

ICFOnians

Community News from The Institute of Photonic Sciences



EDITOR'S CORNER

What Comes Next



BROOK HARDWICK
Coordinating Editor



I am still glowing from the positive reverberations of the 1st Alumni Reunion which took place at ICFO on the 23rd September. A heart-felt thank you to all the attendees who came from near and far for sharing your positive energy, infectious enthusiasm for ICFO, science, friends and life. Having successfully reunited so many of you and seeing all that you have accomplished since your days at ICFO, I am anxious to continue moving forward to get everyone on board - those who could not make it to the event as well as future members of the network. With a strong network to hold us together, I am confident that the ICFO family will be ready for whatever comes next.

We all know that once we launch a project, we rarely have time to sit back and enjoy the view. The reunion made it clear that *ICFOnians* leave ICFO and fly off in hundreds of different directions. Some set up shop thousands of kilometers away, others close-by, and some are focusing on fields that were not at all in their scope when they were at ICFO. Achieving something important, be it a PhD, breakthrough results on an experiment, establishing a start-up company, or what have you, often leads to raising the bar, setting new goals, and starting more projects. The more you achieve, the more motivated you become to see just how high you can climb.

I have come back to this reflection with every article in this edition of *ICFOnians*. For example, as you read on, you will learn that the ICFO spin-off company, Signadyne, was acquired this summer by the California-based giant, Keysight Technologies. For ICFO Alumni Marc Almendros (CEO) and Néstor Oliverio (CTO) this has by no means meant that they have slowed down. New offices, new challenges, and who knows what will come next?

Summer at ICFO means welcoming a wave of students for a taste of a career in research and a chance for ICFO to fulfill one of its goals: to help young scientists determine the next steps in their careers. This year, in addition to the ICFO Summer Fellows program for undergraduate and Masters students, and other programs for high school students, we ran two high level summer school programs for graduate students. The *ICFO School on the Frontiers of Light*, which ran at the beginning of July, was the first in a permanent series of schools which will enhance ICFO's role in training highly talented students worldwide. Later that same month, ICFO had the honor of hosting the 2016 OSA *Siegman International School*, which brought together over 90 students from around the world, not to mention internationally renowned speakers.

Meanwhile, ICFO's research groups are publishing cutting-edge findings in all areas of the science and technology of light. While the alumni who returned to ICFO for the first reunion reflected on how far we have come in these almost 15 years, who knows how many new achievements we will celebrate in the years to come! The big question is "what comes next?"

COVER



23 September 2016 - 1st Alumni Reunion and Symposium: Industry, Networking & Science. Welcome alumni! For some, this was the first return to ICFO since departing many years ago. ICFO Alumni have actively built successful careers in science and in industry around the world while ICFO has also grown in size and scope... and there is so much that we all have in common as our 1st Alumni gathering confirmed.

INDEX

EDITOR'S CORNER	2
<i>What Comes Next</i>	
HAPPENINGS	3
ICFO NEWS	3
<i>Doctor Honoris Causa from the University of Warsaw</i>	
<i>Parole for Omid Kokabee</i>	
<i>High-Level Expert Group for the Quantum Technology Flagship</i>	
<i>UPC PhD Thesis Award 2016</i>	
<i>Paul Ehrenfest Best Paper Award for 2015</i>	
ICFO NEWCOMERS	3
LATEST ADVANCES	4
<i>Graphene Does Double Duty for Plasmons</i>	
<i>Nanoantennas Enable Forbidden Energy Transfer</i>	
<i>High Power Multi-color Source with Femtosecond Outputs</i>	
<i>Force Sensing Achieved with Graphene Opto-Mechanical Resonators</i>	
<i>Functionalized Tailored Wettability Surfaces</i>	
INFRASTRUCTURE	4
<i>OSHA Certification</i>	
BUSINESS NEWS	5
<i>SIGNADYNE Acquired by Keysight Technologies</i>	
COLLABORATION	6
YOUNG TALENT	6
<i>Summer Opportunities for Students</i>	
PEOPLE	7
BEYOND ICFO	7
<i>1st Alumni Reunion at ICFO</i>	
GO & FLY	7
<i>Ioannis Tsioutsios</i>	
<i>Seth Cousin</i>	
THE LAST WORD	8
HIGH PROFILE	8
<i>Anne l'Huillier</i>	
CHALLENGE	8
<i>MYSTERY ICFOnian</i>	

