band fiber optical parametric amplifier pumped by chirped pulses*	Optics Letters	Vol. 39, No. 13, pp. 3782-3785
Vangheluwe, Marie; Liang, Feng; Petit, Yannick; HÃ©e, Patricia; Ledemi, Yannick; Thomas, SÃ©bastien; Fargin, Evelyne; Cardinal, Thierry; Messaddeq, YounÃ¨s; Canioni, Lionel;	*Enhancement of nanograting formation assisted by silver ions in a sodium gallophosphate glass*	Optics letters	39 19 5491-5494 (2014)
Cattoor, Romain; Manek-Honninger, Inka; Rytz, Daniel; Canioni, Lionel; Eichhorn, Marc;	*Laser action along and near the optic axis of a holmium-doped KY (WO 4) 2 crystal*	Optics letters	39 22 6407-6410 (2014)
Philippe Réfrégier; Valentine Wasik; **Kevin Vynck**; Rémi Carminati	*Analysis of coherence properties of partially polarized light in 3D and application to disordered media*	Optics Letters	2014, 39, pp. 2362-2365
Wei Zhang; Signe Seidelin; Joshi Abhay; Shubo Datta; **Giorgio Santarelli**; Yann Le Coq	*Dual photo-detector system for low phase noise microwave generation with femtosecond lasers*	Optics Letters	2014, 39, pp. 1204-1207
Sevillano P., Georges, P., Druon F., Descamps D. and Cormier.E	*32-fs Kerr-lens mode-locked Yb:CaGdAlO4 oscillator optically pumped by a bright fiber laser*	Optics letters	39, 6001 (2014)
A.Tron, P.Thornton, M.Rocher, H.-P.Jacquot de Rouville, J.-P. Desvergne, B. Kauffmann, T. Buffeteau, D. Cavagnat, J.H.R. Tucker, N.D. McClenaghan	*Formation of a hydrogen-bonded barbiturate [2]-rotaxane*	Org. Lett	2014*, 16,* 1358-1361.
F. Catoire, R. E. F. Silva, P. Rivière, H. Bachau and F. Martin	*Molecular resolvent-operator method : Electronic and nuclear dynamics in strong-field ionization*	Phys. Rev A	A **89**, 023415 (2014).
A.S. Simonsen, H. Bachau and M. Forre	*Laser-induced breakup of helium $^3S\ 1_s2_s$ with intermediate doubly exited states*	Phys. Rev. A	021405(R) (2014).
V. Parthasarathy, R. Pandey, F. Terenziani, P. K. Das, M. Blanchard-Desce	*Combined Transparency and Optical Nonlinearity Enhancement in Flexible Covalent Multimers by Operating Through-Space Interactions Between Dipolar Chromophores*	Phys. Chem. Chem. Phys	**2014**, *16*, 9096-9103
Mark J. Fernée, Chiara Sinito, Paul Mulvaney**, Philippe Tamarat and Brahim Lounis**	*The optical phonon spectrum of CdSe colloidal quantum dots*	Phys. Chem. Chem. Phys	2014,16, 16957-16961
L. Volpe, J-L. Feugeas, Ph. Nicolai, J.J. Santos, M. Touati, J. Breil, D. Batani and V. Tikhonchuk	*Controlling the fast electron divergence in a solid target with multiple laser pulses*	Phys. Plasmas	063108 (2014).
Ph. Korneev, E. d'Humières, V. Tikhonchuk	*Collisionless plasma interpenetration in a strong magnetic field for laboratory astrophysics experiments,*	Phys. Plasmas	022117 (2014)
B. E. Peigney, O. Larroche, V. Tikhonchuk	*Ion kinetic effects on the ignition and burn of ICF targets: a multi-scale approach*	Phys. Plasmas	122709 (2014).

S.N. Chen, A.P.L. Robinson, P. Antici, E. Brambrink, E. d'Humières, S. Gaillard, A. Mancic, T. Grismayer, P. Mora, L. Romagnani, P. Audebert, H. Pépin, J. Fuchs	*Passive tailoring of laser-accelerated ion beam cut-off energy by using double foil assembly*	Phys. Plasmas	1. 023119 (2014)
A.Casner, L. Masse, B. Delorme, D. Martinez, G. Hüser, D. Galmiche, S. Liberatore, I. Igumenshchev, M. Olazabal-Loumé, Ph. Nicolaï, J. Breil, D.T. Michel, D. Froula, W. Seka, G. Riazuelo, S. Fujioka, A. Sunahara, M. Grech, C. Chicanne, M. Theobald, N. Borisenko, A. Orekhov, V. T. Tikhonchuk, B. Remington, V.N. Goncharov, and V.A. Smalyuk,	*Progress in indirect and direct-drive planar experiments on hydrodynamic instabilities at the ablation front,*	Phys. Plasmas	122702 (2014).
M. Gauthier, A. Lévy, A. E. d'Humieres, M. Glesser, B. Albertazzi, C. Beaucourt, J. Breil, S. N. Chen, V. Dervieux, J.-L. Feugeas, Ph. Nicolaï, V. Tikhonchuk, H. Pépin, P. Antici, J. Fuchs	*Investigation of longitudinal proton acceleration in exploded targets irradiated by intense sort-pulse laser*	Phys. Plasmas	013102 (2014)
O. M. Fedotova, G. Rustsky, O. K. Khasanov, J. Degert, E. Freysz	*Nonlinear propagation of terahertz pulses in ammonia vapor*	Phys. Rev. A	90 (2014) 053843
J. Rolle, L. Bergé, G. Duchateau and S. Skupin	*Filamentation of ultrashort laser pulses in silica glass and KDP crystals: A comparative study*	Phys. Rev. A	023834 (2014)
A.S. Simonsen, H. Bachau and M. Forre	*Two-photon double ionization of metastable $^{1,3}S$ 1s2s helium*	Phys. Rev. A	**89**, 043427 (2014).
T. Vanderbruggen, R. Kohlhaas, **A. Bertoldi**, E. Cantin, A. Landragin and **P. Bouyer**,	*Feedback control of coherent spin states using weak nondestructive measurements,*	Phys. Rev. A	89, 063619 (2014)
S. Kar, D. R. Mohapatra, G. Prakash, E. Freysz, A. K. Sood	*Tuning the sign of photoinduced terahertz conductivity in monolayer graphene: optical pump terahertz probe spectroscopy*	Phys. Rev. B	90 (2014) 165420
H. Jouin, M. Raynaud, G. Duchateau, G. Geoffroy, A. Sadou, and P. Martin	*A quantuum – classical model for the surface plasmon enhanced photoemission process at metal surfaces*	Phys. Rev. B	**89**, 195136 (2014). (FUSION)
H. Jouin, M. Raynaud, G. Duchateau, G. Geoffroy, A. Sadou, P. Martin	*Quantum-classical model for the surface plasmon enhanced photoemission process at metal surfaces*	Phys. Rev. B	1. 195136 (2014)
L. Volpe, J-L. Feugeas, Ph. Nicolai, J.J. Santos, M. Touati, J. Breil, D. Batani and V. Tikhonchuk	*Controlling the fast electron divergence in a solid target with multiple laser pulses*	Phys. Rev. E	90, 063108 – Published 9 December 2014
Abutrab A. Aliverdiev, Dimitri Batani, Luca Antonelli, Katarzyna Jakubowska, Riccardo Dezulian, Anise A. Amirova, Gaji M. Gajiev, Manoranjan Khan, and Hem C. Pant	*Use of multilayer targets for achieving off-Hugoniot states*	Phys. Rev. E	89, 053101 (2014)
Ph. Nicolaï, JL. Feugeas, M. Touati, X. Ribeyre, S. Gus'kov, V. Tikhonchuk	*Deleterious effects of nonthermal electrons in shock ignition concept,*	Phys. Rev. E	033107 (2014)
J.-L. Dubois, F. Lubrano-Lavaderci, D. Raffestin, J. Ribolzi, J. Gazave, A. Compant La Fontaine, E. d'Humières, S. Hulin, Ph. Nicolaï, A. Poyé, and V. T. Tikhonchuk	*Target charging in short-pulse-laser–plasma experiments*	Phys. Rev. E	013102 (2014)
A. Colaïtis, G. Duchateau, Ph. Nicolaï, V. Tikhonchuk	*Towards modeling of nonlinear laser-plasma interactions with hydrocodes: the thick rays approach*	Phys. Rev. E	033101 (2014)**:**
H. Bachau, M. Dondera et V. Florescu	*Stimulated Compton Scattering in two-color Ionization of Hydrogen with keV Electromagnetic Fields*	Phys. Rev. Lett	**112**,073001 (2014).
Y Maheut, L Antonelli, S Atzeni, J Badziak, F Baffigi, D Batani, C Cecchetti, T Chodukowski, F Consoli, G Cristoforetti, R De Angelis, G Folpini, L A Gizzi, Z Kalinowska, M Kucharik, P Köster, E Krousky, L Labate, T Levato, R Liska, G Malka, A Marocchino, P Nicolaï, T O'Dell, P Parys, T Pisarczyk, P Rączka, O Renner, Y J Rhee, X Ribeyre, M Richetta, M Rosinski, L Ryć, J Skala, A Schiavi, G Schurtz, M Smid, C Spindloe, J Ullschmied, J Wolowski, A Zaraś,	*Experiment on laser interaction with a planar target for conditions relevant to shock ignition*	Phys. Scr. **T161**	014017 (2014)

