

ICFO^R spotlight

WINTER 2009 | 05



a Catalan research model



Today, with its brand new building and state-of-the-art facilities, it can be difficult to remember or even imagine the early days of ICFO. But setting up a research institute from scratch is no mean feat. It takes vision, patience, and a bit of faith too.

ICFO was launched by the Government of Catalonia and the Technical University of Catalonia (UPC) in March 2002 with the mission to conduct basic and applied research in the sciences of light. In those early days, ICFO's offices and research laboratories were temporarily located on the Barcelona UPC campus. The labs were situated on the floors -2 and -3 of a building that was still under construction, and these less-than-optimal conditions generated a range of technical problems. José Carlos Cifuentes González, then in charge of setting up the first engineering workshop at ICFO, had to use much of his time and imagination to overcome the difficulties.

As research got underway, the building that was to later house ICFO on the Castelldefels UPC campus was also being built. When ICFO finally moved to its new home in summer 2005, the shiny building, extra resources, and experience previously acquired in the face of adversity soon made ICFO the research center it is today.

Nowadays, ICFO is a young institute that regularly publishes in top journals, wins awards, and attracts top funding. Most recently, ICFO Group Leader Niek van Hulst became one of this year's winners of a European Research Council Advanced Investigator Grant for his work on nano-optical antennas.

ICFO is a competitive research environment for international group leaders to open new lines of research. In September, Gerasimos Konstantatos joined ICFO to establish a new research group in nanophotonics. A native of Greece with research experience in Canada, Gerasimos is bringing his expertise in the field of colloidal nanocrystals with the aim of developing novel devices for renewable energy and optoelectronic applications.

ICFO is also an institution that welcomes always more researchers, engineers, and support and administrative staff members. But ICFO is also dedicated to preparing young scientists for an international career. Just this winter, three young scientists left ICFO after obtaining a Ph.D. to explore new research horizons. Aditi Sen De and Ujjwal Sen, a married couple from India who spent four years at ICFO as postdoctoral researchers, were also able to recently come back to a faculty position in their home country.

Finally, in less than 8 years, ICFO has become a place of reference in the Catalan, Spanish, and European research systems. Last October, the Vice-President of the European Research Council Helga Nowotny came to visit ICFO to assess the Catalan research model as part of a delegation from several research institutions in Vienna, Austria.

This latest issue of ICFO Spotlight offers you a journey back to the early days of ICFO together with a selection of ICFO's most recent successes.

Enjoy your reading!

Elisabeth Pain – ICFO Spotlight Coordinating Editor



cover

ICFO moved to a brand new building on the Castelldefels UPC campus in summer 2005 and celebrated the completion of its phase II expansion in summer 2008.

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HAPPENINGS

ICFO news

ERC Advanced Investigator Grant

ICFO Group Leader Niek van Hulst is among this year's winners of a European Research Council (ERC) Advanced Investigator Grant. Niek van Hulst was awarded the prestigious grant to pursue his research on nano-optical antennas—extremely small devices able to confine, control, and exploit light on a nanometer scale. With the support of the ERC, the researcher will build upon his group's pioneering results on a range of new physical phenomena including directed bright single photon emission and control of nanoscale optical fields.

Niek van Hulst leads the Molecular Nanophotonics group at ICFO with a research professor position supported by the Catalan Institution for Research and Advanced Studies (ICREA). Before joining ICFO in October 2005, he held a full professor position at the University of Twente's MESA+ Institute for Nanotechnology in the Netherlands.

Benjamin Franklin Medal

Ignacio Cirac, Distinguished Invited Professor at ICFO and Director of the Theory Division at the Max Planck Institute of Quantum Optics in Garching, Germany has been awarded the 2010 Benjamin Franklin Medal in Physics. Ignacio Cirac shares the prize with David Wineland of the U.S. National Institute of Standards and Technology in Boulder, Colorado and Peter Zoller of the University of Innsbruck in Austria. The Franklin Institute offers the medal to the three scientists in recognition "for their theoretical proposal and experimental realization of the first device that performs elementary computer-logic operations using the quantum properties of individual atoms."

Founded in 1824 in Philadelphia, Pennsylvania, the Franklin Institute aims to reward "men and women whose achievements truly reflect the spirit, innovation, and inspiration of Franklin himself."

