

COLLABORATION

Women in Science Month

p.6

PEOPLE

Women for Africa Foundation

p.10

PEOPLE

Beyond ICFO with Emilie Wientjes

p.11

THE LAST WORD

Aleksandra Boskovic

p.12

# ICFONIANS 35

Community News Spring 2018

Recognition, awareness and empowerment of

# Women in Science



## EDITOR'S CORNER

**Brook Hardwick**  
Coordinating  
Editor



# ICFOnianAs

**This edition is dedicated to women scientists at ICFO and around the world, because we ALL benefit by supporting women in science**

This edition of ICFOnians, like all editions of our newsletter, highlights great research produced at ICFO, showcases some of the thought-provoking events that are organized within our community, and focuses on accomplishments, giving names and faces to the people who make it all happen. Nevertheless, readers will notice that something IS different in this edition. The following pages have a decidedly feminine focus, reflecting the activities that took place during ICFO's recent celebration of women in science.

In 2016 the United Nations Member States declared February 11th the International Day of Women and Girls in Science to recognize the critical role that women and girls play in science and technology around the globe. At ICFO we celebrated the first edition of this global day with a commemorative picture of ICFOnianAs (i.e. only women ICFOnians). In 2017, we made a video capturing some of the motivation of the women conducting research at ICFO, as well as the support of other members of the community. This year, instead of a single action in honor of the day, we dedicated an entire month to better recognize and discuss women's accomplishments as well as the particular challenges they face in scientific careers. (p 7) The healthy showing of support from male colleagues for the entire initiative was heartening, especially considering that unconscious biases and cultural norms that make it more difficult for women to reach positions of leadership not just in science,

but in all professional fields, can only be successfully countered by a united front of women AND men.

It is clear that there are no easy answers or solutions. We will need more dialogue, some honest introspection, public engagement, difficult public policy adjustments, hard work and a concerted effort by women AND men who are convinced that more talented people working in science can only be a good thing for society.

In the meantime, this edition is full of examples of great science. Four of the six PhD graduates in this Go & Fly section are women. Prof. Leticia Tarruell gave a "Made at ICFO" Colloquium on her group's work that was recently published in *Science*. Perfectly timed for this special edition was the arrival of *Women for Africa Foundation* grantee Dr. Rose Alani, visiting scientist in the Optoelectronics group led by ICREA Prof. Valerio Pruneri. We follow the visit of seventy girls to ICFO through the Erasmus+ initiative *ScienceGirls*, and we get a peek into the life of ICFO alumna Dr. Emilie Wientjes, who recently started her own group at Wageningen University. An additional special thanks to our High Profile interviewee, Dr. Aleksandra Boskovic from Corning, Inc, a top leader in research and development and also a role model and mentor for women in science both inside and outside of her organization.

Congratulations to all the women and men at ICFO for making the Women in Science Month initiative a success.

**Mystery ICFonian**  
Solution Ed #34

**Javier Pérez**  
Nanofabrication  
Laboratory

**Science Quiz**

Answers from p.12

1. C , 2. B, 3. D, 4. A

## COVER



Women account for 53% of Bachelor's graduates, 53% of Master's graduates, and 43% of PhD graduates, but only 28% of PIs\*, however women and girls are showing

through their drive and accomplishments that they have what it takes to become leaders in science.

\* UNESCO Institute for Statistics estimates based on data from its database, July 2015.

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# HAPPENINGS



**BUSINESS NEWS**  
Corporate Liaison Program.

p.6

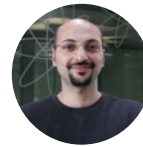
## ICFO NEWCOMERS

### Welcome to ICFO

Many of us joined ICFO or took a new position at the institute between January and March



**Vanesa Sanz**  
Visiting Scientist



**Vincenzo d'Ambrosio**  
Visiting Scientist



**Unai Ortiz**  
PhD Student



**Pilar Pujol**  
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**Ravi Das**  
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**Jana Ockova**  
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**Nicolas Mateos**  
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Postdoctoral Researcher