A. Benuzzi-Mounaix, S. Mazevet, A. Ravasio, T. Vinci, A. Denoeud, M. Koenig, N. Amadou, E. Brambrink, F. Festa, A. Levy, M. Harmand, S. Brygoo, G. Huser, V. Recoules, J. Bouchet, G. Morard, F. Guyot, T. de Resseguier, K. Myanishi, N. Ozaki, F. Dorchies, J. Gaudin, P. M. Leguay, O. Peyrusse, O. Henry, D. Raffestin, S. Le Pape, R. Smith, R. Musella	*Progress in warm dense matter study with applications to planetology*	Phys. Scripta	014060 (2014)
S. Paleari, D. Batani, R. Benocci, K. Shigemori, Y. Hironaka, T. Kadono, A. Shiroshita, and A. Aliverdiev	*About carbon reflectivity in the mbar regime*	Physica Scripta	T161 (2014) 014018 (4pp)
D Batani, M Koenig, J L Miquel, J E Ducret, E d'Humieres, S Hulin, J Caron, J L Feugeas, Ph Nicolai, V Tikhonchuk, …	*Development of the PETawatt Aquitaine Laser system and new perspectives in physics*	Physica Scripta	T159 (2014) (7pp)
D. Batani, M.Koenig, J.L. Miquel, J.E. Ducret, E. d'Humieres, S. Hulin, J. Caron, J.L. Feugeas, Ph. Nicolai, V. Tikhonchuk, …	*Development of the PETAL laser system and new perspectives in physics*	Physica Scripta	014016 (2014).
K. Jakubowska, M. Kubkowska, et al.	*A spectroscopic study of laser ablation plasma from Mo target",*	Physica Scripta	**T161**, 014029 (2014)
Y. Maheut, L. Antonelli, S. Atzeni, J. Badziak, F. Baffigi, D. Batani, C. Cecchetti, T.Chodukowski, F. Consoli, G. Cristoforetti, R. De Angelis, G. Folpini, L.A. Gizzi, Z. Kalinowska, M. Kucharik, P. Köster, E. Krousky, L. Labate, T. Levato, R. Liska, G. Malka, A. Marocchino, P. Nicolaï, T. O'Dell, P. Parys, T. Pisarczyk, P. Rączka, O. Renner, Y. J. Rhee, X.Ribeyre, M. Richetta, M. Rosinski, L. Ryć, J. Skala, A. Schiavi, G. Schurtz, M. Smid, C. Spindloe, J. Ullschmied, J. Wolowski, A. Zaraś	*Results of PALS experiment on laser-plasma interaction for planar target at conditions relevant to Shock Ignition*	Physica Scripta,	T161 (2014) 014017 (4pp)
D. Staedter, N. Thire, E. Baynard, P. C. Samartzis, and V. Blanchet	*268 nm photodissociation of ClN3: a femtosecond velocity-map imaging study*	Physical Chemistry Chemical Physics	**16**, 540 (2014).
A. Bourgeade G. Duchateau	*Influence of the time-dependent pulse spectrum on ionization and laser propagation in nonlinear optical materials*	Physical Review A	Vol. 89, No. 5, 053837, pp. 1-8
Christophe Sauvan; Jean-Paul Hugonin; Rémi Carminati; **Philippe Lalanne**	*Modal representation of spatial coherence in dissipative and resonant photonic systems*	Physical Review A	, 2014, 89, pp. 043825
C. Fourment, F. Deneuville, D. Descamps, F. Dorchies, S. Petit, O. Peyrusse, B. Holst, V. Recoules.	*Experimental determination of temperature-dependent electron-electron collision frequency in isochorically heated warm dense gold*	Physical Review B	89 (2014) 161110(R)
M. Belli, M. Fanciulli, D. Batani	*Electron spin resonance of substitutional nitrogen in silicon*	PHYSICAL REVIEW B 89	115207 (2014)
Plaisir C., Gobet F., Hannachi F., Tarisien M., Versteegen M. (20 auteurs)	*In Flight Fast-timing Measurement in ^{152}Sm*	Physical Review C	89, 021302(R) (2014)
J. L. Rodriguez-Sanchez, J. Benlliure, J. Taieb, A. Chatillon, C. Paradela, Y. Ayyad, G. Belier, G. Boutoux, E. Casarejos, T. Gorbinet, B. Laurent, J.-F. Martin, E. Pellereau, H.Alvarez-Pol, L. Audouin, D. Cortina-Gil, A. Heinz, A. Kelic-Heil, B. Pietras, D. Ramos, C. Rodriguez-Tajes, D. Rossi, H. Simon, L. Tassan-Got, J. Vargas, and B. Voss	*Proton-induced fission cross sections on 208Pb at high kinetic energies*	PHYSICAL REVIEW C 90	C 90, 064606 (2014),
Olga Lozan; Mathias Perrin; Buntha Ea-Kim; Jean-Michel Rampnoux; Stefan Dilhaire; **Philippe Lalanne**	*Anomalous light absorption around tiny apertures in metal films*	Physical Review Letters	2014, 112, pp. 193903
P. Béjot, G. Karras, F. Billard, E. Hertz, B. Lavorel, E. Cormier, O. Faucher	*Harmonic generation and nonlinear propagation : when secondary radiations have primary consequences*	Physical Review Letters **112**	203902 (2014)
A. Denoeud, A. Benuzzi-Mounaix, A. Ravasio, F. Dorchies, P. M. Leguay, J. Gaudin, F. Guyot, E. Brambrink, M. Koenig, S. Le Pape, S. Mazevet.	*Metallization of warm dense SiO2 studied by XANES spectroscopy*	Physical Review Letters 113	113 (2014) 116404
2. T. Pisarczyk, S. Yu. Guskov, Z. Kalinowska, J. Badziak, D. Batani, L. Antonelli, G. Folpini, Y. Maheut, F. Baffigi, S. Borodziuk, T. Chodukowski, G. Cristoforetti, N.N. Demchenko, L. A. Gizzi, A. Kasperczuk, P. Koester, E. Krousky, L. Labate, P. Parys, M. Pfeifer, O. Renner, M. Smid, M. Rosinski, J. Skala, R. Dudzak, and J.Ullschmied, P. Pisarczyk	*Pre-plasma effect on energy transfer from laser beam to shock wave generated in solid target*	Physics of Plasmas	1. 21, 012708 (2014)

D. Batani, L. Antonelli, S. Atzeni, J. Badziak, F. Baffigi, T. Chodukowski, F. Consoli, G. Cristoforetti, R. de Angelis, R. Dudzak, G. Folpini, L. Giuffrida, L.A. Gizzi, Z. Kalinowska, P. Koester, E. Krousky, M. Krus, L. Labate, T. Levato, Y. Maheut, G. Malka, D. Margarone, A. Marocchino, J. Nejdl, Ph. Nicolai, T. O'Dell, T. Pisarczyk, O. Renner, Y.J. Rhee, X. Ribeyre, M. Richetta, M. Rosinski, M. Sawicka, A. Schiavi, J. Skala, M. Smid, Ch. Spindloe, J. Ullschmied, A. Velyhan, T.Vinci	*Generation of High Pressure Shocks relevant to the Shock-Ignition Intensity Regime*	Physics of Plasmas	21, 032710 (2014)
B. Vauzour, A. Debayle, X. Vaisseau, S. Hulin, H.-P. Schlenvoigt, D. Batani, S.D. Baton, J.J. Honrubia, Ph. Nicolaı, F.N. Beg, R. Benocci, S. Chawla, M. Coury, F. Dorchies, C. Fourment, E. d'Humi`eres, L.C. Jarrot, P. McKenna, Y.J. Rhee, V.T. Tikhonchuk,1 L. Volpe, V. Yahia, and J.J. Santos	*Unraveling resistive versus collisional contributions to relativistic electron beam stopping power in cold-solid and in warm-dense plasmas*	Physics of Plasmas	21, 033101 (2014)
A. Morace, L. Fedeli, D. Batani, S. Baton, F. N. Beg, S. Hulin, L. C. Jarrott, A. Margarit, M. Nakai, M. Nakatsutsumi, P. Nicolai, N. Piovella, M. S. Wei, X. Vaisseau, L. Volpe, and J. J. Santos	*Development of x-ray radiography for high energy density physics*	Physics of Plasmas	21, 102712 (2014)
A. Lar'kin, D. Uryupina, K. Ivanov, A. Savel'ev, T. Bonnet, F. Gobet, F. Hannachi, M. Tarisien, M. Versteegen, K. Spohr, J. Breil, B. Chimier, F. Dorchies, C. Fourment, P. M. Leguay, V. Tikhonchuk.	*Microjet formation and hard x-ray production from a liquid metal target irradiated by intense femtosecond laser pulses*	Physics of Plasmas	(2014) 093103
Gadalla A., Dehoux T., Audoin B	*Transverse mechanical properties of cell walls of single living plant cells probed by laser-generated acoustic waves*	Planta	Vol. 239, 2014.
O. Klimo, J. Psikal, V. Tikhonchuk, S. Weber	*Two-dimensional simulations of laser-plasma interaction and hot electron generation in the context of shock-ignition research*	Plasma Phys. Control. Fusion	055010 (2014)
T. Bladé, L. Malosse, E. Duguet, M. Lansalot, E. Bourgeat-Lami and S. Ravaine,	*Synthesis of nanoscaled poly(styrene-co-n-butylacrylate)/silica particles with dumbbell- and snowman-like morphologies by emulsion polymerization",*	Polym. Chem.,,	5, 5609–5616, (2014) - 10.1039/c4py00370e
Y.-F. Chen, G.V. Dubacheva, K.-P. Tseng, G. Raffy, A. Del Guerzo, L. Hirsch, J.-J. Shyue, K.-T. Wong, D.M. Bassani	*Supramolecular control of electronic properties in aromatic materials*	Pure. Appl. Chem.	2014*, 86*, 471-481.
B. M. Mirdan, L. Antonelli, D. Batani, R. Jafer, K. Jakubowska*, et al.*	*Influence of consecutive picosecond pulses at 532 nm wavelength on laser ablation of human teeth*	Radiation Effects and Defects in Solids: Incorporating Plasma Science and Plasma Technology	**169(7)**, 610 (2014)
A.E. Shumack, J. Rzadkiewicz, M. Chernyshova, K. Jakubowska, et al.,	*X-Ray crystal spectrometer upgrade for ITER-like wall experiments at JET*	Rev. Sci. Instrum	**85(11)**, 11E425 (2014)
Isabelle Thfoin, Charles Reverdin, Sébastien Hulin, Csilla Szabo, Serena Bastiani-Ceccotti, Dimitri Batani, Erik Brambrink, Michel Koenig, Alain Duval, Xavier Leboeuf, Ludovic Lecherbourg, Bertrand Rossé, Alessio Morace, Joao Santos, Xavier Vaisseau, Claude Fourment, Lorenzo Giuffrida, and Motoaki Nakatsutsumi	*Monte-Carlo simulation of noise in hard X-ray spectrometers TCS/LCS/SPECTIX: Identification of contributors to the background noise and shielding optimization*	Review of Scientific Instruments	85(11) (2014)
C. Pradere, J.P. Caumes, S. BenKhemis, G. Pernot, E. Palomo, S. Dilhaire, J.C. Bastale	*Thermoreflectance temperature measurement with millimeter wave*	Review of Scientific Instruments	85(6) (2014) 064904
Tomoda M., Dehoux T., Iwasaki Y., Matsuda O., Gusev V., Wright O.B	*Nanoscale mechanical contacts mapped by ultrashort time-scale electron transport*	Scientific Reports	Vol. 4, 2014
J. Gaudin, C. Fourment, B. I. Cho, K. Engelhorn, E. Galtier, M. Harmand, P. M. Leguay, H. J. Lee, B. Nagler,M. Nakatsutsumi, C. Ozkan, M. Störmer, S. Toleikis, T. Tschentscher, P. A. Heimann, F. Dorchies.	*Towards simultaneous measurements of electronic and structural properties in ultra-fast x-ray free electron laser absorption spectroscopy experiments*	Scientific Reports	4 (2014) 4724
, G.V. Dubacheva, M. Devynck, G. Raffy, L. Hirsch, A. Del Guerzo, D.M. Bassani	*Probing lateral charge transport in single molecule layers. How charge is transported over long distances in fullerene self-assembled monolayers*	Small	2014*, 10*, 454-461.