Coordinating Editor
Brook Hardwick, Corporate Communications Head

Editorial Committee
Brook Hardwick, Corporate Communications Head
Lluís Torner, ICFO Director
Dolors Mateu, ICFO Manager
Silvia Carrasco, Knowledge & Technology Transfer Director
Laia Miralles, HR and Education Head
Valerio Pruneri, Group Leader, Optoelectronics
Rob Sewell, Coordinator of Academic Programs
Alina Hirschmann, Communications

Pictures by
© ICFO, Ramon Josa

Reporting & Picture Research
Brook Hardwick, Corporate Communications Head
Alina Hirschmann, Communications
Diana Campo, Communications
Tomás Charles, Visual Communication

Additional Contributors
Sergi Beltran, Occupational Safety and Biosafety Head
Mireia Vilamala, Human Resources and Education
Rob Sewell, Academic Programs Coordinator
Marc Almendros, CEO, Signadyne
Anne l'Huillier, Professor in Atomic Physics, Lund University

Design & Layout
Mineral Gràfics



ICFO-The Institute of Photonic Sciences
Member of The Barcelona Institute of Science and Technology
Mediterranean Technology Park
Av. Carl Friedrich Gauss, 3
08860 Castelldefels | Barcelona | Spain
Phone: 93 553 4001
Email: communications@icfo.eu
Web: www.icfo.eu



This newsletter is printed on 100% post-consumer-waste recycled, chlorine-free, and EU eco-labeled paper.



This content is licensed under the Creative Commons Attribution-NonCommercial-NoDerivs 3.0 Unported License. Except pictures that are copyrighted by ICFO.

D.L.: B-54464-2008

ICfonians® is a registered trademark

ICFO NEWS



DOCTOR HONORIS CAUSA

ICREA Prof. at ICFO Maciej Lewenstein, a recognized international leader in the field of Quantum Optics, was honored with the Doctor Honoris Causa from the University of Warsaw. During the 26th September award ceremony, Prof. Dariusz Wasik, Dean of the Faculty of Physics, said, “I am impressed with the scientific and academic career of Prof. Maciej Lewenstein. This is one of the most famous physicists in Europe.” Prof. Lewenstein accepted this accolade during the “Perspectives of Quantum Optics Symposium” organized on the occasion of this honorary doctorate award.

PAROLE FOR OMID KOKABEE

ICFO Alumnus, Omid Kokabee, who was convicted in 2011 by the Islamic Revolutionary Court in Iran with a 10-year prison sentence for communicating with a hostile government, has been granted freedom on parole. Omid has been on temporary leave from prison since May of this year to recover from kidney removal surgery. Friends and colleagues around the world who have lent their support to Omid’s struggle join the entire ICFO community in celebrating this important victory.

HIGH-LEVEL EXPERT GROUP FOR THE QUANTUM TECHNOLOGY FLAGSHIP

The European Commission has now formally established the Expert Group on Quantum Technologies – a high level steering committee with a mandate of one year to provide recommendation on the preparation of a new Quantum Technology Flagship. Its members, including ICFO director Prof. Lluís Torner, will collectively represent the diversity of stakeholders in Europe, from both the academic and industrial side. Together with this wider community of stakeholders, in close collaboration with member states, the group will work in an open and transparent way to propose a Strategic Research Agenda with clear and ambitious goals, as well as an efficient approach to its implementation and governance.

UPC PhD THESIS AWARD 2016

Every year the Technical University of Catalonia (UPC) grants the Extraordinary PhD Awards in order to recognize the doctoral theses which have obtained “cum laude” in their final PhD defense evaluation. This year, ICFO Alumni Dr. Jan Gieseler and Dr. Ignacio Martinez’s theses were among the list of extraordinary doctoral works for the academic period 2013/2014. Dr. Jan Gieseler’s thesis, entitled “Dynamics of optically levitated nanoparticles in high vacuum,” was co-supervised by ICREA Prof. at ICFO Romain Quidant and Prof. Lukas Novotny, Professor ETH Zürich and distinguished invited professor at ICFO. Dr. Ignacio Martinez’s thesis, supervised by the late ICREA Prof. at ICFO Dmitry Petrov, was entitled “Noise assisted effects in physics and biophysics studied by the optical trapping technique.”

PAUL EHRENFEST BEST PAPER AWARD FOR 2015

Through the Paul Ehrenfest Best Paper Award, the Institute for Quantum Optics and Quantum Information in Austria recognizes the most significant publication in the foundations of quantum physics, theoretical or experimental, during one calendar year. In 2015, Albert Einstein’s famous objection “God does not play dice” was tested with unprecedented rigor by groups at TU Delft, IQOQI Vienna, and NIST (USA). The 2015 Paul Ehrenfest Best Paper Award goes to the authors of these three landmark Bell test studies, all of which were co-authored by ICFO researchers in the groups led by ICREA Professors Morgan Mitchell and Valerio Pruneri.