ICFO as a Model

Michael Häupl, president of the Vienna Science and Technology Fund (WWTF) in Austria and Mayor and Governor of Vienna, came to Barcelona last October to assess the Catalan scientific research model. Häupl led a delegation of 20 representatives from several research and technology institutions in Vienna, with the WWTF-based Vice-President of the European Research Council Helga Nowotny among them.

The Vienna delegation came to visit ICFO with a special interest in quantum optics research. During the event, ICFO Director Lluís Torner gave a presentation on the structure and management of the institute. ICFO Group Leader and ICREA Professor Maciej Lewenstein then offered a brief description of ongoing quantum optics research projects. The delegation also visited the Barcelona Biomedical Research Park and the new health science park Biopol located in L'Hospitalet de Llobregat.

ICFO in the Media

A monograph published in the newspaper *La Vanguardia* on September 28 highlights the creation of the new Nanophotonics for Energy Efficiency European Network of Excellence. The network is to gather more than 130 nanophotonics scientists, engineers, technicians, and managers from nine different institutions in six different European countries in the quest towards energy-efficient applications.

Also in September, ICFO Director Lluís Torner reflected on the scientific enterprise in a video interview conducted by *Global Talent*, a science communication website recently launched in Barcelona.

On October 6, the Spanish national newspaper *El País* also published an article written by Lluís Torner in anticipation of the 50th anniversary of the invention of the laser, which is to be celebrated in 2010. The article reviews the history of laser discovery and its current and future applications.

ICFO newcomers

A warm welcome to all of you who joined ICFO between September and November 2009!



Martin Kuttge
Postdoctoral Researcher



Eylem Ozkaramanli
Documentation Assistant



Frank Koppens
Junior Group Leader



Laura Hottin
Postgraduate Student



Alexandre Thai
Ph.D. Student



David Benedetti
Postgraduate Student



Mathieu Alloing
Ph.D. Student



Rosa Weigand
Visiting Scientist



Parisa Farzam
Ph.D. Student



Sebastian Strobl
Postgraduate Student



Edina Szirmai
Postdoctoral Researcher



Saverio Pasini
Postgraduate Student



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Visiting Scientist



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Outreach & Media Officer



Riccardo Sapienza
Postdoctoral Researcher



Chunfu Huang
Visiting Scientist



Alexia Giannoula
Postdoctoral Researcher



Johann Osmond
Research Engineer



Ignacio Martínez
Ph.D. Student



Jorick Van't Oever
Postgraduate Student



Gergely Szirmai
Postdoctoral Researcher



Tim Rumping
Postgraduate Student



Gerasimos Konstantatos
Junior Group Leader



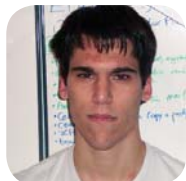
Chiara Fasson
Postgraduate Student



Judith Durá
Research Engineer



Stephan Teichmann
Ph.D. Student



Oliver Hijano
Undergraduate Student



Robert Sewell
Postdoctoral Researcher



Radek Machulka
Visiting Scientist

welcome
to ICFO

ICFO events

Science Week. In November, ICFO introduced high school students to the wonders of light through interactive games and exhibitions.

Gastronomical Rendez-vous. ICFO hosted the 6th Gastronomical Encounters organized by the Hotel and Catering Trade Association of Castelldefels and Baix Llobregat.

Public Outreach. In October ICFO Group Leader Juan Torres gave a lecture on the many uses of light to an audience of senior citizens at the Technical University of Catalonia.

LATEST ADVANCES

research highlights

Ultragentle Manipulation at the Nanoscale

Researchers led by ICFO Group Leader and ICREA Professor Romain Quidant have developed a novel light-based technique for the trapping and gentle manipulation of particles the size of a few nanometers. The so-called 'SIBA' (Self-Induced Back-Action) led, for the first time, to the optical immobilization of nanoscale objects without causing any damage to them. The work, published online in *Nature Physics* in October, was carried out by ICFO postdoctoral researcher Mathieu Juan in collaboration with researchers of the University of Victoria in Canada, including Visiting Professor Reuven Gordon. SIBA opens new opportunities for the non-invasive immobilization and manipulation of nanoscale objects as small as single viruses and quantum dots. The work was largely supported by the Fundació Cellex Barcelona and received extensive coverage on major Spanish TV channels and in national newspapers.