J. Croissant, A. Chaix, O. Mongin, M. Wang, S. Clément, L. Raehm, J.-O. Durand, V. Hugues, M. Blanchard-Desce, M. Maynadier, A. Gallud, M. Gary-Bobo, M. Garcia, J. Lu, F. Tamanoi, D. P. Ferris, D. Tarn, J. I. Zink	*Two-Photon-Triggered Drug Delivery via Fluorescent Nanovalves,*	Small	2014, *10*, 1752–1755
, Pal Jovari, Shuo Cui, Virginie Nazabal, Ivan Kaban, Brigitte Beuneu, Marc Dussauze, Catherine Boussard-Pledel, and Bruno Bureau, J. Am. Ceram	*Network Rearrangement in AgI-Doped GeTe4 Glasses*	Soc.	1–6 (2014).
Zouani O., Dehoux T., Durrieu M.C., Audoin B	*Universality of the network-dynamics of the cell nucleus at high frequencies*	Soft Matter	Vol. 10, pp. 8737–8743, 2014.
C.M. Leroy, C. Olivier, T. Toupance, M. Abbas, L. Hirsch, S. Ravaine and R. Backov,	*One-pot easily-processed TiO2 macroporous photoanodes (Ti-HIPE) for dye-sensitized solar cells*	Solid State Sci.	, 28, 81-89, (2014) - 10.1016/j.solidstatesciences.2013.12.004
El Haddad, Josette; BruyÃ¨re, Delphine; IsmaÃ«l, Amina; Gallou, G; Laperche, ValÃ©rie; Michel, Karine; Canioni, Lionel; Bousquet, Bruno;	*Application of a series of artificial neural networks to on-site quantitative analysis of lead into real soil samples by laser induced breakdown spectroscopy*	Spectrochimica Acta Part B: Atomic Spectroscopy	97 57-64 (2014)
El Haddad, Josette; Canioni, Lionel; Bousquet, Bruno;	*Good practices in LIBS analysis: Review and advices*	Spectrochimica Acta Part B: Atomic Spectroscopy	101 171-182 (2014)
R Saad, D L'Hermite, B Bousquet	*Unexpected temporal evolution of atomic spectral lines of aluminum in a laser induced breakdown spectroscopy experiment*	Spectrochimica Acta Part B: Atomic Spectroscopy 101	330-334 (2014)
J. L. Wood, L. D. Marciasini, M. Vaultier, M. Pucheault	*Iron catalysis and water, a synergy for refunctionalisation of boron*	Synlett	2014, *25*, 551-555.
K. Amro, J. Daniel, G. Clermont, T. Bsaibess, M. Pucheault, E. Genin, M. Vaultier, M. Blanchard-Desce	*A new route towards fluorescent organic nanoparticles with red-shifted emission and increased colloidal stability*	Tetrahedron	2014, *70*, 1903-1909.
D.S. Guerrand, L. D. Marciasini, T. Gendrineau, O. Pascu, S. Marre, S. Pinet, M. Vaultier, C. Aymonier, M. Pucheault	*Sequential dehydrogenation-arylation of diisopropylamine-borane complex catalyzed by Palladium nanoparticules*	Tetrahedron	2014, 6156-6161
L. D. Marciasini, M. Vaultier, M. Pucheault,	*Borylation using group IV metallocene under mild conditions*	Tetrahedron Lett	2014, 1702–1705
W. Brandi, C. Joblin, V. Blanchet, A. Bodi, B. Sztaray, C. Mayer	*The dynamics of hydrogen and methyl radical loss from ionized dihydro-polycyclic aromatic hydrocarbons: a tandem mass spectrometry and imaging-PEPICO study of dihydronaphthalene and dihydrophenanthrene*	The J. of Phys. Chem. A	**118** (10), 1807 (2014).
S.Najjar, D.Talaga, L.Schué, Y.Coffinier, S.Szunerits, R.Boukherroub, L.Servant, V.Rodriguez, S.Bonhommeau,	*Tip-enhanced Raman spectroscopy of combed double-stranded DNA bundles*	The Journal of Physical Chemistry C	2014, *118*, 1174-1181.
J.-L.Miquel, D.Batani N.Blanchot	*Overview of the Laser Mega Joule (LMJ) facility and PETAL project in France*	The review of laser engineering	42(2), 131-136, 2014-02
., Abi Ghanem M., Zouani O., Ducousso M., Chigarev N., Rossignol C., Tsapis N., Durrieu M.C., Audoin B	*Probing single-cell mechanics with picosecond ultrasonics*	Ultrasonics	doi:10.1016/j.ultras.2014.07.010

RICL 2015 *(on Nov.2015)*

Autors	*Title*	Journal	References
Cédric Mongin, Isabelle Pianet, Gediminas Jonusauskas, Dario M. Bassani, Brigitte Bibal	*Supramolecular Photocatalyst for the Reduction of Au(III) to Au(I) and High-Turnover Generation of Gold Nanocrystals*	ACS Catalysis	2015, 5 (1), pp.380-387
J. Daniel, F. Bondu, F. Adamietz, M. Blanchard-Desce, V. Rodriguez	*Interfacial Organization in Dipolar Dye-Based Organic Nanoparticles Probed by Second-Harmonic Scattering*	ACS Photonics	2015, *2 (8)*, 1209-1216.
Faggiani, Remi; Yang, Jianji; Lalanne, Philippe	*Quenching, Plasmonic, and Radiative Decays in Nanogap Emitting Devices*	ACS PHOTONICS	10.1021/acsphotonics.5b00424
H. Zheng, R.M. Almeida, T. Rivera and S. Ravaine	*Fabrication of broadband omnidirectional non-reflective gold surfaces by electrodeposition*	Adv. Device Mater., 1, 1, 11-16, (2015)	10.1179/2055031614Y.0000000003
A. Karajić, S. Reculusa, M. Heim, P. Garrigue, S. Ravaine, N. Mano and A. Kuhn	*Bottom-up Generation of Miniaturized Coaxial Double Electrodes with Tunable Porosity*	Adv. Mater. Interfaces	10.1002/admi.201500192
S Danto, F Désévédavy, Y Petit, JC Desmoulin, A Abou Khalil et al.	*Photowritable Silver-Containing Phosphate Glass Ribbon Fibers*	Advanced Optical Materials	(2015) – DOI: 10.1002/adom.201500459
H. D. S.Guerrand, M.Vaultier, S. Pinet,M. Pucheault	*Amine-Borane Complexes: Air- and Moisture-Stable Partners for Palladium-Catalyzed Borylation of Aryl Bromides and Chlorides*	Advanced Synthesis & Catalysis	2015, 357, 1167-1174
Altschul, Brett; Bailey, Quentin G.; Blanchet, Luc; Bongs, Kai; Bouyer, Philippe; Cacciapuoti, Luigi; Capozziello, Salvatore; …	*Quantum tests of the Einstein Equivalence Principle with the STE-QUEST space mission*	ADVANCES IN SPACE RESEARCH	
O. Vaillant, K. El Cheikh, D. Warther, D. Brevet, M. Maynadier, E. Bouffard, F. Salgues, A. Jeanjean, P. Puche, C. Mazerolles, P. Maillard, O. Mongin, M. Blanchard-Desce, L. Raehm, X. Rebillard, J.-O. Durand, M. Gary-Bobo, A. Morère, M. Garcia, *Angew.*	*Mannose 6-phosphate receptor as new target for theranostic of prostate cancer*	Angew Chem Int Ed Engl.	2015, 54, 5952-5956.
Manon Isaac, Sergey A. Denisov, Amandine Roux, Daniel Imbert, Gediminas Jonusauskas, Nathan Mcclenaghan, Olivier Séneque	*Lanthanide Luminescence Modulation by Cation-pi Interaction in a Bioinspired Scaffold: Selective Detection of Copper(I)*	Angewandte Chemie (English Edition)	2015, 54 (39), pp.11453-11456
L.N. Truong, M. Dussauze, E. Fargin, L. Santos, H. Vigouroux, A. Fargues, F. Adamietz, V. Rodriguez	*Isotropic octupolar second harmonic generation response in LaBGeO5 glass-ceramic with spherulitic precipitation*	Appl. Phys. Lett.,	2015, 106(16), 161901
Dematteo-Caulier, O., Mishchik, K., Chimier, B., Skupin, S., Bourgeade, A., Javaux-Leger, C., Kling, R., Hönninger, C., Lopez, J., Tikhonchuk, V. and Duchateau, G.	*Femtosecond laser pulse train interaction with dielectric materials*	Appl. Phys. Lett.,	Vol. 107, 181110 (2015)
JP Guillet, B Recur, H Balacey, J Bou Sleiman, F Darracq, D Lewis, P Mounaix	*Low-frequency noise effect on terahertz tomography using thermal detectors*	Applied optics	
Chambonneau, M., M. Chanal, S. Reyné, G. Duchateau, J.-Y. Natoli and L. Lamaignère (2015).	*Investigations on laser damage growth in fused silica with simultaneous wavelenght irradiation*	Applied Optics	54, No 6: 1463 - 1470.
Reyné, S., G. Duchateau, L. Hallo, J. Y. Natoli and L. Lamaignère (2015).	*Multi-wavelength study of nanosecond laser-induced bulk damage morphology in KDP crystals*	Applied Physics A	119: 1317-1326.
A. Jolly, F. S. Gokhan, J.-C. Jolly, S. Hocquet & B. Chassagne	*Combination of silicon phase masks with time-domain spectroscopy for single-scan terahertz imaging*	Applied Physics B	ISSN 0946-2171, Appl. Phys. B DOI 10.1007/s00340-015-6153-6
Cattoor R., Manek-Honninger I., Petit Y., Rytz D., Canioni L., Eichhorn M.	*Orientation and polarization dependence of both the absorption and the laser efficiency around the optic axis in monoclinic Ho3+ :KYW.*	Applied Physics B: Lasers and Optics	2015, vol. 120, n° 3, p. 451-459. DOI : 10.1007/s00340-015-6154-5

Stepanov, Petr; Delga, Adrien; Zang, Xiaorun; Bleuse, Joel; Dupuy, Emmanuel; Peinke, Emanuel; Lalanne, Philippe; Gerard, Jean-Michel; Claudon, Julien	*Quantum dot spontaneous emission control in a ridge waveguide*	APPLIED PHYSICS LETTERS	10.1063/1.4906921
Aquila, A., R. Sobierajski, C. Ozkan, V. Hajkova, T. Burian, J. Chalupsky, L. Juha, M. Störmer, S. Bajt, M. T. Klepka, P. Dhuzewski, K. Morawiec, H. Ohashi, T. Koyama, K. Tono,Y. Inubushi, M. Yabashi, H. Sinn, T. Tsschentscher, A. P. Mancuso, and J. Gaudin.	*Fluence thresholds for grazing incidence hard x-ray mirrors*	Applied Physics Letters	106: 241905.
Joyce Bou Sleiman, Bruno Bousquet, Norbert Palkac, Patrick Mounaix	*Quantitative Analysis of Hexahydro-1,3,5-trinitro-1,3,5, Triazine/Pentaerythritol Tetranitrate (RDX–PETN) Mixtures by Terahertz Time Domain Spectroscopy*	Applied spectroscopy	69 (12), 1464-1471
N. Darbois J. Néauport P. Blaineau D. André R. Laheurte P. Darnis O. Cahuc	*Subsurface mechanical damage during bound abrasive grinding of fused silica*	Applied Surface Science	Vol. 353, pp. 764-773, 10/2015
Van Son Nguyen, Véronique Jubera, Alain Garcia, Hélène Debéda	*Toward hydrogen detection at room temperature with printed ZnO nanoceramics films activated with halogen lighting*	Applied Surface Science	Vol Part A 357 pp 14–21
A. Tron, M. Rocher, P.J. Thornton, J.H.R. Tucker, N. D. McClenaghan	*Supramolecular architectures incorporating hydrogen-bonding barbiturate receptors*	Asian J. Org. Chem.	2015, 4, 192–202. (Special issue: Molecular Devices and Machines. "Featured article").
Murrell, Michael P.; Voituriez, Raphael; Joanny, Jean-Francois; Nassoy, Pierre; Sykes, Cecile; Gardel, Margaret	*Liposome Adhesion Generates Contractile Traction Stresses*	BIOPHYSICAL JOURNAL	
Massera J., Petit L., Koponen J., Glorieux B., Hupa L., Hupa M.	*Er3+-Al2O3 nanoparticles doping of borosilicate glass.*	Bulletin of Materials Science	2015, vol. 38, n° 5, p. 1407-1410.
Fujimoto H., Tressaud A.	*Long-term stability of fluorine–graphite intercalation compound prepared under high pressure of fluorine.*	Carbon	(New York, N. Y.) 2015, vol. 82, p. 176-183. DOI : 10.1016/j.carbon.2014.10.060
K. A. Korzycka, P. M. Bennett, E. Cueto-Diaz, G. Wicks, M. Drobizhev, M. Blanchard-Desce, A. Rebane, H. L. Anderson	*Two-photon sensitive protecting groups operating via intramolecular electron transfer: uncaging of GABA and tryptophan*	Chem Sci	2015, 6, 2419-2426.
J. Daniel, C. Mastrodonato, A. Sourdon, G. Clermont, J.-M. Vabre, B. Goudeau, H. Voldoire, S. Arbault, O. Mongin, M. Blanchard-Desce	*pKa tuning in quadrupolar-type two-photon ratiometric fluorescent membrane probes*	Chem. Comm	2015, 51, 15245-15248
R. Beniazza, F. Molton, C. Duboc, A. Tron, N. D. McClenaghan, D. Lastécouères, J.–M. Vincent	*Copper(I)-photocatalyzed trifluoromethylation of alkenes*	Chem. Comm	2015, 51, 9571-9574
A. Tron, H.-P. Jacquot de Rouville, A. Ducrot, J. H. R. Tucker, M. Baroncini, A. Credi, N. D. McClenaghan	*Photodriven [2]Rotaxane-[2]Catenane Interconversion*	Chem. Comm	2015, *51*, 2810-2813 (Special issue)
J. G. Croissant, C. Mauriello-Jimenez, X. Cattoën, M. Wong Chi Man, L. Raehm, O. Mongin, M. Blanchard-Desce, M. Maynadier, M. Gary-Bobo, M. Garcia, P. Maillard, J.-O. Durand	*Synthesis of Disulfide-Based Biodegradable Bridged Silsesquioxane Nanoparticles for Two-Photon Imaging and Therapy of Cancer Cells*	Chem. Comm.	2015, 51, 12324-12327
V. Parthasarathy, R. Pandey, M. Stolte, S. Ghosh, F. Castet, F. Würthner,* P. K. Das,* M. Blanchard-Desce	*Combination of Cyanine Behaviour and Giant Hyperpolarisability in Novel Merocyanine Dyes: Beyond the BLA Paradigm*	Chem. Eur. J	2015, 21, 14211-14217
M. Grzybowski, E. Glodkowska-Mrowka, Vincent Hugues, Mireille Blanchard-Desce,* D. T. Gryko,	*Polar diketopyrrolopyrrole-imidazolium salts as selective probes for staining mitochondria in two-photon fluorescence microscopy*	Chem. Eur. J	2015, 21, 9101-9110