ICFO NEWCOMERS



Adrianna Frelek
Student



Katerina Gratsea
Student



Itai Epstein
Postdoctoral Researcher



James Quach
Postdoctoral Researcher



Elías Martínez
Postdoctoral Researcher



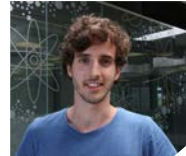
Charikleia Troullinou
PhD Student



Piotr Grochowski
Student



Marc Rodà Llordés
Student



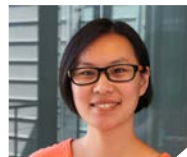
Llorenç Escolà
Student



Ioannis Tsioutsios
Postdoctoral Researcher



Giulia Franco
Student



Cheng Peng
Visiting PhD Student



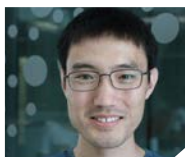
Biplob Nandy
PhD Student



Robin Camphausen
Student



Deng Pan
Visiting Scientist



Jianbo Yin
Postdoctoral Researcher



Andreas Schell
Postdoctoral Researcher



Jordi Minnema
Student



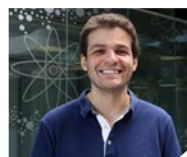
Bernat Terrés
Postdoctoral Researcher



Sarah Keary
PhD Student



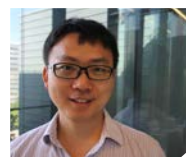
Sebastian Castilla
PhD Student



Onur Özdemir
PhD Student



Daniel Pérez
PhD Student



Hui Zhang
Postdoctoral Researcher



Lisa Kobayashi
PhD Student



Zahra Baghali
PhD Student



Alex Soares Duarte
Postdoctoral Researcher



Sascha Lindig
PhD Student



Gorka Muñoz Gil
PhD Student



Carlotta Ciancico
PhD Student



Francesco Di Stasio
Postdoctoral Researcher



Jonas Neumeier
Student



Stefan Wieser
Team Leader SLN Facility



Jessica Oliveira
PhD Student



Loïc Henriët
Postdoctoral Researcher



Frank Grubbert
Student



María Maffei
PhD Student

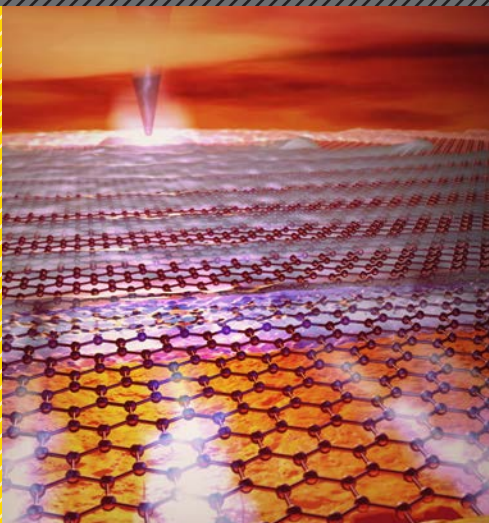
Many of us joined ICFO or took a new position at the Institute between July and September.

Welcome to ICFO!

LATEST ADVANCES

GRAPHENE DOES DOUBLE DUTY FOR PLASMONS

■ Last year, the nano-optoelectronics research group led by ICREA Prof. at ICFO Frank Koppens, showed that high-quality graphene could guide plasmons and confine them to length scales of nanometers, one hundred to two hundred times below the wavelength of light, while maintaining a long plasmon lifetime. But, the lack of an on-chip detector of plasmons was still a major problem. Now, this research group has taken a huge step forward by fabricating an all-graphene mid-infrared plasmon detector operating at room temperature, where a single graphene sheet serves simultaneously as the plasmonic generation medium and detector. This study, published in *Nature Materials*, in collaboration with CIC nanoGUNE, Columbia University and the National Institute for Materials Science in Japan, opens a new pathway to graphene “plasmo-electronics,” which would permit the performance of mid-infrared opto-electronics at very small length scales. The team looks forward to creating a fully integrated system in which all three parts - source, channel, and receiver - are made of graphene, enabling a new “all-carbon optics” technology.