Measuring the Force of Light

Research led by ICFO Group Leader and ICREA Professor Dmitri Petrov measuring the tiny force exerted by light on matter was highlighted in *Physical Review Focus* in September. The experiment proposed a novel use of a fundamental law of nature—the law of conservation of momentum—for the analysis of fluorescence and Raman scattering. Silica beads coated with fluorescent molecules were optically trapped in a suspension. An optical beam then coaxed fluorescent molecules into releasing photons, which caused the beads to move from their initial position. The correlation between the beads' recoil and the intensity of photon emission allowed the researchers to calculate the force of light on the beads. ICFO researchers Satish Rao, Mark Kreuzer, and Štefan Bálint, former visiting student Pål Løvhaugen, and researchers from the M.V. Lomonosov Moscow State University in Russia all contributed to the work.

Generation of Surface Acoustic Waves

A picture of surface acoustic waves generated on a lithium niobate nanostructure made the cover of the August 3 issue of *Applied Physics Letters*. The image illustrates research results published in the same issue by ICFO Ph.D. student Didit Yudistira, postdoctoral researcher Davide Janner, former postdoctoral researcher at ICFO Sarah Benchabane, and ICFO Group Leader and ICREA Professor Valerio Pruneri. The researchers designed an innovative nanostructure configuration by domain engineering the surface of a lithium niobate crystal in such a way that all domains were separated by an equal distance. The team then generated acoustic waves on the nanostructure by applying electrodes to its surface. The newly designed superlattice makes it possible to generate surface acoustic waves with resonance frequencies that are twice greater than those obtained with a similar production efficiency using classical methods.

New ICFO Ph.D. Graduates

In October, Felix Rohde defended a Ph.D. thesis on a new ion trap experimental set-up he designed for the study of quantum communication with laser cooled single ions. The work, done under the supervision of Jürgen Eschner, is a step forward toward the creation of remote entanglement. Anisha Thayil obtained her Ph.D. the same month with the design of a new laser scanning two-photon excited fluorescence microscope that represents a relatively non-invasive and high resolution 3D imaging tool with great potential for biological applications. The project was co-supervised by Pablo Loza-Alvarez and Silvia Soria of the Nello Carrara Institute of Applied Physics in Florence, Italy. Manoj Mathew also graduated in November with a project on the development of light-based methods for neuron manipulation with potential applications in nano-neurosurgery and therapies for neural degenerative disorders, under the supervision of Pablo Loza-Alvarez.

business news

by Elisabeth Pain

Photonics, a key technology for Europe

Photonics is set to become a key technology in the development of new goods and services that will help nations shift to a low carbon, knowledge-based economy over the next decade. This was the conclusion of a European Commission report recently submitted to the European Parliament and Council, the European Economic and Social Committee, and the Committee of the Regions.

The 'Preparing for our future: Developing a common strategy for key enabling technologies in the EU' report highlights five technological areas of strategic importance for the competitiveness of the European industry, namely nanotechnology, micro- and nanoelectronics, photonics, advanced materials, and biotechnology. All five technologies were selected based on their high reliance on scientific knowledge, their economic potential, their likely contribution to solving societal challenges, and the current global research and market trends.

According to the report, "The potential of these technologies is largely untapped." All five technologies are expected to help the EU "equip itself with all the means needed to address major societal challenges ahead, such as fighting climate change, overcoming poverty, fostering social cohesion, and improving resource and energy efficiency."