**Federica Maruccia**  
Visiting PhD Student



**Luc Dümpelmann**  
Postdoctoral Researcher



**Christian Knapp**  
PhD Student



**Hani Awwad**  
PhD Student



**Victor Lopez**  
Student



**Sofía Martínez**  
Student



**Francesco Andreoli**  
PhD Student



**Andrés de los Ríos**  
PhD Student



**Jorge Madrid**  
Student



**Valerio Di Giulio**  
PhD Student



**Chandan Samanta**  
Research Engineer



**Hamidreza Fayaz**  
PhD Student



**Luigi Seveso**  
Visiting PhD Student



**Marta Gimenez-Zapiola**  
Lawyer



**Gonzalo Podgaezky**  
Student



**Michael Evans**  
Student



**Xi Chen**  
Visiting PhD Student



**Constanza Sansierra**  
PhD Student



**Alexander LeBon**  
Student



**Robin Camphausen**  
PhD Student



**Gonçalo Figueira**  
Visiting Scientist



**Matěj Hejda**  
Student



**Manuel Fernández**  
Student



**Boris Karamata**  
Research Engineer



**Pablo Lujan**  
Postdoctoral Researcher



**Migle Stebryte**  
Student



**Giulia de Rosi**  
PostDoc



**Katerina Gratsea**  
Student



**Pablo Fernández**  
PhD Student



**Alastair Cunningham**  
KTT Project Manager



**Rose Alani**  
Visiting Scientist



**Loïc Reymond**  
Research Engineer



**Piotr Węgrzyn**  
Student



**Juan Rafael Álvarez**  
Student



**Daniel Sevilla**  
Student



**Ferran Martín**  
Postdoctoral Researcher

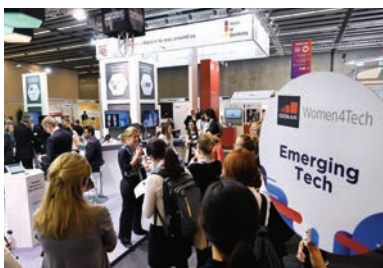


**Anamika Nair Karunakaran**  
Student

## HAPPENINGS

## ICFO NEWS

## The Graphene Pavilion at MWC 2018



**February 26- March 1 the Graphene Pavilion returned to the GSMA Mobile World Congress presenting the next generation of mobile technologies.**

The exhibition was designed to bring graphene and 2D materials to life, highlighting large-scale production through the Graphene Knowledge Center and allowing visitors to experience cutting-edge new technologies with interactive demonstrations in Sensors and IoT, Wearables and Health, Datacom and Energy. The Pavilion was organised by the Graphene Flagship, curated by ICFO and supported by the European Commission and the GSMA, providing a glimpse into the future of mobile technologies.

This year, the pavilion hosted 25 exhibiting partners from across Europe who presented prototypes and products including cameras that can see the invisible, health monitoring patches, filters that provide safe drinking water, novel batteries, a wide range of flexible electronics, ultrafast data transmission systems, pressure tracking shoes and solar cells with world-class efficiency, all enabled by graphene. "As we start to see more diversity in the type of prototypes that are being demonstrated, more and more of the technology is edging closer to the markets," said ICREA Professor at ICFO Dr. Frank Koppens, the Scientific Chair of the Graphene Pavilion.



## Polish Academy of Sciences



**The Polish Academy of Sciences (PAN)** is a national research institution founded in Warsaw in 1952 and is the most significant scientific institution in Poland. New members of the Academy are chosen by the General Assembly from among candidate scholars who have made outstanding contributions to their fields and command respect among the scientific community. **ICREA Prof. at ICFO Maciej Lewenstein** has recently been selected as a foreign member in the area of Mathematics, Physics, Chemistry and Earth Sciences.

## APS 2018 Outstanding Referees



**ICREA Professor at ICFO Dr. Darrick Chang is among 147 Outstanding Referees for 2018 recognized by the American Physical Society (APS)**, for having demonstrated exceptional work in the assessment of manuscripts published in the *Physical Review journals*. The efforts of these individuals not only keep the standards of the journals at a high level, but in many cases also help authors improve the quality and readability of their articles—even those that are not published by APS. The Outstanding Referees are to be congratulated and thanked for their outstanding service to the physics community.

## Ignite Call Awardees



**Eight interdisciplinary research projects were awarded Phase 1 funding in the inaugural BIST Ignite Program** at the beginning of 2017 to promote the initiation of new collaborations among BIST researchers, facilitate the exchange of knowledge among different scientific fields and explore new approaches to address complex questions. At the end of 2017, a selection panel reviewed results as well as a proposal for further research and awarded Phase 2 funding to three outstanding multidisciplinary projects in this group. ICFO researchers led by Dr. Pablo Loza-Álvarez, in collaboration with researchers from ICN2 led by Prof. José Antonio Garrido, will continue to advance in the THEIA project (*Towards the implementation of a multi-electrode array for retinal prosthesis*).

+INFO  
bist.eu/

## ICFO Alumni Network in SFO



**The Alumni Network** gathered during the Photonics West conference in San Francisco in a get-together that aimed to **strengthen relationships between ICFO Alumni and current ICFOians**.

Current ICFOians, including ICFO Professors Frank Koppens, Jordi Martorell and Romain Quidant, and alumni, both residents from the San Francisco area as well as from other parts of the globe, attended the event. In a relaxed ambience, **they shared experiences, visited with old friends and met new members of the network**.

The organization of the event was possible thanks to the efforts of **Armand Niederberger**, honorary alumni representative of the ICFO Alumni Network.