NANOANTENNAS ENABLE FORBIDDEN ENERGY TRANSFER

■ In a collaboration between Institut Fresnel in Marseille, University of Montpellier and ICFO research groups led by ICREA Professors at ICFO Maria Garcia-Parajo and Niek van Hulst, nanoantennas with nanogaps have been optimized to bring about the increase in energy transfer efficiency for a DNA-based FRET system, with nearly perpendicular donor and acceptor dipoles. This has enabled an energy transfer which is simply forbidden in a homogeneous environment. The approach increases the applicability of single molecule FRET over diffraction-limited approaches, with the additional benefit of higher sensitivity and higher concentration range toward physiological levels. The work was published in *NanoLetters* and carried out under the EU FP7 framework project NanoVista - Photonic Antennas for Biology.

HIGH POWER MULTI-COLOR SOURCE WITH FEMTOSECOND OUTPUTS

■ The study “High power multi-color OPCPA source with simultaneous femtosecond deep-UV to mid-IR outputs” recently published in *Optics Letters* by ICFO researchers Matthias Baudisch, Benjamin Wolter, Michael Pullen, and Michaël Hemmer, led by ICREA Prof. at ICFO Jens Biegert, describes a femtosecond multi-color optical parametric chirped pulse amplifier (OPCPA) with simultaneous outputs from the deep-UV to the mid-IR with optical synchronization. In this study, researchers used optical synchronization of a mid-IR optical parametric chirped pulse amplification system to demonstrate MW femtosecond (fs) laser pulses generated with high stability at various wavelengths: 3100, 1620, 810, 405, and 270 nm. With this technique, they were able to prove that it is possible to reveal ultrafast dynamics of materials at unexplored wavelengths, since the wavelength range of high peak fs pulse outputs range from the deep UV to the mid-IR. The results of this study have been highlighted in the “Spotlight for Optics” review section of the OSA journals.

FORCE SENSING ACHIEVED WITH GRAPHENE OPTO-MECHANICAL RESONATORS

■ In a recent study published in *Nature Communications*, ICFO researchers Peter Weber, Johannes Güttinger, Adrien Noury, Jorge Vergara-Cruz, led by ICFO Prof. Adrian Bachtold, have achieved unprecedented ultra-sensitive measurements on graphene mechanical resonators, surpassing previous studies in terms of force sensitivity (390 zN Hz^{-0.5}), displacement sensitivity (1.3 fm Hz^{-0.5}), and phonon occupation (7.2 phonons). The force sensitivity obtained by the team approaches the fundamental limit imposed by thermo-mechanical noise at sub-Kelvin temperature. The results obtained in this study pave the way towards ultra-high sensitivity force sensing based on nanoscale systems in order to explore new physical phenomena in nuclear spin physics, quantum electron transport, surface science, and light-matter interaction.

FUNCTIONALIZED TAILORED WETTABILITY SURFACES

■ ICFO researchers in the groups led by ICREA Professor at ICFO Valerio Pruneri and Prof. Melike Lakadamyali, in collaboration with Corning, Inc. and researchers at the Universitat de Barcelona, presented a study of the external membrane of Influenza A virus envelope. Recently published in *Applied Materials and Interfaces*, the study sheds light on the mechanisms by which substrates with different wettability can interact with the lipid envelope of bacteria and viruses. Researchers tailored the wetting characteristics of glass surfaces by functionalizing them with coating made of alkyl- and fluoro-silanes as well as by nanostructuring. Furthermore, using a number of experimental and computational methods including real-time fluorescence microscopy and molecular dynamics simulations, they were able to study the effects of these functionalized surfaces on the infectivity of Influenza A viruses and introduce design criteria for new surfaces with specific properties that can reduce or eliminate the spread of disease.

INFRASTRUCTURE

OHSAS
Certification

ICFO among the top research centers in the world in terms of safety excellence

Throughout the course of the past year, ICFO's Occupational Safety and Biosafety Unit has been implementing an Occupational Health and Safety Management System (OHSMS) based on the BS OHSAS 18001:2007 certification program. Thanks to the coordinated efforts of the OS&B team and the participation of all ICFO-nians, UKAS standard has recently granted the center the OHSAS certification. ICFO is the only research center in Spain to have earned this recognition.