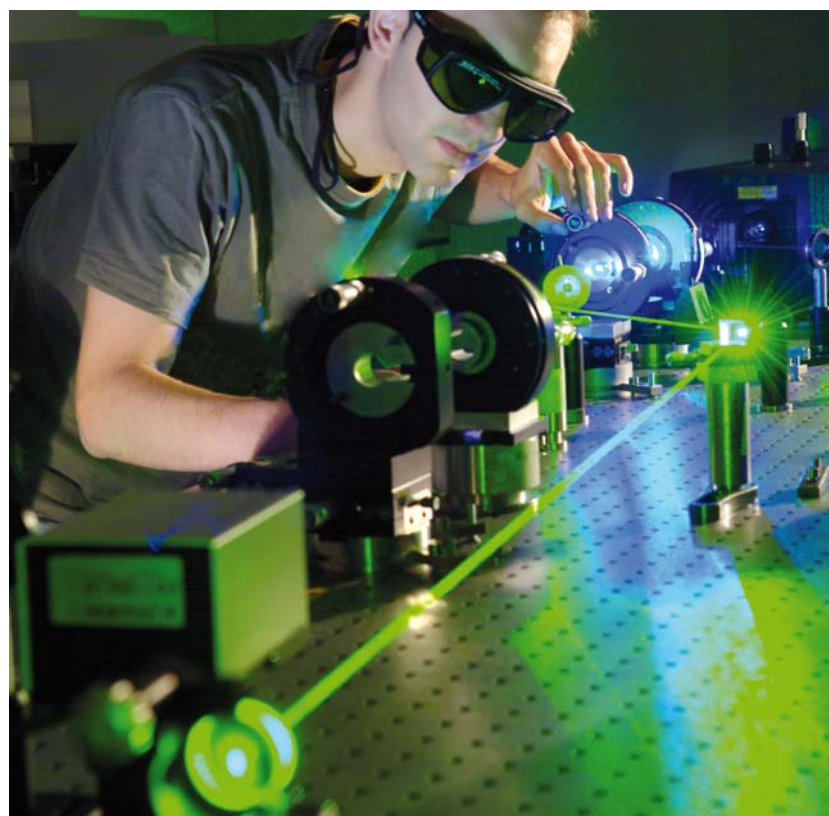
Photonics, which the report defines as "a multidisciplinary domain dealing with light, encompassing its generation, detection, and management," will play an essential role. "Among other things it provides the technological basis for the economical conversion of sunlight to electricity which is important for the production of renewable energy, and a variety of electronic components and equipment such as photodiodes, LEDs, and lasers."

But for photonics and the other four key technologies to reveal their full potential, adequate policy measures and support instruments must be put in place at European level, the report warns. While Europe shows real strength in some research and industrial areas like photonics, nano- and microelectronics, and industrial biotech, Europe still lags behind the United States and Japan in its ability to deploy key technologies. The report calls for more research bridging scientific results and industrial impact, increased focus on technology transfer, and more opportunities for multidisciplinary training in Europe.

The identified need for harnessing photonics to foster industrial innovation is in line with many research, technology transfer, and education efforts already underway at ICFO. One of our main goals at ICFO is indeed to act as a leading partner for optics and photonics companies by offering them scientific resources, technological advances, and people with adequate training and talent.

The ICFO Corporate Liaison Program (CLP) run by the Knowledge & Technology Transfer (KTT) Office in particular serves as a bridge between ICFO and small and large companies with an interest in using photonics to further develop their goods and services. Through collaborative research projects, ICFO helps companies to embrace innovation and become more competitive in the global market.

"Our Corporate Liaison Program is the instrument that we use to establish an initial connection with local and international corporations interested in co-developing technology. In these collaborations, the expertise of our senior researchers and Ph.D. students becomes a unique asset," says Head of the KTT Office Silvia Carrasco. Also, "we do not limit ourselves to a specific model for technology transfer. Our aim with companies is to achieve common goals, so we set a customized action plan with each member of the program to maximize mutual benefits. ICFO is an outstanding partner through which corporations can also establish collaborations with Spanish photonics companies and access more customers."



COLLABORATIONS



ICFO and the European Network of Excellence for Biophotonics welcome six new members

Launched in May 2008 with European Commission funding, the European Network of Excellence for Biophotonics photronics4life (P4L) aims to provide a common platform for biophotonics research in Europe. Biophotonics--an emerging research area using light-based technologies to tackle fundamental and applied questions in the life sciences and medicine--is a highly multidisciplinary field spanning physics, engineering, chemistry, biology, and medicine.

P4L aims to coordinate biophotonics research across Europe by pulling together human resources, infrastructure, and expertise in the field. The network also fosters interactions with companies in order to strengthen Europe's economic competitiveness in the global biophotonics market.

Photronics4life celebrated its third meeting at ICFO on 16-18 November. The P4L meeting was locally organized by ICFO Group Leader and ICREA Professor Niek van Hulst. ICFO Group Leaders Pablo Loza-Alvarez and Turgut Durduran, and ICFO group leaders and ICREA Professors Dmitri Petrov and Romain Quidant also contributed to the event.