## 2017 City of Barcelona Awards



**A jury from the Barcelona City Hall has recognized ICFO Prof. Hugues de Riedmatten** and the members of his research group with the 2017 City of Barcelona Award in the field of Experimental Science and Technology for their **outstanding contributions to the field of quantum information networks and quantum repeaters**, in particular for their study of hybrid quantum networks, published recently in *Nature*. The results of this study open the pathway to safer telecommunications networks, compatible with the current fiber optic infrastructures. The award ceremony took place on February 15th at the Saló de Cent in the Barcelona City Hall.

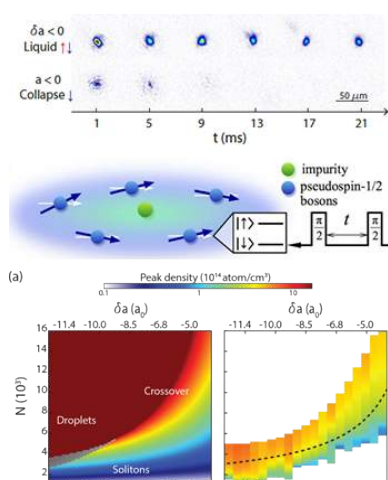
## BIST 'Mothers of Science' grant



**The Barcelona Institute of Science and Technology (BIST) opened the Mothers of Science supporting grant on February 11, 2018** – the international day of women and girls in science – in order to address the gap that exists between the number of women in the BIST Community who are research associates or senior post-doctoral researchers and the percentage of women who are group leaders. BIST recognizes the value and excellent research done by these scientists and support them in their career transition. This program is a result of the ideas collected during the BIST Round Table on Empowering Women in Science within the BIST Community, and is also inspired by the CRG Women Scientists Support Grant (WOSS), from which the Mothers of Science grant has grown. BIST Director Gabby Silberman formally announced and opened the first call for this grant at the inauguration of Women in Science Month at ICFO.



## LATEST ADVANCES

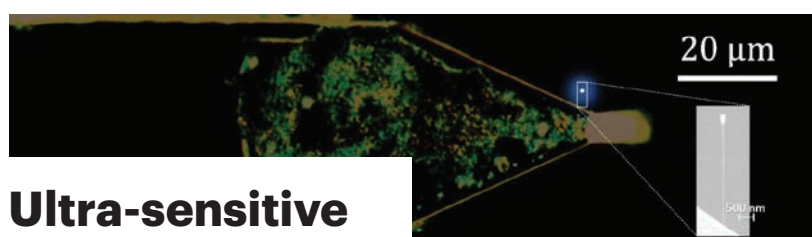


## Hat-trick for Quantum Simulation with Mixtures of BECs

**Nature Physics** highlights three papers on quantum simulation with mixtures of Bose-Einstein condensates by the ICFO Ultracold Quantum Gases group led by Prof. Leticia Tarruell

Mixtures of Bose-Einstein condensates constitute ideal systems for quantum simulation. They give access to fundamental condensed matter phenomena and allow the creation of ultra-dilute quantum liquid droplets and the study of the real time formation of quasi-particles, to cite just two examples.

All three papers were published during the first trimester of 2018. In a *News and Views* article, D. S. Petrov reviews the two experimental ICFO papers reporting the observation of quantum liquid droplets, published in January and appearing in March in *Science* and *Physical Review Letters*, respectively. In a Research Highlight, the Nature Physics editor Y. Li discusses a theoretical proposal for the creation of magnetic polarons and the interferometric observation of the polaronic cloud that appeared in February as Rapid Communication in *Physical Review B*. This work was carried out in collaboration with the group of E. Demler at Harvard University.



## Ultra-sensitive Optomechanical Device at Room Temperature

A study published in *Nature Communications* has developed an optomechanical device with the lowest thermal force noise levels ever

ICFO researchers Alexandros Tavernarakis, Alexandros Stavriniadis, and Ioannis Tsioutsios led by ICFO Prof. Adrian Bachtold, in collaboration

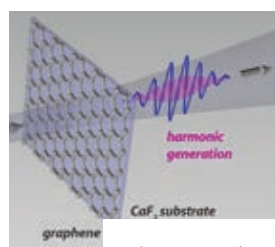
with Prof. Pierre Verlot (ILM) report on a novel optomechanical device with the lowest level of thermal noise at room temperature, two orders of magnitude below the current state-of-the-art devices to date.

The achievement was made possible thanks to the use of an optically active nanoparticle, placed at the tip of a single-clamp Carbon Nanotube (CNT) resonator. The absorptive nature of this nanoparticle has allowed the system to control its vibrational states without the use of an optical cavity or optical resonator that helps attenuate or amplify the vibrations. By precisely calibrating the temperature of the system, they were able to achieve, at room temperature, thermal force noise levels only attainable under cryogenic conditions.