L. Cornu, M. Gaudon, P. Veber, A. Villesuzanne, S. Pechev, A. Garcia, V. Jubera	*Discussion on the Structure Stability and the Luminescence Switch under Irradiation of a Ce-Doped Elpasolite Compound*	Chem. Eur. J.	21(13), pp 5242-5251
V. Lebrun, A. Tron, C. Lebrun, J.-M. Latour, N. D. McClenaghan, O. Sénèque	*Reactivity of a Zn(Cys)2(His)2 Zinc Finger with Singlet Oxygen: Oxidation is Directed toward Cysteines but not Histidines*	Chem. Eur. J.	2015, 21, 14002-14010
F. Bondu, J. Quertinmont, V. Rodriguez, J.-L. Pozzo, A. Plaquet, B. Champagne, F. Castet	*Second-order nonlinear optical properties of a dithienylethene–indolinooxazolidine hybrid: a joint experimental and theoretical investigation*	Chem. Eur. J.	2015
O. Mongin, V. Hugues, M. Blanchard-Desce, A. Mehri, S. Drouet, D. Yao, C. Paul-Roth	*Fluorenyl porphyrins for combined two-photon excited fluorescence and photosensitization*	Chemical Physics Letters	2015, 625, 151-156
Antonio Iazzolino, Geoffrey Galle, Jérôme Degert, Jean-François Létard, Eric Freysz	*Impact of the spin state switching on the dielectric constant of iron (II) spin crossover nanoparticles*	Chemical Physics Letters	*2015, 641, pp. 14-19*
Leblanc M., Maisonneuve V., Tressaud A.	*Crystal chemistry and selected physical properties of inorganic fluorides and oxide-fluorides.*	Chemical Reviews	2015, vol. 115, n° 2, p. 1191-1254. DOI : 10.1021/cr500173c
Li W., Corradini D., Body M., Legein C., Salanne M., Ma J., Chapman K. W., Chupas P. J., Rollet A.-L., Julien C., Zhagib K., Duttine M., Demourgues A., Groult H. , Dambournet D.	*High substitution rate in TiO2 anatase nanoparticles with cationic vacancies for fast lithium storage.*	Chemistry of Materials	2015, vol. 27, n° 14, p. 5014-5019. DOI : 10.1021/acs.chemmater.5b01407
Benito Q., Maurin I., Cheisson T., Nocton G., Fargues A., Garcia A., Martineau C., Gacoin T., Boilot J.-P., Perruchas S.	*Mechanochromic luminescence of copper iodide clusters.*	Chemistry--A European Journal	2015, vol. 21, n° 15, p. 5892-5897. DOI : 10.1002/chem.201500251
O. Mongin, M. Four, S. Chevreux, M. Blanchard-Desce, G. Lemercier	*Two-photon absorption engineering of 5-(fluorenyl)-1,10-phenanthroline-based Ru(II) complexes*	Chimia	2015, 69, 666-669
J.-B. Verlhac, J. Daniel, P. Pagano, G. Clermont, M. Blanchard-Desce	*Enhanced two-photon brightness in molecular-based organic nanoparticles built from articulated-dipoles*	Comptes Rendus Chimie	2015 (special issue), accepté (07/2015).
Lopez, Olivier; Kefelian, Fabien; Jiang, Haifeng; Haboucha, Adil; Bercy, Anthony; Stefani, Fabio; Chanteau, Bruno; Kanj, Amale; Rovera, Daniele; Achkar, Joseph; Chardonnet, Christian; Pottie, Paul-Eric; Amy-Klein, Anne; Santarelli, Giorgio	*Frequency and time transfer for metrology and beyond using telecommunication network fibres*	COMPTES RENDUS PHYSIQUE	10.1016/j.crhy.2015.04.005
Barrett, Brynle; Geiger, Remi; Dutta, Indranil; Meunier, Matthieu; Canuel, Benjamin; Gauguet, Alexandre; Bouyer, Philippe; Landragin, Arnaud	*The Sagnac effect: 20 years of development in matter-wave interferometry (vol 15, pg 875, 2014)*	COMPTES RENDUS PHYSIQUE	10.1016/j.crhy.2014.11.003
B. Doistau, C. Rossi-Gendron, A. Tron, N. D. McClenaghan, L.-M. Chamoreau, V. Marvaud, B. Hasenknopf, G. Vives	*Switchable Platinum-based Tweezers with Pt-Pt Bonding and Selective Luminescence Quenching*	Dalton Trans.	2015, 44, 8543-8551. (Special issue)
E. Boreham, L. Jones, A. Swinburne, M. Blanchard-Desce, V. Hugues, C. Terryn, F. Miomandre, G. Lemercier, L. S. Natrajana	*A Cyclometallated Fluorenyl Ir(III) Complex as a Potential Sensitiser for Two-Photon Excited Photodynamic Therapy (2PE-PDT)*	Dalton Transactions	2015, 44, 16127-16135
Chable J., Dieudonné B., Body M., Legein C., Crosnier-Lopez M.-P., Galven C., Mauvy F., Durand E., Fourcade S., Sheptyakov D., Leblanc M., Maisonneuve V., Demourgues A.	*Fluoride solid electrolytes: investigation of the tysonite-type solid solutions La1−xBaxF3−x (x < 0.15).*	Dalton Transactions	2015, vol. 44, n° 45, p. 19625-19635. DOI : 10.1039/C5DT02321A
Goglio G., Kaur G., Pinho S. L. C., Penin N., Blandino A., Geraldes C. F. G. C., Garcia A., Delville M. H.	*Glycine-nitrate process for the elaboration of Eu3+-doped Gd2O3 bimodal nanoparticles for biomedical applications.*	European Journal of Inorganic Chemistry	2015, n° 7, p. 1243-1253. DOI : 10.1002/ejic.201402721

Schuldt, Thilo; Schubert, Christian; Krutzik, Markus; Bote, Lluis Gesa; Gaaloul, Naceur; Hartwig, Jonas; Ahlers, Holger; Herr, Waldemar; Posso-Trujillo, Katerine; Rudolph, Jan; Seidel, Stephan; Wendrich, Thijs; Ertmer, Wolfgang; Herrmann, Sven; Kubelka-Lange, Andre; Milke, Alexander; Rievers, Benny; Rocco, Emanuele; Hinton, Andrew; Bongs, Kai; Oswald, Markus; Franz, Matthias; Hauth, Matthias; Peters, Achim; Bawamia, Ahmad; Wicht, Andreas; Battelier, Baptiste; Bertoldi, Andrea; Bouyer, Philippe; ….	*Design of a dual species atom interferometer for space*	EXPERIMENTAL ASTRONOMY	10.1007/s10686-014-9433-y
C. Hubert, C. Chomette, A. Désert, M. Sun, M. Treguer-Delapierre, S. Mornet, A. Perro, E. Duguet and S. Ravaine	*Synthesis of multivalent silica nanoparticles combining both enthalpic and entropic patchiness*	Faraday Discuss.	10.1039/c4fd00241e
Yang, B.; Fang, C. -Y.; Chang, H. -C.; Treussart, F.; Trebbia, J. -B.; Lounis, B.	*Polarization effects in lattice-STED microscopy*	FARADAY DISCUSSIONS	10.1039/c5fd00092k
P. Lozano, J.M. Bernal, E. Garcia-Verdugo,G. Sanchez-Gomez,M. Vaultier, M. I. Burguete, L., V. Santiago	*Sponge-like ionic liquids: a new platform for green biocatalytic chemical processes*	Green Chem	2015, 17, 3706-3717
Bastiani-Ceccotti, S., A.-C. Bourgaux, A.-C. Bourgaux, C. Bowen, F. Dorchies, F. Gilleron, J.-R. Marquès, J.C. Pain, V. Silvert, and T. Vinci. (2015).	*Analysis of X-ray and Thomson scattering data from non-LTE Nb and Ta plasmas*	High Energy Density Physics	16: 41- 42.
Deschaud, B., O. Peyrusse and F. B. Rosmej (2015).	*Atomic kinetics for isochoric heating of solid aluminium under short intense XUV free electron laser irradiation.*	High Energy Density Physics	15: 22-29.
Fabian, X., F. Mauger, G. Quéméner, Ph. Velten, G. Ban. C. Couratin, P. Delahaye, D. Durand, B. Fabre, P. Finlay, X. Fléchard, E. Liénard, A. Méry, O. Naviliat-Cuncic, B. Pons, T. Porobic, N. Severijns, and J. C. Thomas. (2015).	*Using GPU parallelization to perform realistic simulations of the LPCTrap experiments*	Hiyperfine Interact	DOI 10;1007/S1075-015-1192-2.
Jérémy Michaud, Pamela Del Vecchio, Laurent Béchou, David Veyrié, Mauro Bettiati, François Laruelle, Stéphane Grauby	*Precise Facet Temperature Distribution of High- Power Laser Diodes: Unpumped Window Effect*	IEEE Photonics Technology Letters	2015, 27 (9), pp.1002-1005
Deshayes, Yannick ; Baillot, Raphael ; Joly, Simon ; Ousten, Yves ; Béchou, Laurent	*Overview on sustainability, robustness and reliability of GaN single chip LED devices*	IEEE Transactions on Device and Materials Reliability	https://hal.archives-ouvertes.fr/hal-01221533
Lu, Heqi; Pacanowski, Romain; Granier, Xavier	*Position-Dependent Importance Sampling of Light Field Luminaires*	IEEE TRANSACTIONS ON VISUALIZATION AND COMPUTER GRAPHICS	10.1109/TVCG.2014.2359466
Burbano M., Duttine M., Borkiewicz O., Wattiaux A., Demourgues A., Salanne M., Groult H., Dambournet D.	*Anionic ordering and thermal properties of FeF3·3H2O*	Inorganic Chemistry	2015, vol. 54, n° 19, p. 9619-9625. DOI : 10.1021/acs.inorgchem.5b01705
Benito Q., Le Goff X., Nocton G., Fargues A., Garcia A., Berhault A., Kahlal S., Saillard J.-Y., Martineau C., Trébosc J., Boilot J.-P., Perruchas S.	*Geometry flexibility of copper iodide clusters : variability in luminescence thermochromism.*	Inorganic Chemistry	2015, vol. 54, n° 9, p. 4483-4494. DOI : 10.1021/acs.inorgchem.5b00321
Blanco-Gutierrez V., Demourgues A., Toulemonde O., Wattiaux A., Nguyen O., Gaudon M.	*Understanding the relationships between structural features and optical/magnetic properties when designing Fe1–xMgxMoO4 as piezochromic compounds.*	Inorganic Chemistry	2015, vol. 54, n° 5, p. 2176-2184. DOI : 10.1021/ic5025845
M. A. Carrillo Solano, M. Dussauze, P. Vinatier, L. Croguennec, E.I. Kamitsos, R. Hausbrand, W. Jaegermann	*Phosphate structure and lithium environments in lithium phosphorus oxynitride amorphous thin films*	ionics	Accepted 2015