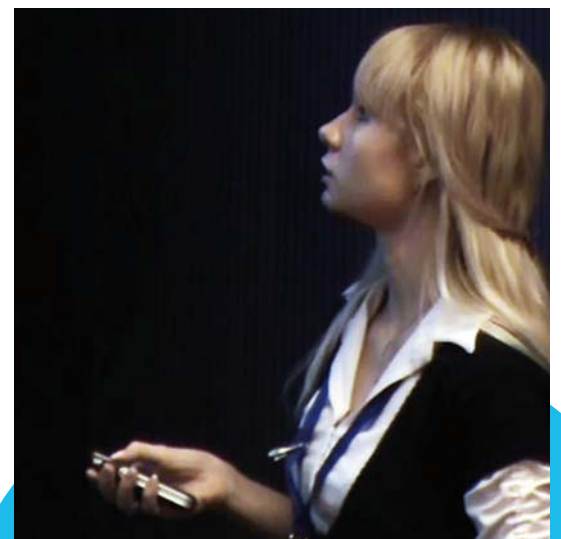
Altogether, around 90 researchers from all over Europe attended the three-day meeting. The event program featured progress updates on ongoing joint P4L research projects and talks on the latest scientific advances such as imaging at the nanoscale and non-invasive technologies for the diagnosis and treatment of disease.

The event served as an important scientific venue for young scientists to present their research, attend tutorials on frontier science and cutting-edge technologies, and expand their professional network. The meeting also featured many presentations from women scientists as well as a session addressing gender issues in science.

This third P4L meeting also marked the enlargement of the network, which originally counted 13 core members--including ICFO--in 10 different European countries. In a special ceremony, P4L Coordinator Jürgen Popp, who is also the scientific director of the Institute of Photonic Technology Jena, Germany, welcomed six new members. The Don Carlo Gnocchi

Foundation and the European Joint Research Centre's Institute for Health and Consumer Protection in Italy, the Swiss Center for Electronics and Microtechnology, the Institute of Electronic Structure and Laser in Greece, the Technical University of Denmark, and the Wrocław University of Technology in Poland all became associated partners.

"With their know-how our new partners perfectly complement the scientific spectrum of the network, so that the full range of biophotonics is present within photronics4life," Jürgen Popp recently stated in a press release.



Top left: Biophotonics researchers from all over Europe gathered at ICFO in November for the third photronics4life meeting

Top right: Young scientists discussed their research and expanded their network during a poster session

Bottom left: Attendees had coffee in front of the ICFO building with a generous serving of October sunshine.

Bottom right: Attendees took part in a 'P4L Elevator Pitch' in which they had just 20 seconds to sell their research ideas to the community

PEOPLE

in focus

by José Carlos Cifuentes González

José Carlos Cifuentes González · Electronics Engineering Department

I've been fascinated with electronic devices and had computer programming as one of my hobbies since I was a kid. So, as a teenager growing up in Catalonia, I didn't have to think long before deciding to study telecommunications engineering at the Technical University of Catalonia (UPC) in Vilanova i la Geltrú.

When the time came to do my final-year university project, I chose a topic that was entirely focused on hardware. I was lucky enough to pursue it in the Electromagnetic and Photonics Engineering Group in the Department of Signal Theory and Communications located on the UPC campus of Barcelona. There, I produced my first real electronic prototype, and I also got access to an optics research laboratory for the first time. I embraced my new field with enthusiasm and learned as much as I could during that year.

After I graduated, my group offered me a temporary position as an electronic technician, which I accepted. The years that followed were intense. I collaborated on different research projects while combining my job with postgraduate studies in electronics at the UPC. Gaining further training while being surrounded by great professors and technicians was an invaluable experience.

In January 2003, just as my contract was coming to an end, the professor Lluís Torner invited me to visit him in the ICFO offices that back then were located in the NEXUS II building on the Barcelona UPC Campus. Lluís talked to me about investigation in biophotonics, nanophotonics, and quantum physics, and about people who wanted to "catch atoms." They needed someone to help them with the technical aspects of the research. All this immediately caught my imagination, and the only reply I could give was, "Where do I have to sign?"

Back in those days, ICFO's research laboratories were temporarily located several meters underground on the floors -2 and -3 of a nearby, half-finished building called OMEGA. A few months after I joined, electronics technician Jordi Ninou also got onboard, and together we secured space in a storeroom on one of the underground floors. There, we improvised a ru-

dimentary electronics facility and effectively launched the first workshop at ICFO.

We faced more than one setback as we went along. Underground dampness was a problem from the start. The water condensed on the lasers, forcing us to leave more than 10 dehumidifiers constantly switched on. One summer, we got to take out of the labs and workshop almost 180 liters of condensed water in 48 hours. We used to joke about bottling it all and selling it as 'photonic water.'