## Graphene in Petahertz Lightwave Electronics

A study published in *Nature Communications* reports on the instantaneous response of Dirac carriers in graphene for petahertz electronics

ICFO researchers Matthias Baudisch, Andrea Marini, Joel Cox, Francisco Silva, Stephan Teichmann and Mathieu Massicotte, led by ICREA Professors Jens Biegert, Javier Garcia de Abajo and Frank Koppens, report on the use of graphene as an ideal material for in-



stantaneous response to ultra-fast optical fields, elucidating the role of free carriers that are created through non-linear harmonic generation.

The researchers focused on the ultra-fast nonlinear response of graphene and the back-action onto the stimulating optical fields arising from the photo-generated free carriers at moderate pump intensity. They employed 80 fs mid infrared pulses in graphene and observed that the linear dispersion and absence of a band gap in graphene leads to an instantaneous photo-generation of free carriers by the optical field and a delayed recombination with a metal-like instantaneous response and time-dependent plasma frequency. Consequently, optical-field-driven square-wave oscillatory motion of Dirac fermions leads to the generation of new frequencies.

## Scaling Silicon Quantum Photonics Technology

The study published in *Science* reports on the development of a large-scale integrated silicon-photonics quantum circuit for the precise and general control of multidimensional entanglement

Integrated Quantum Photonics allows the routing and control of single

particles of light with intrinsically high stability and precision, however to date it has been limited to small-scale demonstrations in which only a small number of components are integrated on a chip.

An international team of researchers led by scientists from the Univ. of Bristol's Quantum Engineering Technology Labs, in collaboration with ICFO researchers Alexia Salavrakos and ICREA Prof. Antonio Acín, has demonstrated the first ever large-scale integrated quantum photonic circuit, which can generate, control and analyze high-dimensional entanglement with unprecedented high precision and generality. The quantum chip was realised using a scalable silicon photonics technology, similar to today's electronic circuits, which would provide a path to manufacture massive components for the realization of an optical quantum computer.

## Continuous Monitoring of Ictus and Sleep Apnea

*PLOS ONE* and *OSA's Biomedical Optics Express* publish studies on a non-invasive, bed-side optical device for monitoring blood flow in the brain

The research group led by ICREA Prof. at ICFO Turgut Durduran has recently published two studies on the use of a non-invasive bed-side optical device that could carry out a continuous monitoring of the blood flow in the brain to prevent cerebrovascular accidents as well as sleeping disorder.

In the first study, published in *OSA's Biomedical Optics Express*, ICFO researchers Clara Gregori-Pla, Peyman

Zirak, Igor Blanco, and Turgut Durduran, report on the development of their non-invasive optical device that can provide clinicians with real-time feedback and help them determine, on a continuous basis, the effectiveness of treatment given to patient's suffering an ischemic stroke. The device has been taken into the Stroke Unit at the Hospital de la Santa Creu i Sant Pau in Barcelona, through a collaboration with Dr. Raquel Delgado-Mederos. The study was made possible by support from "La Caixa" Foundation through the initiative LlumMedBcn, the Cellex Foundation and the Spanish Ministry of Health.

In a study published in *PLOS ONE*, ICFO researchers Clara Gregori-Pla, Gianluca Cotta, Igor Blanco, Peyman Zirak, Martina Giovannella, and Turgut Durduran, report on the development of another non-invasive, portable optical device, capable of continuous bedside monitoring of cerebral blood flow of patients with Obstructive Sleep Apnea (OSA). The study has been achieved through a collaboration with the Department of Respiratory Medicine at the Hospital de la Santa Creu i Sant Pau in Barcelona.

## HAPPENINGS

## BUSINESS NEWS



# Corporate Liaison Program

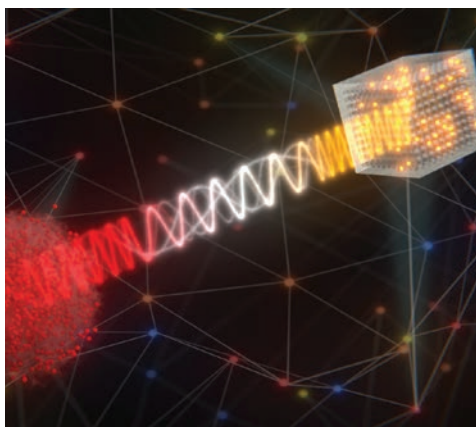
## Quantum Technologies

**On January 19, ICFO hosted the Corporate Liaison Program (CLP) Day, an event aimed at bringing together professionals from international platforms, multinational corporations, local business representatives and researchers of other institutions to interact and search for common synergies.**

The theme of each edition of the CLP Day usually varies and highlight topics of interest and relevance to ICFO's corporate partners and collaborators.

This year the CLP Day focused on Quantum Technologies. During the whole day, the event provided an ideal environment to review the latest advances in photonic technologies while focusing on the generation of joint research projects.