RAETZ S., LAURENT J., DEHOUX T., ROYER D., AUDOIN B., and PRADA C.	*Effect of refracted light distribution on the photoelastic generation of ZGV Lamb modes in optically low-absorbing plates*	J. Acoust. Soc. Am.	2015 Dec;138(6):3522. doi: 10.1121/1.4936903.
S. W. Hell, S.J. Sahl, M. Bates, , X. Zhuang, R. Heintzmann, M.J Booth, J. Bewersdorf, G. Shtengel, H. Hess, P. Tinnefeld, A. Honigmann, S. Jakobs, I. Testa, L. Cognet, B. Lounis, H. Ewers, S.J. Davis, C. Eggeling, D. Klenerman, K.I. Willig, G. Vicidomini, M. Castello, A. Diaspro, T. Cordes	*The 2015 Super-Resolution Microscopy Roadmap*	J. App. Phys. D	48 (2015) 443001
S. Cordier, F. Grasset, Y. Molard, M. Amela-Cortes R. Boukherroub, S. Ravaine, M. Mortier, N. Ohashi, N. Saito and H. Haneda	*Inorganic Molybdenum Octahedral Nanosized Cluster Units, Versatile Functional Building Block for Nanoarchitectonics*	J. Inorg. Organomet. Polym.	25 , 189–204, (2015) 10.1007/s10904-014-0112-2
J. G. Croissant, C. Qi, O. Mongin, V. Hugues, M. Blanchard-Desce, L. Raehm, X. Cattoën, M. Wong Chi Man, M. Maynadier, Gary-Bobo, M. Garcia, J. I. Zink, J.-O. Durand	*Disulfide-Gated Mesoporous Silica Nanoparticles Designed for Two-Photon-Triggered Drug Release*	J. Mater. Chem. B	2015, 3, 6456-6461
J. Croissant*, O. Mongin, V. Hugues, M. Blanchard-Desce*, X. Cattoën, M. Wong Chi Man, M. Maynadier, M. Garcia, M. Gary-Bobo, L. Raehm, J.-O. Durand	*Influence of the Synthetic Method on the Properties of Mesoporous Silica Nanoparticles Designed for Two-Photon Excitation*	J. Mater. Chem. B	2015, 3, 5182-5188
A. Chakrabarty, S. Marre, R. F. Landis, V. M. Rotello, U. Maitra, A. Del Guerzo, C. Aymonier	*Continuous synthesis of high quality CdSe quantum dots in supercritical fluids*	J. Mater. Chem. C	
H. Jintoku, M.-T. Kao, A. Del Guerzo, Y. Yoshigashima, T. Masunaga, M. Takafujia, H. Ihara	*Unable Stokes Shift and Circular Polarized Luminescence by Supramolecular Gel*	J. Mater. Chem. C	
E. Campioli, D.-M. Nikolaidou, V. Hugues, M. Campanini, L. Nasi, M. Blanchard-Desce	*Amplified Two-Photon Brightness in Organic Multicomponent Nanoparticles*	J. Mater. Chem. C,	2015, 3, 7483-7491
A. Tron, P. J. Thornton, C. Lincheneau, J.-P. Desvergne, N. Spencer, J. H. R. Tucker, N. D. McClenaghan	*Reversible Photocapture of a [2]Rotaxane Harnessing a Barbiturate Template*	J. Org. Chem.	2015, 80, 988–996
XL Wang, Y Guillet, PR Selvakannan, H Remita, B Palpant	*Broadband Spectral Signature of the Ultrafast Transient Optical Response of Gold Nanorods*	J. Phys. Chem C	volume 119, pages 7416-7427, doi : 10.1021/acs.jpcc.5b00131
J. Avó, M.T. Cidade, V. Rodriguez, J.C. Lima, A.J. Parola	*Photorheological ionic liquids*	J. Phys. Chem. B	2015, *119 (22)*, 6680-6685
N. Reinhardt, L. Adumeau, O. Lambert, S. Ravaine and S. Mornet	*Quaternary Ammonium Groups Exposed at the Surface of Silica Nanoparticles Suitable for DNA Complexation in the Presence of Cationic Lipids*	J. Phys. Chem. B	10.1021/acs.jpcb.5b01834
A. Lepicard, T. Cardinal, E. Fargin, F. Adamietz, V. Rodriguez, K. Richardson, M. Dussauze	*Surface Reactivity Control of a Borosilicate Glass Using Thermal Poling*	J. Phys. Chem. C	2015, 119, 22999, DOI: 10.1021/acs.jpcc.5b07139
Robertson L., Penin N., Blanco-Gutierrez V., Sheptyakov D., Demourgues A., Gaudon M.	*CuMo0.9W0.1O4 phase transition with thermochromic, piezochromic, and thermosalient effects.*	J. Phys. Chem. C	2015, vol. 3, n° 12, p. 2918-2924. DOI : 10.1039/C4TC02463J
T. Doussineau, A. Désert, O. Lambert, J-C. Taveau, M. Lansalot, P. Dugourd, E. Bourgeat-Lami, S. Ravaine, E. Duguet and R. Antoine	*Charge Detection Mass Spectrometry for the Characterization of Mass and Surface Area of Composite Nanoparticles*	J. Phys. Chem. C,	119, 10844-10849, (2015) 10.1021/jp510081v
A. Bourgeade T. Donval L. Lamaignère J-L. Rullier L. Gallais	*Modeling surface defects in fused silica optics for laser wave propagation*	JOSA B	Vol. 32, n°4, pp. 655-663, 04/2015

E. Hugonnot C. Fourcade Dutin O. Vanvincq	*Ultra-Broad band fiber optical parametric amplifier pumped by chirped pulses PART I*	JOSA B	Vol. 32, n°7, pp. 1479-1487,07/2015
A. Mussot D. Bigourd	*analytical model*		
E. Hugonnot C. Fourcade Dutin O. Vanvincq A. Mussot	*Ultra-Broad band fiber optical parametric amplifier pumped by chirped pulses PART II*	JOSA B	Vol. 32, n°7, pp. 1488-1493, 07/2015
D. Bigourd	*SUB-30FS pulse amplification at high gain*		
Omrani R. O., Kaoutar A., El Jazouli A., Krimi S., Khattech I., Jemal M., Videau J.-J., Couzi M.	*Structural and thermochemical properties of sodium magnesium phosphate glasses.*	Journal of Alloys and Compounds	2015, vol. 632, p. 766-771. DOI : 10.1016/j.jallcom.2015.01.297
G. Yang, M. Dussauze, V. Rodriguez, F. Adamietz, N.D. Marquestaut, K.L.N. Deepak, D. Grojo, O. Uteza, P. Delaporte, T. Cardianl, E. Fargin	*Large scale micro-structured optical second harmonic generation response imprinted on glass surface by thermal poling*	Journal of Applied Physics	2015, 118(4), 043105
Desmoulin J.-C., Petit Y., Canioni L., Dussauze M., Lahaye M., Gonzalez H. M., Brasselet E., Cardinal T.	*Femtosecond laser structuring of silver-containing glass: silver redistribution, selective etching, and surface topology engineering.*	Journal of Applied Physics	2015, vol. 118, n° 21, p. 213104 (7 p.). DOI : 10.1063/1.4936233
M. Chambonneau R. Diaz P. Grua	*Parametric study of the damage ring pattern in fused silica induced by multiple longitudinal modes laser pulses*	Journal of Applied Physics	Vol. 117, 103101, pp. 1-7
J.-L. Rullier L. Lamaignère J-Y. Natoli			
LEGRAND R., ABI GHANEM M., PLAWINSKI L., DURRIEU M-C, AUDOIN B., DEHOUX T.,	*Thermal microscopy of single biological cells*	Journal of Applied Physics	107, 263703 (2015); http://dx.doi.org/10.1063/1.4938998
Ward, Richard J.; Pediani, John D.; Godin, Antoine G.; Milligan, Graeme	*Regulation of Oligomeric Organization of the Serotonin 5-Hydroxytryptamine 2C (5-HT2C) Receptor Observed by Spatial Intensity Distribution Analysis*	JOURNAL OF BIOLOGICAL CHEMISTRY	10.1074/jbc.M115.644724
Lopez, J., Mincuzzi, G., Devillard, R., Zaouter, Y., Hönninger, C., Mottay, E. and Kling, R.	*Ablation efficiency of high-average power ultrafast laser*	Journal of Laser Applications (JLA)	Vol. 27, S28008
Lopez, J., Faucon, M., Devillard, R., Zaouter, Y., Hönninger, C., Mottay, E. and Kling, R.,	*Parameters of influence in surface ablation and texturing of metals using high-power ultrafast laser*	Journal of Laser Micro and Nanoengineering (JLMN)	Vol. 10, No. 1 (2015)
Bachau, H., M. Dondera, and V. Florescu. (2015).	*Stimulated Compton scattering of soft X-ray radiation by hydrogen.*	Journal of Modern Optics	10.1080/09500340.2015.1064549.
Boukhris A., Glorieux B., Ben Amara M.	*Xg-ray diffraction, 31P NMR and europium photoluminescence properties of the Na2Ba1−xSrxMg(PO4)2 system related to the laserite type structure.*	Journal of Molecular Structure	2015, vol. 1083, p. 319-329. DOI : 10.1016/j.molstruc.2014.11.063
D. Talaga, M. Comesana-Hermo, S. Ravaine, R. Vallée, S. Bonhommeau	*Colocalized dark-field scattering, atomic force and surface-enhanced Raman scattering microscopic imaging of single gold nanoparticles*	Journal of Optics	2015, 17 (11), in press
Tatjana Stoll, Paolo Maioli, Aurélien Crut, Julien Burgin, Pierre Langot, Michel Pellarin, Ana Sánchez-Iglesias, Benito Rodríguez-González, Luis M. Liz-Marzán, Natalia Del Fatti, Fabrice Vallée	*Ultrafast Acoustic Vibrations of Bimetallic Nanoparticles*	Journal of Physical Chemistry B	2015, 119 (3), pp.1591-1599
Bondu, Flavie; Hadji, Rachid; Szaloki, Gyoergy; et al.	Huge Electro-/Photo-/Acidoinduced Second-Order Nonlinear Contrasts From Multiaddressable Indolinooxazolodine	JOURNAL OF PHYSICAL CHEMISTRY B	Volume: 119 Issue: 22 Pages: 6758-6765 Published: JUN 4 2015
Szaloki, Gyoergy; Aleveque, Olivier; Pozzo, Jean-Luc; et al.	Indolinooxazolidine: A Versatile Switchable Unit	JOURNAL OF PHYSICAL CHEMISTRY B	Volume: 119 Issue: 1 Pages: 307-315 Published: JAN 8 2015