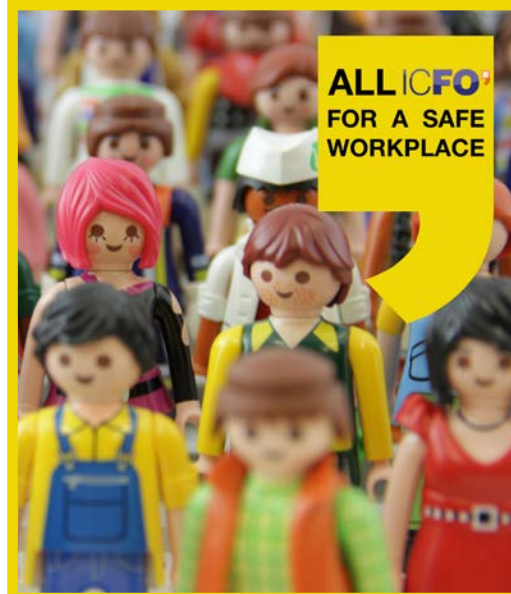
Based on the continuous improvement process, the OHSMS goes far beyond the safety standards set by the EU directives in establishing the legal obligations on safety. The result of this effort is the safety manual (available on the Intranet) that outlines the responsibilities of all ICFO-nians in this regard and sets procedures governing the safety requirements to be applied in different phases of our daily operations (maternity protection, work with lasers, safety training, etc.).

An external company will audit this certification annually, thus guaranteeing the process' independence.

Without a doubt, this recognition places ICFO among the top research centers in the world in terms of safety excellence.



ALL ICFO
FOR A SAFE
WORKPLACE



BUSINESS NEWS

Signadyne Acquired by Keysight Technologies

California-based multinational leader in test and measurement solutions acquires ICFO spin-off



Keysight Technologies, the world's leading electronic measurement company headquartered in the USA, has acquired the technology start-up Signadyne, a spin-off born at ICFO. Signadyne, with expertise in modular measuring equipment, received financial support from Caixa Capital Risc, the venture capital arm of "la Caixa", and Fitalent, everis Group's Investment Fund. The acquisition agreement was led by the consulting firm ImpulsetoGrow.

Signadyne was founded in December 2010 by ICFO PhD graduate Dr. Marc Almendros (CEO) and former ICFO research engineer Mr. Néstor Oliverio (CTO), as a result of a research project they were conducting at ICFO. The two young scientists discovered that the test and measurement equipment they needed to control their experimental setup - an ion trap for quantum computing and communication - did not exist in the market. After a period of incubation in the ICFO LaunchPad, (an ICFO support area and facility that allows innovative ideas to be converted into technological spin-offs), the technology and business plan matured and Signadyne was born. The company develops cutting-edge technology in the field of modular tests and measurement

for a broad range of applications with large commercial potential.

Based on the PXI standard concept, Signadyne is capable - from different test modules - of efficiently and economically developing tailor-made equipment for specific applications in contrast to conventional test and measurement devices which require an almost customized design for each type of element tested. In addition, Signadyne's devices stand out for their ability to yield many measurements in very short time intervals (up to 1Gs/s, one million samples per second), for the amount of channels per device (the number of parameters measured at the same time) and for their versatility and flexibility.

Keysight Technologies purchased Signadyne with the objective of further developing its cutting-edge technology. An industry leader since Dave Packard and Bill Hewlett founded the original company in their garage in Silicon Valley in 1937, Keysight will incorporate Signadyne's products and technology into their Global Solutions Support, helping to continue its contribution to more efficient testing and measurement.

“Signadyne develops cutting-edge technology in the field of modular tests and measurement for a broad range of applications with large commercial potential.”

KTT Launchpad at ICFO... Encouraging Innovation



■ At the core of a frontier research institute are individuals with the drive to do or discover something that no one has ever done before. ICFO is proactive in fostering entrepreneurial activities and spin-off creations, encouraging ICFOnians to take their new ideas and discoveries "made @ ICFO" out of the lab and into society.

The center offers its researchers the KTT Launchpad, a space and support structure which allows innovative ideas to develop into new technology spin-offs. In addition, ICFO participates in incubator activities and seeks to attract venture capital investment.

To date, ICFO has helped create five successful start-up companies, with additional initiatives in various stages of incubation.

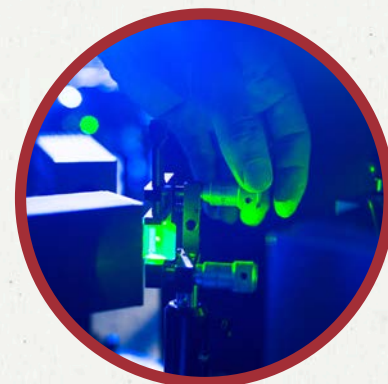
▲ SIGNADYNE TEAM. Top: José Luis Preciado, Marc Almendros, CEO (✓), Néstor Oliverio CTO (✓), Jordi Martínez-Carrasco, Albert Muñoz (✓). Bottom: Eneas Puertas, Rubén Benet (✓), Marcel Gozalbo. ✓-ICFO Alumnus



Message from Signadyne's CEO MARC ALMENDROS

■ We are all very excited about the new developments at Signadyne. Just six years after founding this company, the acquisition by Keysight Technologies gives us more resources for research and an enormous commercial network. This is a great success story, both for the Signadyne team and for ICFO. I would really like to thank Silvia Carrasco and the KTT team, as well as Lluís Torner and Dolors Mateu. Without ICFO's help, this would not have been possible.