Some time later, the electrical installation began to stop working. Between the different laboratories and the workshop, we had so many pieces of equipment plugged in that we overloaded the power lines. To this, you had to add the ongoing construction of the OMEGA building and, for some time, the implementation of the MareNostrum supercomputer, which also caused frequent power cuts. Working in those conditions wasn't easy; we dedicated a lot of time and imagination to solving problems as they came up.

Finally, in summer 2005, the phase I of the construction of the Castelldefels building was over and we all started relocating. I immediately focused on setting up a new electronics workshop. Of course, some new technical hitches appeared, but with the experience we had previously gained in the face of adversity and with increased resources, we were able to approach these problems efficiently.

The workshop has since flourished to respond to the growing needs of ICFO. Currently, it is composed of 6 technicians with a range of different expertise. These are people who are able to make difficult things look simple, and the services they offer represent an added value to the scientists who come to ICFO to study and do research.

And to me, an engineer, ICFO has been offering all along a wonderful environment where my work has been greatly enriched by the daily contact with researchers. ICFO allows me to develop my creativity with almost no limit, and this continues to fill me with enthusiasm every day.



in the frame

by Gerasimos Konstantatos



Meet New Junior Group Leader Gerasimos Konstantatos

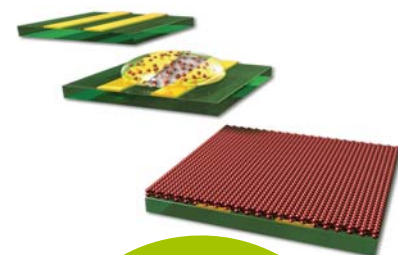
My research area lies within the field of solution-processed nanophotonics. It aims to combine solution-processed materials, such as colloidal inorganic nanocrystals, with quantum size effects emerging from the nanodimensionality of these materials. I decided to join this research field about seven years ago, when it was still in its infancy. Back then, I foresaw the tremendous promise applied research offered in this particular area towards breakthrough technologies for a plethora of optoelectronic applications like optical sources, imaging sensors, photodetectors, and solar cells.

So, after earning my first degree in my native Greece, in 2001, I joined a nanotechnology group at the University of Toronto in Canada to gain the necessary multidisciplinary training in chemistry, material science, and electrical engineering. There, during my graduate studies, I developed novel optoelectronic functionalities based on colloidal quantum dots. After graduating, in 2008, I stayed on for a postdoc on solution-processed photovoltaics based on non-toxic colloidal nanocrystals.

Now, at ICFO, I am bringing in my expertise in the field of colloidal nanocrystals, but I also plan to expand it towards novel functional nanomaterials and devices for renewable energy and optoelectronic applications by merging top-down and bottom-up methodologies. I am looking to assemble a group of people

with a background in chemistry, physics, and engineering interested in solving complex and application-oriented problems. In such an interdisciplinary area, another key quality for young scientists to have is to be fearless about exploring new ideas and finding solutions at the interface of the traditional disciplines.

I see helping the researchers of the future gain such a mindset as an endeavor of utmost importance to ensure high-impact research. The rest—that is, the development of high efficiency, low cost, and robust solar cells, ultra-sensitive photodetectors, and so on—should then come naturally as a result.



Bottom-up meets top-down: colloidal quantum dots can be deposited on any kind of substrate enabling for complementary metal-oxide-semiconductor (CMOS) compatible optoelectronic functionalities

PERSPECTIVES

beyond ICFO

by Aditi Sen De and Ujjwal Sen

Aditi Sen De and Ujjwal Sen, Readers, Harish-Chandra Research Institute, India

Both of us did our school, college, and university education in Kolkata (erstwhile Calcutta) in India. We met while studying together for a Master's degree in applied mathematics, and our personal and professional lives have been entwined ever since.

We both got interested in the emerging field of quantum information and quantum computation during our Master's degree program. We also got married soon after graduating. Initially, neither of us thought that we would ever want to move out of Kolkata, but eventually, we decided to go abroad. Starting in January 2002, we did our Ph.D.s at the University of Gdansk in Poland, in the groups of Ryszard Horodecki and Marek Zukowski, working on quantum information science as well as on its interface with photonic devices. Both of us then became Alexander von Humboldt postdoctoral fellows at the Leibniz University of Hannover in Germany with Maciej Lewenstein as group leader.