Dieudonné B., Chable J., Mauvy F., Fourcade S., Durand E., Lebraud E., Leblanc M., Legein C., Body M., Maisonneuve V., Demourgues A.	*Exploring the Sm1-xCaxFe3-x tysonite solid solution as a solid-state electrolyte : relationship between structural features and F- ionic conductivity.*	Journal of Physical Chemistry C	2015, vol. 119, n° 45, p. 25170-25179. DOI : 10.1021/acs.jpcc.5b05016
Nakano, T., A. E. Shumack, et al. (K. Jakubowska)	*Determination of tungsten and molybdenum concentration from an X-ray range spectrum in JET*	Journal of physics	48: 144023.
Labaigt, G., A. Jorge, C. Illescas, K. Béroff, A. Dubois, B. Pons and M. Chabot	*Electron capture and ionization processes in high-velocity C+n, C-He collisions.*	Journal of Physics	
Rosmej, F. B., R. Dachicourt, B. Deschaud D. Khaghani M. Dozières M. Smid and O. Renner (2015).	*Exotic x-ray emission from dense plasmas*	Journal of physics	48.
Pal Jovari, Shuo Cui, Virginie Nazabal, Ivan Kaban, Brigitte Beuneu, Marc Dussauze, Catherine Boussard-Pledel, Bruno Bureau	*Network Rearrangement in AgI-Doped GeTe4 Glasses*	Journal of the American Ceramic Society	Volume 98, Issue 3, March 2015, Pages 1034-1039
John Restrepo, Pawel Stoerck, Ivo Ihrke.	*Ray and Wave Aberrations Revisited: A Huygens-Like Construction Yields Exact Relations*	Journal of the Optical Society of America A	Vol. 33, Issue 2, pp. 160-171 (2016) •doi: 10.1364/JOSAA.33.000160
Del Sorbo, D., Y. Arikawa, D. Batani, F. Beg, J. Breil, H. Chen, J.L. Feugeas, S.Fujioka, S. Hulin,M. Koga, H. Maclean,A. Morace, T. Namimoto, W. Nazarov, Ph. Nicolaï; H. Nishimura, T. Ozaki, T. Sakaki, J.J. Santos, CH. Spindloe, K.A. Tanaka, X. Vaisseau, M. Veltcheva, T. Yabuchi, and Z. Zhang. (2015).	*Approach to the study of fast electron transport in cylindrically imploded targets*	Laser and Particle Beams:	doi: 10.1017/S0263034615000592.
A. Shakhbazau, M. Mishra, T. Ho Chu, C. Brideau, K. Cummins, S. Tsutsui D. Shcharbin, S. Mignani, J.-P. Majoral, M. Blanchard-Desce, M. Bryszewska, V. W. Yong, P. Stys, J. van Minnen	*Fluorescent phosphorus dendrimer as a spectral sensor for macrophage polarization and fate tracking in spinal cord injury*	Macromol. Biosci	2015
K. Bourhis, J. Massera, L. Petit, J. Koponen, A. Fargues, T. Cardinal, L. Hupa, M. Hupa, M. Dussauze, V. Rodriguez, M. Ferraris	*Erbium-doped borosilicate glasses containing various amounts of P2O5 and Al2O3: Influence of the silica content on the structure and thermal, physical, optical and luminescence properties*	Mat. Res. Bulletin	2015, 70, 47-54.
K. Bourhis, J. Massera, L. Petit, H. Ihalainen, A. Fargues, T. Cardinal, L. Hupa, M. Hupa, M. Dussauze, V. Rodriguez, C. Boussard-Plédel, B.Bureau, C. Roiland, M. Ferraris	*Influence of P_2O_5 and Al_2O_3 content on the structure of erbium-doped borosilicate glasses and on their physical, thermal, optical and luminescence properties*	Mat. Res. Bulletin	2015, 63, 41
Del Vecchio, Pamela ; Curutchet, Arnaud ; Deshayes, Yannick ; Bettiati, Mauro ; Laruelle, François ; Labat, Nathalie ; Béchou, Laurent	*Correlation between forward-reverse low-frequency noise and atypical I–V signatures in 980 nm high-power laser diodes*	Microelectronics Reliability	https://hal.archives-ouvertes.fr/hal-01214031
Baillot, Raphael ; Deshayes, Yannick ; Ousten, Yves ; Béchou, Laurent	*Photothermal activated failure mechanism in polymer-based packaging of low power InGaN/GaN MQW LED under active storage*	Microelectronics Reliability	https://hal.archives-ouvertes.fr/hal-01213954
Yang, Jianji; Giessen, Harald; Lalanne, Philippe	*Simple Analytical Expression for the Peak-Frequency Shifts of Plasmonic Resonances for Sensing*	NANO LETTERS	10.1021/acs.nanolett.5b00771
L. Olislager, W. Kubo, T. Tanaka, S. Ungureanu, R.A. L. Vallée, B. Kolaric, P. Emplit and S. Massar	*Propagation and survival of frequency-bin entangled photons in metallic nanostructures*	Nanophotonics, 4, 324–331, (2015)	10.1515/nanoph-2015-0011

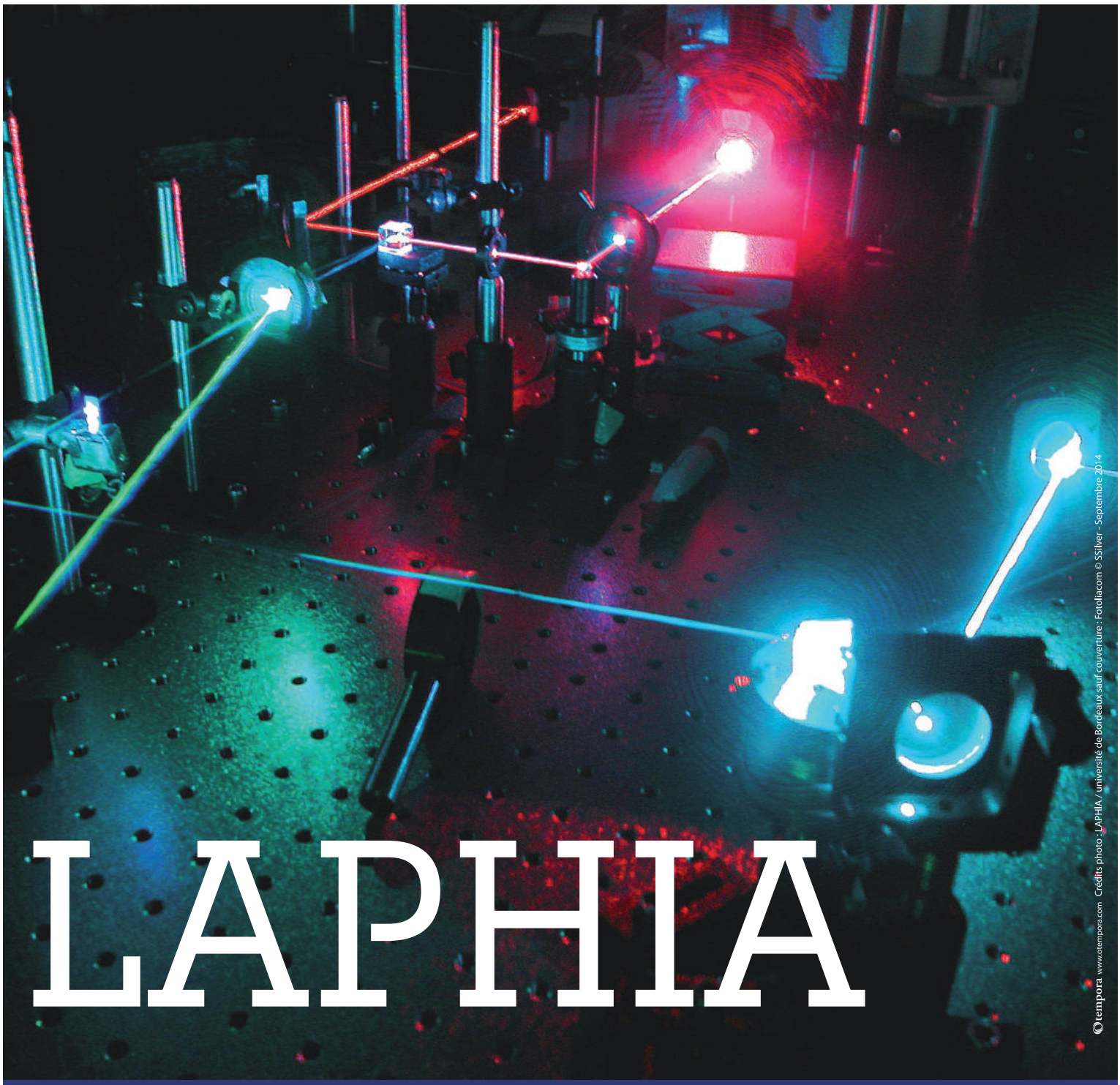
Miguel Munoz Rojo, Jaime Martin, Stéphane Grauby, Théodorian Borca-Tasciuc, Stefan Dilhaire, Marisol Martin-Gonzalez	*Correction: Decrease in thermal conductivity in polymeric P3HT nanowires by size-reduction induced by crystal orientation: new approaches towards thermal transport engineering of organic materials*	Nanoscale	*2015, 7 (9), pp. 4256-7*
P. Moutet, N.M. Sangeetha, L. Ressier, N. Vilar-Vidal, M. Comesana-Hermo, S. Ravaine, R.A.L. Vallee, A.M. Gabudean, S. Astilean and C.Farcau	*Surface-enhanced spectroscopy on plasmonic oligomers assembled by AFM nanoxerography*	Nanoscale,	10.1039/c4nr05092d 7, 2009-2022, (2015)
Ferré, A., A. E. Boguslavskiy, M. Dagan, V. Blanchet, B. D. Bruner, F. Burgy, A. Camper, D. Descamps, B. Fabre, N. Fedorov, J. Gaudin, G. Geoffroy, J. Mikosch, S. Patchkovskii, S. Petit, T. Ruchon, H. Soifer, D. Staedter, J. Wilkinson, A. Stolow, N. Dudovich and Y. Mairesse (2015).	*Multi-channel electronic and vibrational dynamics in polyatomic resonant high-order harmonic generation*	Nature Communication	6: 5952.
Tetiana Orlova, Sarah Jane Aßhoff, Tadatsugu Yamaguchi, Nathalie Katsonis, Etienne Brasselet	*Creation and manipulation of topological states in chiral nematic microspheres*	Nature Communications	2015, 6, pp.7603 (1-9)
Bon, Pierre; Bourg, Nicolas; Lecart, Sandrine; Monneret, Serge; Fort, Emmanuel; Wenger, Jerome; Leveque-Fort, Sandrine	*Three-dimensional nanometre localization of nanoparticles to enhance super-resolution microscopy*	Nature Communications	10.1038/ncomms876 4
Yang, B.; Trebbia, J. -B.; Baby, R.; Tamarat, Ph.; Lounis, B.	*Optical nanoscopy with excited state saturation at liquid helium temperatures*	Nature Photonics	10.1038/NPHOTON.2 015.152
Ferré, A., C. Handschin, M. Dumergue, F. Burgy, A. Comby, D. Descamps, B. Fabre, G. A. Garcia, R. Géneaux, L. Merceron, E. Mevel, L. Nahon, S. Petit, B. Pons, D. Staedter, S. Weber, T. Ruchon, V. Blanchet and Y. Mairesse (2015).	*A table-top ultrashort light source in the extreme ultraviolet for circular dichroism experiments*	Nature Photonics	DOI: 10.1038/NPHOTON.2 014.314.
Cireasa, R., A. E. Boguslavskiy, B. Pons, M.C. H. Wong, D. Descamps, S. Petit, H. Ruf, N. Thiré, A. Ferré, J. Suarez, J. Higuet, B. E. Schmidt, A. F. Alharbi, F. Légaré, V. Blanchet, B. Fabre, S. Patchkovskii, O. Smirnova,Y. Mairesse, and V. R. Bhardwaj. (2015).	*Probing molecular chirality on a sub-femtosecond timescale.*	Nature Physics	DOI: 10.1038/NPHYS3369.
D. Yao, V. Hugues, M. Blanchard-Desce, O. Mongin, C. O. Paul-Roth, F. Paul	*Dendritic molecular assemblies for singlet oxygen generation: meso-tetraphenylporphyrin-based biphotonic sensitizers with remarkable luminescence*	New J. Chem	2015, 39, 7730-7733.
Cabrera-Granado, E., Y. Chen, I. Babushkin, L. Bergé and S. Skupin (2015).	*Sepectral self-action of THz emission from ionizing two-color laser*	New Journ. Phys.	17: 023060.
Régis Wunenburger, Juan Israel, Vazquez Lozano, Etienne Brasselet	*Acoustic orbital angular momentum transfer to matter by chiral scattering*	New Journal of Physics	2015, 17 (10), pp.103022
Barrett, B.; Antoni-Micollier, L.; Chichet, L.; Battelier, B.; Gominet, P-A; Bertoldi, A.; Bouyer, P.; Landragin, A.	*Correlative methods for dual-species quantum tests of the weak equivalence principle*	NEW JOURNAL OF PHYSICS	10.1088/1367-2630/17/8/085010
Santos, J., M. Bailly-Grandvaux, L.Giuffrida, P. Foretier-Colleoni, S. Fujioka, Z. Zhang, P. Korneev, R. Bouillaud, S. Dodard, D. Batani, M. Chevrot, JE. Cross, R. Crowston, J-L Dubois, J. Gazave, G. Gregori,, E. Dhumières, S. Hulin, K. Ishihara, S. Khojima, E. Loyez, J-R. Marquès, A. Morace, P. Nicolaï, O. Peyrusse, A. Poyé, A. Raffestin, J. Ribolzi, M. Roth, G. Schaumann, F. Serres, V. Tikhonchuk P. Vacar, and N. Woolsey. (2015)	*Laser-driven platform for generation and characterization of strong quasi-static magnetic fields*	New Journal of Physics	17: 083051
Kneis, C., B. Donelan, A. Berrou, I. Manek-Hönninger, T. Robin, B. Cadier, M. Eichhorn and C. Kieleck (2015).	*Actively mode-locked Tm3+-doped silica fiber laser with wavelength-tunable, high average output power*	Optical Letters	40: 1464 1467