The essence of science is to bring results from the lab to society. This could be a new drug, a new diagnostic system, a quantum computer, but it is useless if it stays in the lab. I encourage you to be on the look-out for marketable applications that may emerge from your research. When I began working on my PhD, I had no idea that I would end up founding a company, and this experience has been really rewarding. The KTT team is doing a great job to give you the space and resources you need to develop your ideas into products. I hope ICFOnians will take advantage of this to create many more successful companies @ ICFO!



IN FOCUS

Summer Science at ICFO



This year, the months of June through September were more active than usual as ICFO expanded its offering of programs for young minds.

One of ICFO's core missions is to have a formative influence on the next generation of scientists. Throughout the year, ICFO welcomes a steady stream of high school and undergraduate students, offering a wide range of outreach activities as well as an active internship

program so that young minds may gain exposure to the work carried out at the center. Taking advantage of the summer break, each year these visitors have a visible presence in our corridors and labs. ICFO puts into motion a Summer Lecture Series, designed to intro-

duce newcomers to the many different lines of research at ICFO. A series of lab tours as well as projects conducted within ICFO's research groups provide the framework for these young scientists (and scientists-to be) to experience ICFO as a researcher, not just a visitor.

This year, the months of June through September were more active than usual as ICFO expanded its offering of programs, reaching out to new students in high schools, universities and graduate programs, sharing the excitement of the ICFO research experience.

HIGH SCHOOL 2016

ICFO participates in a number of programs that offer high-schoolers their first research experience.

E²C³ @ ICFO

ICFO hosted four high school students for a two to five week stay within the E²C³-Centre Recerca program, supported by Fundació Catalunya-la Pedrera. Students worked on projects within the Theoretical Quantum-Nano Photonics Group and the Quantum Information Theory Group.



PROGRAMA JOVES I CIÈNCIA

ACER

This year, through the 2nd Edition of the Extraordinary High School Prizes, the Catalan Association of Research Centers (Associació Catalana d'Entitats de Recerca - ACER) awarded three scholarships. The students worked on the project "First steps in random walks" within the Quantum Optics Theory Group.

ACER[®]

RICHI FOUNDATION

For the first time this year, ICFO teamed up with the Richi Foundation as part of the Richi Talent program, welcoming a talented high school student to work with the Outreach Team for three weeks in order to complete her final school research project.



BIYSC

During seven days, ICFO welcomed seven students from BIYSC (Barcelona International Youth Science Challenge), a new program by the Fundació Catalunya - La Pedrera. They discovered how light and matter interact at the nanoscale, guided by the researchers of the Plasmon Nano-Optics Group.



CTM

The Generalitat's Education Department, through the Science, Technology and Mathematics (CTM) program, puts motivated teachers and their talented students in contact with various Catalan research centers. Through this program, ICFO helped five students complete their high school research projects this year.

SUMMER FELLOWS ICFO[®] 2016

Now in its 10th edition, the *Summer Fellows* program welcomed 18 undergraduate and Master's students to ICFO to carry out challenging research projects under the supervision of a group leader and with the assistance of postdocs or PhD students.

This program is part of ICFO's efforts to attract young top talent at an early academic career stage. It represents a unique opportunity for the fellows to collaborate in frontier research projects, to learn how these projects are conducted and to gain research experience.

◀ *Left to Right, Top row:* Marc A. Mas, Anicet Tibau, Irina Pi, Ignasi Gros, Alba Romero, Adrià Barja. *Middle:* David Masip, Sergio H. Martínez, Xavier Casas, José A. Ballester, Christian Koch. *Bottom:* Júlia Amorós, Sergi Julià, Jaume de Dios, Pilar Pujol, Iñigo Urriaga (Missing: Gabriel Comeron y Julia Medina).