A year later, in February 2005, Maciej moved to ICFO and we decided to join his new Quantum Optics Theory group there as postdocs. Altogether, we stayed at ICFO for about four years, during which we became research fellows and later each obtained a 5-year tenure track position supported by a Ramon y Cajal fellowship.

At ICFO, we worked on different aspects of quantum communication and quantum computation and at the interface of quantum information and many-body physics. During our stay, we heard numerous lectures on a great variety of topics, which we especially enjoyed as these gave us excellent opportunities to improve our scientific knowledge and understanding.

Another important aspect for us at ICFO was having a predominant number of experimentalists close by. As theoreticians, we loved discussing research topics like ion traps, entan-

gled photons, biophysics, and optical parametric oscillators with experimentalists. Researchers at ICFO also have close ties with other institutions, and we could collaborate with researchers at the Autonomous University of Barcelona, the Technical University of Catalonia, and the University of Barcelona, in particular.

Today, universities increasingly attract people from all over the world. But we were amazed to see that at ICFO, this is the norm for almost every research group and also for the technical, engineering, and administrative departments. The beautiful city of Barcelona is also cosmopolitan by nature. Our daughter Anusuya, who was born in Barcelona, got exposed to a broad range of languages as we spent time with our Italian, German, Polish, Swiss, Indian... and, of course, Catalan and Spanish friends!

We decided to return to India at the end of 2008.

I, Aditi, joined the Jawaharlal Nehru University in Delhi as an assistant professor in the School of Physical Sciences. And I, Ujjwal, joined the Department of Physics at the Indian Institute of Technology Delhi, also as an assistant professor.

Just a few months ago, we and our daughter, now almost two years old, moved over to Allahabad, a city at the confluence of the Ganga and Yamuna rivers, where both of us joined the Physics Division of the Harish-Chandra Research Institute. The Physics Division has professors working in astrophysics, condensed matter physics, high energy physics, and string theory, and we are now also initiating the area of quantum information and quantum computation here.

We are very happy to have been able to return to our home country. But during those eight years abroad, it was great for us to experience the culture of different European countries. And, still today, we often long for the discussions we used to have on science and many other topics with people at ICFO. We especially miss the many cultural events that ICFO used to organize, as they not only exposed us to different traditions but also helped us engage in informal and often fruitful scientific discussions.



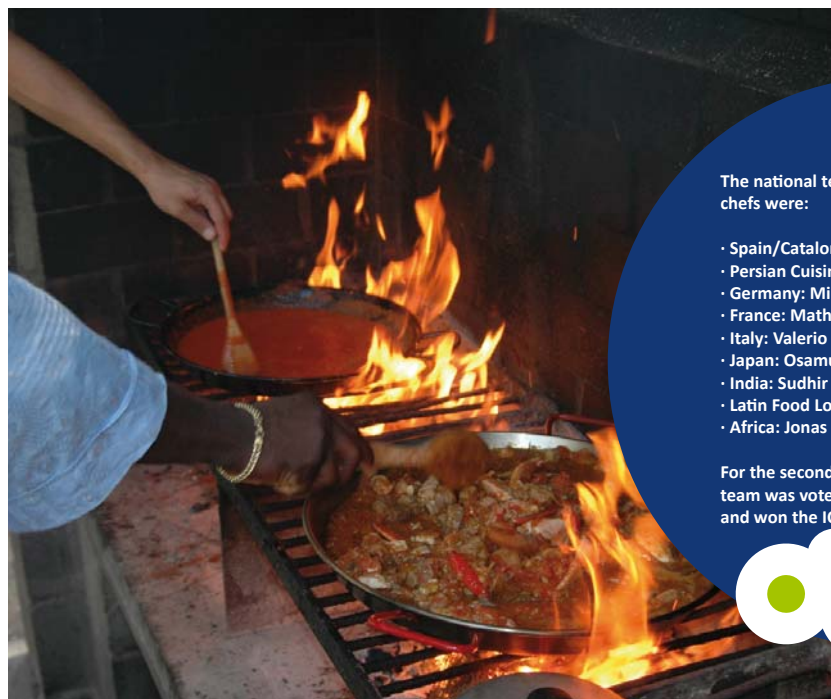
Aditi Sen De and Ujjwal Sen spent four years at ICFO before becoming assistant professors back at home in India

community pictures

by Jan Gieseler

An essential component of our every day life, food tells us a lot about our different cultures. For many of us, it is what we most miss when living abroad. For others, trying typical dishes from other countries is one of the most pleasant aspects of traveling. For all these reasons, in 2008 the ICONS (ICFO Organization and Network of Students) Student Chapter launched the International Food Festival. The rules of this yearly cooking competition are simple: ICFOians gather in national teams to prepare food typical of their home country for the other participants to enjoy.