During the morning, the audience, in a fully packed auditorium, received a welcome speech from the director of ICFO, Lluís Torner. Subsequently, Tommaso Calarco from the Quantum Flagship Advisory Committee, gave an overview of the advent of the new Quantum Flagship initiative and what is expected to happen in the near future. Afterwards, John Martinis from Google, Walter Riess from IBM Research, and Colin P. Williams from D-Wave gave talks on quantum computing, optimization problems and applications, communications, among other topics. Finally, a round table discussion panel including Momtchil Peev from Huawei, Diego R. López from Telefónica, Bettina Heim from OHB, and Carlos Abellan from QuSide, moderated by Eleni Diamanti from UPMC, debated the current status of Quantum Communications as well as its future prospects.



This year the CLP Day focused on Quantum Technologies. During the whole day, the event provided an ideal environment to review the latest advances in photonic technologies while focusing on the generation of joint research projects.

# European Commission Support for Marketable Innovation



**The Proof of Concept and FET Launchpad programs provide financing so that scientists may explore the innovative potential of research produced in ERC and FET projects.**

The European Commission (EC) funds frontier research across Europe with the final aim of ensuring the global competitiveness of the European economy, driving economic growth and the creation of jobs. Not only does this entail financial support for research excellence, it goes a step further, assisting researchers in translating their cutting edge advances into marketable technologies.

The EC's European Research Council launched the Proof of Concept (PoC) funding scheme in 2012 to help ERC grant-holders to bridge the gap between their research and the earliest stage of a marketable innovation. More recently, the Future and Emerging Technologies (FET) actions have expanded to include the FET Innovation Launchpad, which aims to finance activities for further innovation related to FET projects. Both initiatives complement the efforts of ICFO's Knowledge and Technology Transfer unit (KTT), which proactively searches for ways to translate newly generated knowledge into new technologies. The KTT unit was active in the preparation of three proposals for projects that were approved in the first quarter of 2018.

**Proof of Concept (PoC):** ICREA Prof. at ICFO Frank Koppens was awarded his third PoC to date, the eighth award of this kind for ICFO in the past six years, for the project titled GTRACK. This project's main goal is to demonstrate a semi-transparent eye-tracking system that is disposed in the line of sight of the user, for portable applications.

**FET Launchpad coordinated project:** UVALITH, a project which has been granted to ICREA Prof. at ICFO Morgan Mitchell, proposes to advance patent protected optical frequency conversion technology towards industrial and biomedical use, allowing to efficiently convert inexpensive near-infrared (NIR) light into coherent UVA.

**FET Launchpad participation:** HERMES SR, a project awarded to the Israeli company IDEA Bio-Medical, with the participation of CRG and ICFO, aims to further advance the development and commercialization plans of a patent protected super resolution microscope that will allow to visualize in single cells, in parallel, DNA, mRNAs and proteins with nanoscale resolution.



# COLLABORATION



**SCIENCEGIRLS**  
More than 70 teenage girls from 7 countries visit ICFO

p. 8

COMMUNITY



**Women in Science Month** received strong support from the entire ICFO community.

## Women in Science Month

**A celebration for ALL ICFOnians because we all benefit by supporting women in science**

**The International Day of Women and Girls in Science (February 11th) and International Women's Day (March 8th) are two international events that inspired ICFO to dedicate an entire month to the celebration of women, focusing on their scientific discoveries of the past, present and future.**

Today there is a significant gender imbalance in science around the world and there is much to be done on all levels if this is to change. The reasons behind the "leaky pipeline", with far too few women transitioning into leadership roles in science, are varied and disputed, as are the actions needed to bring about lasting improvements. ICFO celebrated this month by showcasing women's ongoing contributions to science and by opening meaningful discussions on ways to ensure that more women enter research, are recognized for their contributions, and rise to positions of leadership in their fields.

On February 11th, ICFO Director Lluís Torner kicked off the month by underscoring ICFO's commitment to supporting women in science, followed by informative presentations by ICREA Professor at ICFO Maria Garcia-Parajo and Rob Sewell, Academic Affairs. Further reinforcing institutional support, during the inaugural ceremony, BIST Director Gabby Silberman launched the "To the Mothers of Science" supporting grant for women scientists in the BIST community with families.

Events that took place at the center throughout the ensuing month aimed to highlight and celebrate the contributions of women in science, contemplate actions to support and increase the number of women who choose science as a career, benchmark best practices from around the world in managing diversity issues in science, and debate alternative scenarios that would lead to a healthier gender ratio in science.



Prof. Maria García-Parajo introduced the global panorama for women in science and the agenda for ICFO's celebration.



A panel including Silvana Palacios (MX), Yu Bi (CN), both pictured here, as well as Esther Gellings (DE), and Kavitha Kalavoor (IN), moderated by Pamina Winkler (NL), shared perspectives on women in science from around the world.