SCHOOL ON THE FRONTIERS OF LIGHT ICFO[®] 2016

In an intense week-long program, 40 Masters and starting PhD students recruited from some of the best research centers in the world participated in a new annual *Frontiers of Light Summer School* program at ICFO. Dedicated to Quantum Nano- and Opto-Mechanics, this year's school exposed the students to a carefully chosen list of topics representing the cutting-edge of research. Its overall goal was to introduce them to the topic and help them target their future research directions. This program was the first in a permanent series of schools, to enhance ICFO's role in training highly talented students worldwide.

sessions, and reading and discussion of recent papers. In order to shed light on the broader scope of research taking place at ICFO, there were also lab tours and a poster session from ICFO researchers. Many social activities complemented the academic program including drinks with ICFO students (organized by ICONS) and a walking tour of the Gothic quarter followed by dinner in the Barcelona harbor.

Invited Lecturers: Professors Amir Safavi-Naeini (Stanford); Oriol Romero-Isart (IQOQI Innsbruck); Darrick Chang (ICFO), Romain Quidant (ICFO) and Adrian Bachtold (ICFO).

■ *The 2017 Frontiers of Light Summer School on frontiers in optical trapping and optical manipulation will run from 3-7 July.*

The students followed a dynamic program including pedagogical lectures, active student participation through problem solving

2016 OSA SIEGMAN INTERNATIONAL SCHOOL



ICFO hosted the 2016 *OSA Siegman International School on Lasers*, gathering more than 90 young graduate students in the field of optics and photonics and internationally renowned speakers. Hailing from 36 different countries, these graduate students listened to lectures on laser science and technology, and recent advances and applications, and participated in an intense week-long program to help them advance their education, foster future collaborations, as well as promote research and engineering within the optical community. The school was complemented by an industrial session, thematic discussions, a student poster

session (and competition), visits to ICFO labs, encounters with ICFOnians and a daily social activity.

Invited Lecturers: Professors Lene Vestergaard Hau (Harvard); Philip Bucksbaum (Stanford); John Collier (Central Laser Facility); Eric Van Stryland (CREOL); Martin Wolf (Fritz Haber Institute); Jean-Claude Diels (Univ. of New Mexico); Scott Diddams (NIST); Marcus Motzkus (Univ. Heidelberg); Rick Trebino (Georgia Inst. Technology); Mark Stockman (Georgia State University); Peter Fendel (Thorlabs)

BEYOND ICFO



Thank You ICFO Alumni

ICFO welcomes back Alumni for the First Alumni Reunion

In the almost 15 years of ICFO's existence, we have grown to around 400 current ICFOnians who conduct and support frontier research at the institute. But our success is due to a collective effort of both current ICFOnians and Alumni, who together are an extended family of 1000+ scientists who continue to play an important role in the institute's achievements.

On Friday, 23rd September, 84 members of the Alumni Network returned from their current homes as far away as the US, Mexico, and Iran, not to mention from around Europe, to participate in the first Alumni Reunion. ICFO Director Lluís Torner welcomed the attendees, clearly pleased by their enthusiasm for building a network that maintains strong ties to the institute and between its members as they advance in their careers around the world.

After a welcome from the director and a short presentation of the new structure of the network and the services that are now on offer through the on-line alumni platform, the morning sessions focused on the theme of innovation that all ICFOnians have in common. Nuria Sebastian, Vice-President of the Scientific Council of the European Research Council (ERC), offered the first plenary talk about the ERC's activities that help make possible

innovation through frontier research. The sessions continued after a networking coffee with a second plenary talk from Lita Nelsen, who spoke about getting innovative research out of the lab and into businesses based on her 25 years of experience leading MIT's Technology Licensing Office. The morning sessions closed with a panel of ICFO Alumni innovators who shared their experiences in spin-offs and start-up companies at different stages of development.

The afternoon offered alumni the opportunity to network and interact through two alumni debates about careers in industry and academia, as well as a poster session where all were able to share the details of their current projects. The day was capped off by a reunion dinner near the beach.

It is clear that as we advance as an institute, we must take advantage of the rich network that has helped us all grow professionally and personally. The 1st Alumni Reunion formally launched this network and the framework that will continue to strengthen the ICFO family connection for many years to come.

Thank you to all alumni for participating... And see you again soon!



GO & FLY



118 women and men have successfully defended their theses at ICFO since its founding in 2002 and have helped us to measure what we have learned, how far we have come, and how much we have yet to learn. These ICFOnians have recently succeeded in defending their PhD Theses. Honoring ICFO's tradition, ICFOnians gather together to celebrate your accomplishments and encourage you to Go & Fly! Remember that wherever you go, you will always be a part of the ICFO community.