Velázquez M., Veber P., Buse G., Petit Y., Goldner P., Jubera V., Rytz D., Jaffres A., Peltz M., Wesemann V., Aschehough P., Aka G.	*Spectroscopic properties of newly flux grown and highly Yb3+-doped cubic RE2O3 (RE = Y, Gd, Lu) laser crystals.*	Optical Materials	(Amsterdam, Netherlands) 2015, vol. 39, p. 258-264. DOI : 10.1016/j.optmat.2014.11.037
Salek G., Demourgues A., Jubera V., Garcia A., Gaudon M.	*Mn2+ doped Zn3(PO4)2 phosphors : irreversible thermochromic materials useful as thermal sensors.*	Optical Materials	2015, vol. 47, p. 323–327. DOI : 10.1016/j.optmat.2015.05.049
Burian, T., V. Hajkova, J. Chalupsky, L. Vysin, P. Bohacek, M. Precek, J. Wild, C. Özkan, N. Coppola, S. D. Farahani, J. Schulz, H. Sinn, T. Tschentscher, J. Gaudin, S. Bajt, K. Tiedtke, S. Toleikis, H. N. Chapman, R. A. Loch, M. Jurek, R. Sobierajski, J. Krzywinski, S. Moeller, M. Harmand, K. Saskl, P. Sovak and L. Juha (2015)	*Soft x-ray free-electron laser induced damage to inorganic scintillators*	Optical Materials Express	5: 254.
Hort, O., A. Dubrouil, A. Dubrouil, A. Cabasse, S. Petit, E. Mével, D. Descamps, and E. Constant. (2015).	*Post-compression of high-energy terawatt-level femtosecond pulses and application to high-order harmonic generation*	Optical Society of America	32: 1055 1061.
J. Chandezon, J.-M. Rampnoux, S. Dilhaire, B. Audoin, Y. Guillet	*In-line femtosecond common-path interferometer in reflection mode*	Optics express	*2015, 23 (21), pp. 27011-19*
Mupparapu, Rajeshkumar; Vynck, Kevin; Svensson, Tomas; Burresi, Matteo; Wiersma, Diederik S.	*Path length enhancement in disordered media for increased absorption*	OPTICS EXPRESS	10.1364/OE.23.0A1472
Petit, Y., K. Mishchik, N. Varkentina, N. Marquestaut, A. Royon, I. Manek-Hönninger, T. Cardinal, and L. Canioni. (2015).	*Dual-color control and inhibition of direct laser writing in silver-containing phosphate glasses*	Optics Letters	40: 4137.
Adrien Aubourg, Jérôme Lhermite, Steve Hocquet, Eric Cormier, and Giorgio Santarelli	*Generation of picosecond laser pulses at 1030 nm with gigahertz range continuously tunable repetition rate*	Optics Letters	Vol. 40, Issue 23, pp. 5610-5613 (2015) •doi: 10.1364/OL.40.005610
M. Sozet J. Néauport E. Lavastre N. Roquin L. Lamaignère L. Gallais	*Laser damage resistance of optical components in sub-picosecond regime : toward damage density measurement*	Optics Letters	Vol. 40, No. 9, pp. 2091-2094, 05/2015
Konstantin Mishchik, Yannick Petit, Etienne Brasselet, Arnaud Royon, Thierry Cardinal, Lionel Canioni	*Patterning linear and nonlinear optical properties of photosensitive glasses by femtosecond structured light*	Optics Letters	2015, 40 (2), pp.201-204
Zang, Xiaorun; Lalanne, Philippe	*Theoretical treatment of the interaction between two-level atoms and periodic waveguides*	Optics Letters	10.1364/OL.40.003869
M Weidman, M Ramme, B Bousquet, K Lim, M Durand, M Baudelet, ...,	*Angular dependence of filament-induced plasma emission from a GaAs surface*	Optics letters	40 (19), 4548-4551 (2015)
", E. J. Cueto Díaz, S. Picard, V. Chevasson, J. Daniel, V. Hugues, O. Mongin, E. Genin, M. Blanchard-Desce	*Cooperative Dyads for Two-Photon Uncaging*	Org. Lett	2015, 17, 102-105
C. Tran, T. Gallavardin, M. Petit, R. Slimi, H. Dhimane, M. Blanchard-Desce, F. C. Acher, D. Ogden, P. I. Dalko	*Two-Photon "Caging" Groups: Effect of Position-Isomery on the Photorelease Properties of Aminoquinoline-Derived Photolabile Protecting Groups*	Org. Lett	2015, 17, 402-405
L. Marciasini, Ludovic; B Cacciuttolo, M.Vaultier, M.Pucheault	*Synthesis of Borinic Acids and Borinate Adducts Using Diisopropylaminoborane*	Org. Lett	2015, 17, 3532-3535
Camper, A., A. Ferré, N. Lin, E. Skantzakis, D. Staedter, E. English, B. Manschwetus, F. Burgy, S. Petit, D. Descamps, T. Auguste, O. Gobert, B. Carré, P. Salières, Y. Mairesse and T. Ruchon (2015).	*Transverse Electromagnetic Mode Conversion for High-Harmonic Self-Probing Spectroscopy*	Photonics	2: 184-199

R. Orłowski, M. Banasiewicz, G. Clermont, F. Castet, R. Nazir, M. Blanchard-Desce*, D. T. Gryko	*Strong solvent dependence of linear and non-linear optical properties of donor-acceptor type pyrrolo[3,2-b]pyrroles*	Phys. Chem. Chem. Phys	17, 23724-23731
Pavel A. Panchenko, Yuri V. Fedorov, Olga A. Fedorova, Gediminas Jonusauskas	*FRET versus PET: ratiometric chemosensors assembled from naphthalimide dyes and crown ethers*	Phys. Chem. Chem. Phys	2015, 17 (35), pp.22457-23282
M.Comet, G.Gosselin, V.Méot, P.Morel, J.-C.Pain, D.Denis-Petit, F.Gobet, F.Hannachi, M.Tarisien, M.Versteegen,	*NEET rate confidence interval in a 201Hg LTE plasma,*	Phys.Rev. C	92, 054609 (2015)
Theobald, W., R. Nora, W. Seka, M. Lafon, K. S. Anderson, M. Hohenberger, F. J. Marshall, D. T. Michel, A. A. Solodov, C. Stoeckl, D. H. Edgell, B. Yaakobi, A. Casner, C. Reverdin, X. Ribeyre, A. Shvydky, A. Vallet, J. Peebles, F. N. Beg, M. S. Wei and R. Betti (2015).	*Spherical strong-shock generation for shock-ignition inertial fusion*	Physic of Plasmas	22.
Kosionis, Spyridon G.; Paspalakish, Emmanuel	*Pump-probe optical response of an asymmetric double quantum dot molecule*	PHYSICA E-LOW-DIMENSIONAL SYSTEMS & NANOSTRUCTURES	10.1016/j.physe.2015.05.016
Gutierrez, F. A. and H. Jouin	*Bulk plasmon assisted electron capture process for ions travelling outside a metal surface*	Physica Scripta	90: 105002.
Silva, R. E. F., F. Catoire, P. Rivière, T. Niederhausen,H. Bachau, and F. Martin. (2015).	*Energy - and angle-resolved ionization of H2+ interacting with xuv subfemtosecond laser pulses*	Physical Review A	92: 013426.
Cloux, F., B. Fabre and B. Pons (2015).	*Semiclassical description of high-order-harmonic spectroscopy of the Cooper minimum in krypton*	Physical Review A	91: 023415.
Matthieu Robert de Saint Vincent, Hamza Chraibi, Jean-Pierre Delville	*Optical flow focusing: Light-induced destabilization of stable liquid threads*	Physical Review Applied	2015, 4 (4), pp.044005 (1-8)
Dorchies, F., F. Festa, V. Roucoules, O. Peyrusse, A. Benuzzi-Mounaix, E. Brambrink, A. Levy, A. Ravasio, M. Koenig, T. Hall, and S. Mazevet. (2015).	*X-ray absorption K edge as a diagnostic of the electronic temperature in warm dense aluminium.*	Physical Review B	92: 085117.
Harmand, M., A. Ravasio, S. Mazevet, J. Bouchet, A. Denoeud, F. Dorchies, Y. Feng, C. Fourment, E. Galtier, J. Gaudin,F. Guyot, R. Kodama, M. Koenig, H.J.Lee, K. Miyanishi, G. Morard, R. Musella, B. Nagler, M. Nakatsutsumi, N. Ozaki. V; Roucoules, S. Toleikis, T. Vinci, U. Zastrau, D. Zhu,and A. Banuzzi-Mounaix. (2015)	*X-ray absorption spectroscopy of iron at multimegabar pressures in laser shock experiments*	Physical Review B	92: 024108.
Rodriguez-Sanchez, J. L., J. Benlliure, G. Boutoux et al. (2015)	*Constraining the level density using fission of lead projectiles*	Physical Review C	92: 044612.
Rodríguez-Sánchez, J. L., J. Benlliure, G. Boutoux et al. (2015).	*Complete characterization of the fission fragments produced in reactions induced by 208Pb projectiles on proton at 500A MeV.*	Physical Review C	91: 064616.
Palmeri, P., G. Boutoux, et al.	*Effects of target heating on experiments using Kα and Kβ diagnostics*	Physical Review E	92: 033108.
Colaïtis, A., G. Duchateau, X. Ribeyre and V. Tikhonchuk (2015).	*Modeling of the cross-beam energy transfer with realistic inertial-confinement-fusion beams in a large-scale hydrocode*	Physical Review E	91: 013102.
Poyé, A., S. Hulin, M. Bailly-Grandvaux, J.-L. Dubois, J. Ribolzi, D. Raffestin, M. Bardon, F. Lubrano-Lavaderci, E. D'humières, J. J. Santos, P. Nicolaî and V. Tikhonchuk (2015).	*Physics of giant electromagnetic pulse generation in short-pulse laser experiments.*	physical Review E	91: 043106.