Rob Sewell highlighted the contributions of women researchers at ICFO, which in 2017 accounted for 30% of the total research output at the institute.



Prof. Leticia Tarruell offered a Made at ICFO Colloquium on her recent high impact Science paper "Quantum liquid droplets in a mixture of Bose-Einstein condensates".



The *Beyond Curie* Poster exhibit was on display in the NEST Hall throughout the month. The posters were raffled off to ICFOnians on the final day.



## COLLABORATION

## OUTREACH

**ScienceGirls**

*Encouraging girls to consider careers in Science, Technology, Engineering and Math*

**More than 70 teenage girls from 7 different countries visited ICFO with the ScienceGirls project**



It is not unusual to see high-school students wandering through ICFO's corridors, but what happened on the afternoon of March 1st was really exceptional: a group of more than 70 teenage girls from 7 different countries (United Kingdom, Italy, Turkey, Greece, Lithuania, Slovenia and Spain) came to visit ICFO as part of the ScienceGirls project.

This project is an Erasmus+ program launched by a consortium of different entities, including the Universitat Politècnica de Catalunya (UPC). Its mission is to reduce the gender gap in scientific vocations. One can do this by involving young participants in the creation of new ways of teaching science that are more meaningful and appealing to girls. Another way to engage girls is to acquaint them with real science, bringing them to research centres and introducing them to female role models.

At ICFO, this special group experienced cutting edge research and the power of photonics through a pool of diverse activities guided by female ICFONIANS. Susanna Tagliabue, Pamina Winkler, Yu Bi and Clara Vilches explained their research through lab tours or live demonstrations; Alexia Salavrakos, Noslen Suarez and Maria Sanz showed them different properties of light through didactic activities; Maria Martí explained the importance of tech transfer. The "Beyond Curie" exhibit in the ICFO Nest Hall was the perfect place to end this intensive, but exciting and inspiring, event.



## TRAINING

**BIST Winter School and Symposium**

**Approximately 200 people from the BIST community registered to attend the day-long closing Symposium at ICFO**

The BIST Winter School on Microscopy, Nanoscopy and Imaging Sciences, part of the training program of the BIST-UPF Master of Multidisciplinary Research in Experimental Sciences, was held during the first two weeks of February, culminating with a special BIST Symposium hosted by ICFO on February 9<sup>th</sup>.



## OUTREACH

**ICFO participates in the 2018 Edition of YoMo The Graphene Corner**

Over 10,000 students and 4,000 teachers visited the fair to learn about science and technology

**ICFO hosted and coordinated The Graphene Corner; a 6x6m space that was entirely dedicated to the world of graphene, created with the support of the Graphene Flagship and ICFO's GSMA Chair. The stand displayed information about the properties, applications and history of graphene.**

Visitors had the opportunity to learn by testing the conductivity of graphene sheets that were donated by Graphene-XT, producing their own graphene with the traditional peeling system using cello tape, and then estimating the layers produced. They were also able to interact with an ICFO prototype of a light sensor fabricated with graphene. The Graphene Corner had some special visitors, such as Barcelona's mayor Ada Colau, GSMA's CEO John Hoffman, as well as Vincenzo Palermo, Vice-president of the Graphene Flagship.

In addition to the Graphene Corner, ICFO also offered a Quantum Eraser activity on the final day of the fair within a larger BIST institutional participation. Through this activity, ICFO's Outreach team introduced students and teachers to the fascinating world of quantum.



The Winter School program was designed to introduce students to a core set of techniques and technologies that are used in a wide range of scientific fields. It included theoretical and practical classes hosted at five of the BIST institutes. ICFO researchers, under the leadership of ICREA Prof. at ICFO María García-Parajo, contributed to the program on advanced Optical Microscopy.

Approximately 200 people from the BIST community registered to attend the day-long closing Symposium at ICFO and enjoyed talks from leading Spanish and International researchers on an extremely diverse range of topics from Electron Microscopy, Scanning Probe Microscopy, Imaging Science and Optical Microscopy. Four external sponsors contributed to the cost of the event, including Izasa Scientific, Monocomp Instrumentación, S.A., Sociedad de Microscopía de España and Thermo Fischer Scientific.

Talks covered topics ranging from the nano scale – e.g. Super-resolution imaging to uncover how immune cells migrate in the tissue and lymph nodes, Alessandra Cambi, (Radboud University Medical Center, Nijmegen, The Netherlands) – to the cosmological scale – e.g. Precise imaging of distant galaxies: mapping the invisible Universe with weak gravitational lensing, Ramon Miquel (Institute of High Energy Physics, IFAE, Barcelona, Spain).