117
July 26th
2016

IOANNIS TSIOUTSIOS

Mechanical Resonators Based on Graphene and Carbon Nanotubes
TD: Prof. Dr. Adrian Bachtold



118
September 12th
2016

SETH LUCIEN COUSIN

Towards the Generation of Isolated Attosecond Pulses in the Water Window
TD: Prof. Dr. Jens Biegert

HIGH PROFILE



Anne L'Huillier:

“My most important ‘eureka moment’ has been the discovery of high-order harmonic generation in 1987... I have had other eureka moments during my career, both in the lab and writing equations, but the 1987 experiment made the biggest impact, affecting my whole career.”

Renowned Professor of Atomic Physics at Lund University, and a member of the Nobel Prize Committee for Physics, Anne L'Huillier pioneered the field of high-order harmonic generation in gases and its application to attosecond pulse generation.



Can you give some insights into how your career developed?

I was interested in studying mathematics and physics from a very young age. After getting a teaching degree in mathematics, I switched into physics and studied “quantum physics”, a rather broad program with fantastic teachers like C. Cohen-Tannoudji who made me love atomic physics. Then I did a PhD at the Commissariat à l’Energie Atomique on “multiple ionization of atoms in strong laser fields” under the supervision of G. Mainfray. Subsequently I did short postdoctoral visits to learn about atomic theory in Gothenburg and in Los Angeles. By 1986, I had a permanent researcher position at the Commissariat à l’Energie Atomique. Eight years later, I moved to Lund, Sweden, to follow my husband.

I got a temporary associate professor position in Lund in 1995 and a professorship in 1997, which has let me combine my love for teaching and research.

What has been your most important “eureka moment”?

My most important “eureka moment” was the discovery of high-order harmonic generation in 1987. I still

remember vividly the sharp peaks coming up on the screen as the grating was rotated and the light came onto the monochromator slit. I quickly realized that this was what I wanted to do research on, both experimentally and theoretically. Almost 30 years have gone by and I am still working on it! Of course, I have had other eureka moments during my career, both in the lab and writing equations, but the 1987 experiment made the biggest impact, affecting my whole career.

What has been your role in the Nobel Prize Committee?

I was “adjoint” to the committee the first three years, then member the last six years. I had the honor and duty to be chairman the last year, 2015. It has been

“My advice to the young generation: You are performing better as a scientist when you have a balanced life, whether it is a family and/or different hobbies like sport or music.”

a very interesting task which has given me a broad knowledge of physics and allowed me to meet many people. Part of the Nobel Committee’s work is to popularize science to the general public which has also been quite interesting. At the same time, it has been a very demanding job. I have not been able to travel as much as I could have, and I have refused to take administrative positions, which was probably good for me!

You are a role model for many young women in science. What advice would you offer the new generations entering careers in research about science and about work-life balance?

I think that it is a great profession and I would definitely encourage any young woman (or man) to consider this career. My advice to the young generation: You are performing better as a scientist when you have a balanced life, whether it is a family and/or different hobbies like sport or music. I have two boys, now in their teens, still requiring attention and support. So my advice is just that: Combine science and family as best as you can! Don’t give up in advance because you think you cannot combine. And good luck.

CHALLENGE

SUDOKU

9				3			4	1
1	3		2				6	
		8	4		1	7		
		9		5		8	7	
3			1		7			9
	8	2		4		1		
		3	6		4	9		
	9				5		1	7
2	5			9				6

7			3	2				5
	9					2	1	
	6			8	1			3
					2			9
		7				5		
3			7					
6			2	5			9	
	7	4					6	
8				6	7			4

MYSTERY ICFONIAN

How much do you know about the people you work with? ICFOnians are a fascinating group, with hobbies, interests and talents that may surprise you. Have a look around and see if you can guess who this edition’s **Mystery ICFOnians** is! Look for the answer in next edition’s Challenge section!



1. When he was a kid, he appeared in a commercial about a toy robot. His voice was dubbed and this upset him.
2. Also in his artistic youth, he had a role in a short film, playing the main character in scenes about his childhood.
3. He carries his laptop literally everywhere.
4. He used to work as a sound technician and bartender – simultaneously.
5. He has a very poor memory or put another way, a “selective” one.
6. He played professional football until he was 18.

Ed. #28 (Summer) solution: Carlos Dengra (Facilities Head)

Want to subscribe?
Have you got news to share?

Whether you’d like to subscribe to **ICFOnians**, change your email address, or have some comments and ideas for future content, we’d love to hear from you!

twitter.com/ICFOnians

To subscribe or to read back issues of **ICFOnians**, please visit the ICFO Website www.icfo.eu

facebook.com/ICFOnians

To get in touch, please send us an email to: communications@icfo.eu indicating your name, email address, and institution.

youtube.com/user/ICFOnians