Nora, R., W. Theobald, R. Betti, F. J. Marshall, D. T. Michel, W. Seka, B. Yaakobi, M. Lafon, C. Stoeckl, J. Delettrez, A. A. Solodov, A. Casner, C. Reverdin, X. Ribeyre, A. Vallet, J. Peebles, F. N. Beg and M. S. Wei (2015)	*Gigabar Sphererical Shock Generation on the OMEGA Laser*	Physical Review Letters	114: 045001.
Catoire, F. and H. Bachau (2015).	*Above-Threshold Ionization of Quasiperiodic Structures by Low-Frequency Laser Fields.*	Physical Review Letters	115: 163602.
Sävert, A., S. P. D. Mangles, M. Schnell, E. Siminos, J. M. Cole, M. Leier, M. Reuter, M. B. Schwab, M. Möller, K. Poder, O.Jaëkel, G. G. Paulus, C. Spielmann, S. Skupin, Z. Najmudin, and M. Kaluza. (2015).	*Direct Observation of the Injection Dynamics of a Laser Wakefield Accelerator Using Few-Femtosecond Shadowgraphy*	Physical Review Letters	115: 055002.
Gonzalez de Alaiza Martinez, P., I. Babushkin, L. Bergé, S. Skupin, E. Cabrera-Granado, C. Köhler, U. Morgner, A. Husakou and J. Herrmann (2015).	*Boosting Terahertz Generation in Laser-Field Ionized Gases Using a Sawtooth Wave Shape*	Physical Review Letters	114.
Vaisseau X., A. Debayle, J. J. Honrubia, S. Hulin, A. Morace, P. Nicolaï, H. Sawada, B. Vauzour, D.Batani, F. N. Beg, J. R. Davies, R. Fedosejevs, R. J. Gray, G. E. Kemp, S. Kerr, K. Li, A. Link, P. McKenna, H. S. McLean, M. Mo, P. K. Patel, J. Park, J. Peebles, Y. J. Rhee, A. Sorokovikova, V. Tikhonchuk, L. Volpe, M. Wei and J. Santos (2015).	*Enhanced Relativistic-Electron-Beam Energy Loss in Warm Dense Aluminium*	Physical Review Letters	114: 095004.
Veshchunov, I. S.; Mironov, S. V.; Magrini, W.; Stolyarov, V. S.; Rossolenko, A. N.; Skidanov, V. A.; Trebbia, J. -B.; Buzdin, A. I.; Tamarat, Ph.; Lounis, B.	*Direct Evidence of Flexomagnetoelectric Effect Revealed by Single-Molecule Spectroscopy*	Physical Review Letters	10.1103/PhysRevLett.115.027601
Mueller, K.; Richard, J.; Volchkov, V. V.; Denechaud, V.; Bouyer, P.; Aspect, A.; Josse, V.	*Suppression and Revival of Weak Localization through Control of Time-Reversal Symmetry*	Physical Review Letters	10.1103/PhysRevLett.114.205301
Jianji Yang, Mathias Perrin, Philippe Lalanne	*Analytical formalism for the interaction of two-level quantum systems with metal nanoresonators*	Physical Review X	2015, 5 (22), pp.021008 (1-9)
Kohlhaas, R.; Bertoldi, A.; Cantin, E.; Aspect, A.; Landragin, A.; Bouyer, P.	*Phase Locking a Clock Oscillator to a Coherent Atomic Ensemble*	Physical Review X	10.1103/PhysRevX.5.021011
Levy, A., P. Audebert, R. Shepherd, J. Dunn, M. Cammarata, O. Ciricosta, F. Deneuville, F. Dorchies, M. Fajardo, C. Fourment, D. Fritz, J. Fuchs, J. Gaudin, M. Gauthier, A. Graf, H. J. Lee, H. Lemke, B. Nagler, J. Park, O. Peyrusse, A. B. Steel, S. M. Vinko, J. S. Wark, G. O. Williams, D. Zhu and R. W. Lee (2015).	*The creation of large-volume, gradient-free warm dense matter with an x-ray free-electron laser*	Physics of Plasmas	22: 030703.
Del Sorbo, D, J.-L. Feugeas, Ph. Nicolaï, M. Olazabal-Loumé, B. Dubroca, S. Guisset, M. Touati, and V. Tikhonchuk (2015).	*Reduced entropic model for studies of multidimensional nonlocal transport in high-energy-density plasmas*	Physics of Plasmas	22: 082706.
Poyé, A., O. Agullo, M. Muraglia, X. Garbet, S. Benkadda and A. Sen (2015).	*Generation of a magnetic island by edge turbulence in tokamak plasma*	Physics of Plasmas	22: 030704.
Gorbinet, T., G. Bélier, G. Boutoux et al. (2015).	*A Sample of the Results of the First SOFIA Experiment*	Physics Procedia	64: 101.
S. Kisyov , F. Negoita, M.M. Gugiu, D.P. Higginson, L. Vassura, M. Borghesi, L. Bernstein, D.L. Bleuel, F. Gobet, B.L. Goldblum, A. Green, F. Hannachi, S. Kar, H. Petrascu, D. Pietreanu, L. Quentin, A.-M. Schroer, M. Tarisien, M. Versteegen, O. Willi, P. Antici, J. Fuchs	*Time of Flight Measurements for Neutrons Produced in Reactions Driven by Laser-Target Interactions at Petawatt level*	Physics Procedia	77, 29 (2015)
Rodríguez-Sánchez, J. L., J. Benlliure, G. Boutoux et al. (2015).	*Transient Effects in Fission Investigated with Proton-on-lead Reactions in Complete Kinematic Measurements*	Physics Procedia	64: 157.

Gaudon M.	*Out-of-centre distortions around an octahedrally coordinated Ti4+ in BaTiO3*	Polyhedron	2015, vol. 88, p. 6-10. DOI : 10.1016/j.poly.2014.12.004
N. Casis, C. Busatto, M.M. Fidalgo de Cortalezzi, S. Ravaine and D.A. Estenoz	*Molecularly imprinted hydrogels from colloidal crystals for the detection of progesterone*	Polym. Int., 64, 773-779, (2015)	10.1002/pi.4851
I. Chaduc, J. Parvole, T. Doussineau, R. Antoine, A. Désert, P-Y. Dugas, S. Ravaine, E. Duguet, E. Bourgeat-Lami and M. Lansalot	*Towards a one-step method for preparing silica/polymer heterodimers and dimpled polymer particles*	Polymer	10.1016/j.polymer.2015.06.008
Dorchies, F., N. Fedorov, and L. Lecherbourg. (2015).	*Experimental station for laser*	Review	86: 073106.
	based picosecond time-resolved x-ray absorption near-edge spectroscopy."	of Scientific Instruments	
Baccou, C., V. Yahia, S. Depierreux, C. Neuville, C. Goyon,F. Consoli, R. De Angelis, J. E. Ducret,G. Boutoux, J. Rafelski, C. Labaune,. (2015).	*CR-39 track detector calibration for H, He, and C ions from 0.1-0.5 MeV up to 5 MeV for laser-induced nuclear fusion product identification*	Review of Scientific Instruments	86: 083307.
Antonelli, L., P. Forestier-Colleoni, G. Folpini, R. Bouillaud, A. Faenov, L. Fedeli, G. Fourment, L. Giuffrida, S. Hulin, S. Pikuz, J. Santos, L. Volpe, and D. Batani. (2015).	*Measurement of reflectivity of spherically bent crystals using k α signal from hot electrons produced by laser-matter interaction*	Review of Scientific Instruments	86: 073507.
A. Rahimi Rashed, A. De Luca, R. Dhama, A. Hosseinzadeh, M. Infusino, M. El Kabbash, S. Ravaine, R. Bartolinob and Giuseppe Strangi	*Battling absorptive losses by plasmon–exciton coupling in multimeric nanostructures*	RSC Advances	5, 53245–53254, (2015) // 10.1039/c5ra09673a
A. Gallud, D. Warther, M. Maynadier, M. Sefta, F. Poyer, C. D. Thomas, C. Rouxel, O. Mongin, M. Blanchard-Desce, A. Morère, L. Raehm, P. Maillard, J.-O. Durand, M. Garcia, M. Gary-Bobo	*Identification of MRC2 and CD209 receptors as targets for photodynamic therapy of retinoblastoma using mesoporous silica nanoparticles*	RSC Advances	2015, 5, 75167-75172
W. Zhang, M. Rahmani, W. Niu, S. Ravaine, M. Hong and X. Lu	*Tuning Interior Nanogaps of Double-shelled Au/Ag Nanoboxes for Surface-Enhanced Raman Scattering*	Scientific Reports	10.1038/srep08382
Thomas Dehoux, Maroun Abi Ghanem, Omar El-Farouk Zouani, Jean-Michel Rampnoux, Yannick Guillet, Stefan Dilhaire, Marie-Christine Durrieu, Bertrand Audoin	*All-optical broadband ultrasonography of single cells*	Scientific Reports	2015, 5, pp.8650 (1-5)
Gao, Zhenghong; Oudjedi, Laura; Faes, Romain; Morote, Fabien; Jaillet, Christele; Poulin, Philippe; Lounis, Brahim; Cognet, Laurent	*Optical detection of individual ultra-short carbon nanotubes enables their length characterization down to 10 nm*	Scientific Reports	10.1038/srep17093
MEZIANE, Farida ; Raimbault, Vincent ; Hallil, Hamida ; Joly, Simon ; Conédéra, Véronique ; LACHAUD, Jean-Luc ; Béchou, Laurent ; Rebière, Dominique ; Dejous, Corinne	*Study of a polymer optical microring resonator for hexavalent chromium sensing*	Sensors and Actuators B: Chemical	https://hal.archives-ouvertes.fr/hal-01112028
J. Croissant, M. Maynadier, O. Mongin, V. Hugues, M. Blanchard-Desce,* A. Chaix, X. Cattoën, M. Wong Chi Man, A. Gallud, M. Gary-Bobo,* M. Garcia, L. Raehm, J.-O. Durand	*Enhanced Two-Photon Fluorescence Imaging and Therapy of Cancer Cells via Gold@Bridged Silsesquioxane Nanoparticles*	Small	2015, 11, 295-299
Emmanuel Abraham, Kaori Fukunaga	*Terahertz imaging applied to the examination of artistic objects*	Studies in Conservation	*2015, 60 (6), pp.343-352*
Kozhevnikov, I. V., E. O. Filatova, A. A. Sokolova, A. S. Konashuk, F. Siewert, M. Stömer, J. Gaudin, B. Keitel, L. Samoylova and H. Sinn (2015).	*Comparative study of the X-ray reflectivity and in - depth profile of a-C, B4C and Ni coatings at 0.1–2KeV*	Synchrotron Radiation	22: ISSN1600 - 5775.
S. Picard, G. Clermont, E. Genin, M. Blanchard-Desce	*8-Br-quinoline derivatives as sensitizers combining two-photon induced fluorescence and singlet oxygen generation*	Tetrahedron	2015, 71, 1088-1094
DEHOUX T., ABI GHANEM M., ZOUANI O., DUCOUSSO M., CHIGAREV N., ROSSIGNOL C., TSAPIS N., DURRIEU M-C, AUDOIN B.,	*Probing single-cell mechanics with picosecond ultrasonics*	Ultrasonics	56, p. 160-171 , 2015



LAPHIA

Contact
info.laphia@u-bordeaux.fr

Pour plus d'informations

laphia.labex.u-bordeaux.fr

Ce travail a bénéficié d'une aide de l'Etat gérée par l'Agence Nationale de la Recherche au titre du programme Investissements d'avenir dans le cadre du projet IdEx Bordeaux portant la référence ANR - n°ANR -10-IDEX-03-02.