**Jordi Arbiol**, ICREA Professor and Group Leader at ICN2 and coordinator of the Winter School, notes, "An exciting and continuously developing field, microscopy is nowadays a 'must know' for anyone interested in following a career in experimental sciences. Because SEEING the world is understanding... and understanding builds the knowledge of our society".



## PEOPLE

**BEYOND ICFO**

Emilie Wientjes shares her "beyond ICFO" experience with ICFOnians.

p. 10

**IN FOCUS**

# Women for Africa Foundation

**Contributing to sustainable development in Africa through the drive of female scientists like Prof. Rose Alani**

**ICFO participates for the third consecutive year in the Science by Women program, sharing our knowledge and facilities, while benefiting from the expertise and perspectives of a visiting senior researcher in the ICFO community.**

**The Women for Africa Foundation** (Fundación Mujeres por África), a private entity aimed at contributing to the sustainable development of Africa through the drive of its women, began the Science By Women program in 2014, offering fellowships for African women scientists to spend a six month sabbatical in a Severo Ochoa Research Institute in Spain. The program specifically aims to enable African women scientists to tackle the great challenges faced by Africa through research which can be transferred into products and technologies having impact on people's lives.

**Prof. Rose Alani:** Senior Lecturer in the Chemistry Department at the University of Lagos. (Nigeria)

**Research Interests**

Air quality monitoring, particularly passive air monitoring for POPs with the main aim of assessing the status of the environmental pollutants in coastal regions along the Maritime Silk Road from Southeast Asia to Africa and the globe as a whole. Other interests include ambient air monitoring of the chemical compositions, sources and health impact of fine particulate matters (PM2.5) in Nigeria.

**Work at ICFO**

Prof. Alani will spend March through August 2018 working with the Optoelectronics research group led by ICREA Prof. at ICFO Valerio Pruneri to develop new photonic technology platforms for air pollution assessment and water quality monitoring.

**What motivated you to participate in the Visiting Senior Research Fellowships program?**

**Rose Alani:** The World Health Organization (WHO) recently showed four cities in Nigeria as the worst cities in the world for air pollution. A love for my country and passion for my people motivated me to search for solutions. Air pollution is a serious problem because of its ease of proliferation, direct negative health effects on humans and potential to pollute both land and water.

**What inspired you to pursue a career in science?**

**RA:** My first teachers were my parents who both taught mathematics and science related subjects. All but one of my ten siblings work in science related fields. In secondary school, my Chemistry teacher, Miss Ette, took special interest in me. Physics was my best subject but somehow, I ended up with Chemistry. My late husband, Mr Anthony Alani, helped me to realize my dream of earning my PhD in Environmental/Analytical Chemistry and sponsored my stay in the Great Lakes Institute for Environmental Research (GLIER), University of Windsor, Ontario, where I did all my PhD laboratory work. The University of Lagos took over the sponsorship of my PhD program after the demise of my husband. My pastors also gave me a great push. I remarried and my husband, Mr Adekunle Adelani and my five children are a very strong positive influence to me, even now.

**Are there any obstacles that make it more difficult for women to access scientific careers in Nigeria?**

**RA:** In Nigeria, and I think in Africa as a whole, everyone belongs to each other and so has responsibility towards each other in the family and the community. Women's responsibilities are multifaceted: facing her career, being a wife, being a mother, being a sister, being a child to both her biological parents and her husband's parents, also being a good neighbor. An African woman needs the grace of God and all available support to survive all these and still go into reasonable scientific research.

**What issue would you most like to see resolved for the next generation of women scientists in Nigeria?**

**RA:** I would like to see communities encourage their girls to go to school and to bring them back to school if they are put in the family way during their education. This would require support from the government or NGOs. The government should give all the necessary support and encouragement to women scientists, knowing that as homemakers they will surely use their scientific research to better their society.

**What role will this sabbatical program play in overcoming challenges in your country?**

**RA:** The Women for Africa Foundation stepped in when I was facing challenges and frustrations of lack of capacity and lack of access to proper experimental infrastructures to resolve problems in my research. They did not just provide funds but made possible the collaboration with ICFO. This will help to bridge the knowledge gap and provide the infrastructures necessary for tackling the pressing air pollution problem in Africa generally and in Nigeria in particular. This research, when concluded, will have a great impact on air and water quality monitoring in Nigeria.

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## PEOPLE

## BEYOND ICFO

# Emilie Wientjes

Emilie recently visited ICFO to give a scientific seminar within the *Women in Science Month* agenda

## My time at ICFO

I joined ICFO in 2012 as a postdoc in the group of Niek van Hulst. Overall, it was a good time, with bumpy parts, but also nice people and excellent scientific conditions! Furthermore, Parc del Garraf offered great possibilities for "relaxing" on a mountain bike. It was clear for me from the start that I would only stay at ICFO for two years. The most important reason was that I wanted to settle down with my partner who remained in the Netherlands.