This year's food festival, which was held in September, took more than 50 contestants on a short trip around nine different countries on four continents.



The national teams and their respective chefs were:

- Spain/Catalonia: Elena Enrique Romero
- Persian Cuisine: Omid Kokabee
- Germany: Michael Geiselmann
- France: Mathieu Juan
- Italy: Valerio Pruneri
- Japan: Osamu Takayama
- India: Sudhir Cherukulappurath
- Latin Food Lovers: Rafael Betancur
- Africa: Jonas Padonou

For the second year in a row, the Indian team was voted the best cook of the festival and won the ICONS food festival trophy.



ICONS International Food Festival

THE LAST WORD

high profile

Helga Nowotny is a Professor Emeritus in the social studies of science based at the Vienna Science and Technology Fund (WWTF) in Austria and Vice-President of the European Research Council (ERC). Last October, she visited ICFO as part of a delegation of representatives from research institutions in Vienna



Q: What did you find most striking about ICFO and the Catalan scientific research model during your visit?

A: ICFO is a research institute that radiates enthusiasm for its science based on a high level of competence. I was particularly impressed by the optimal mixture of younger and more experienced researchers and their team spirit. The Catalan scientific research model has succeeded beyond expectations to concentrate resources in places of excellence, such as ICFO, and to attract talent from outside the region.

Q: How has the European Research Area (ERA) transformed the landscape of opportunities for scientists in Europe?

A: ERA is still a visionary project in the making to which we all have to contribute. It has opened up new career opportunities for younger researchers who are eager to move to where good scientific working conditions are. Nevertheless, in terms of overall conditions to facilitate mobility (social security, including pension schemes, working opportunities for partners, childcare facilities, etc.) much remains to be done.



Together with a delegation of representatives from various research institutions in Vienna, Austria, Professor Helga Nowotny visited ICFO last October

Q: How would you advise researchers to think about their own position in Europe and in society?

A: As European scientists of a new generation that will shape the future of European societies. The position of science (and of scientists) in society has become more demanding. If we want to tackle the global challenges ahead, the future trajectory must lead from a knowledge-based economy towards knowledge-based living. You will be part of this knowledge evolution.

Q: How important is it for scientists to get involved in the public debate?

A: Science and what I call 'the fruits of (scientific and technological) curiosity' are too important to be left to the market and policy-makers. Scientists should cultivate a sustained interest in 'meddling' with public debates and policy issues to which they can contribute. How? With good arguments and a genuine readiness to listen when 'society speaks back to science.' Often, citizens want scientists not only to communicate their science, but also to take a stand on controversial issues as ordinary citizens. This is much harder for scientists to do.

Q: Do you see a greater need today for physicists and social scientists to collaborate?

A: The interface between physics and the social sciences is not as obvious as it is between the life sciences and the social sciences where genetics or biomedicine provides many entry points... Nevertheless, physicists and social scientists share the 'users' front' where science-based technologies meet with latent needs and various... forms of how users appropriate a new technology. But there is also an important territory that remains largely uncharted: physical concepts that underlie and explain some forms of social behavior and regularities in the social world. The recent financial crisis is a case in point. Physicists were right in claiming that financial markets obey power laws (which many economists in their risk models choose to ignore).

Q: What are the key challenges for young scientists today?

A: There are no ready-made recipes for success, except... [to] follow your own scientific interests, work hard, be persistent. Expect failure--and be ready to move on.

Today, many young researchers have to succeed in highly competitive environments. But they should also remember that joy in science comes also from working on interesting problems together.

Q: Any advice on how to successfully compete for a Grant from the ERC?

A: [Following] the first Starting Grant Call in 2007... applicants have to submit the entire proposal, but at stage 1 only the synopsis will be read by the panels. My advice: work hard on the synopsis. It is the only chance you have to convince a... multidisciplinary panel that your project is interesting and breaks new ground. What do you want to accomplish, how, and why? What will be your contribution to your own field, a neighboring field or to the outside world? And: get feedback before submitting from colleagues whose scientific judgment you trust.

sudoku

easy

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medium

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difficult

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very difficult

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