## The present

Nowadays the mountain bike has changed for a "bakfiets"- the Dutch version of a cargo bike used to transport kids. I have a daughter of 2.7 years and a son of 11 months. It is a rather hectic period of my life, especially in combination with the starting up of my own research group at Wageningen University. I use biophysical techniques to reveal how photosynthetic organisms manage to cope with the different light conditions they experience in nature. I am also teaching physics and spectroscopy courses and in addition, need to acquire funding for my research. My time at ICFO definitely helped me to get this tenure track position. Both for the research training I got and for the experience abroad, which is highly valued in the Netherlands.

## Women in Science month

In March, I was at ICFO to give a talk. It was very nice to be back! So many bright people together who are passionate about science and eager to discover new things. It makes a great atmosphere. My talk was part of the Women in Science month at ICFO, so apart from the scientific part I also shared my experiences as a woman in science. For me being a scientist and a parent is a constant balance between my personal life and scientific career. It seems that planning gets exponentially more complicated with the number of people who are involved. With one partner and two kids, simple things, such as going to a conference, become rather complicated. On the other hand, this is not a gender issue. I think most important is that you share the tasks at home equally, are confident about your qualities at work and keep up the good spirit.



March 2018,  
Wageningen.



March 2014,  
Parc del Garraf.

*"It was very nice to be back! So many bright people together who are passionate about science and eager to discover new things. It makes a great atmosphere."*

## OUTREACH

## YOUNG MINDS want to know...

### How do solar panels work?

The Outreach team at ICFO welcomes school groups to the institute, allowing them to explore the facility and encouraging them to ask questions and develop a mindset based on the scientific discovery and process. Seemingly simple questions pave the way for insightful conversations that introduce some basic concepts behind the science of light.



3rd grade students at Istituto Italiano Statale Comprensivo, Barcelona ask: **How do solar panels work?**

**Dr. Laura Ciammaruchi**, postdoctoral research in the Organic Nanostructured Photovoltaics research group, responds:

Solar panels are made out of special materials, called "photovoltaic" materials. The great thing about them is that when the sun shines on the panel, the solar energy is absorbed in it, and is able to make the electrons move across the photovoltaic material. Electricity is nothing more than the constant flow of these electrons! In order to use electricity in our everyday devices, we need to collect the electrons flow in an ordered way, this is why we create "roads" for them - that is, we wrap the panel with electrical cables - so that electrons can be extracted from the panel... and can be used to power our favorite video game at home!



GO & FLY

# 151 Women and Men

have successfully defended their theses at ICFO since its founding in 2002.



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January 23, 2018

**Noslen Suárez**  
*"Strong-Field Processes in Atoms and Polyatomic Molecules"*

**TD: ICREA Professors Dr. Maciej Lewenstein and Dr. Jens Biegert, and Prof. Dr. Marco Bellini (LENS)**



148

February 26, 2018

**Benjamin Wolter**  
*"Electron Re-Collision Dynamics in Strong Mid-IR Fields for Diffraction Imaging of Molecular Structure and Its Fragmentation"*

**TD: ICREA Prof. Dr. Jens Biegert**



150

March 23, 2018

**Quan Liu**  
*"Double Resonant Character in an Optical Cavity for High Performance and Stable Polymer Solar Cells"*

**TD: Prof. Dr. Jordi Martorell, ICFO and Prof. Dr. Uli Lemmer, KIT**

Together they have helped us measure what we have learned, how far we have come, and how much we have yet to learn. The following ICFOians have recently succeeded in defending their PhD theses. Honoring ICFO's tradition, ICFOians gather 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.



147

February 22, 2018

**Valeria Rodríguez-Fajardo**  
*"Novel Methods for Plasmonic Nanoparticles Imaging Inside Cells Using Dark-Field Microscopy"*

**TD: ICREA Prof. Dr. Romain Quidant and Dr. Rafael Porcar-Guezenc (COSINGO)**



149

March 19, 2018

**Joanna Zielinska**  
*"Spontaneous parametric down-conversion sources for generation of atom-resonant quantum light"*

**TD: ICREA Prof. Dr. Morgan Mitchell**



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March 28, 2018

**Lara Laparra**  
*"Quantitative Nanoscale Imaging of Synaptic Protein Organization"*

**TD: Prof. Dr. Melike Lakadamyali**

COMMUNITY PICTURES



ICFOians participate in ScienceGirls visit



Marta and Fede explain the "Decide Game"



Calçotada 2018



Congratulations to the Quantum Photonics with Solids and Atoms group



ICFOsnow 2018

## Mystery ICFOnian

How much do you know about the people you work with?

ICFOians 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 ICFOnian is! Look for the answer in the next edition of ICFOians.

1. At the young age of 15, she chastised actor Liam Cunningham (Davos from Game of Thrones) for fishing from the river bank in her garden.
2. At the age of 21 she decided The West Bank was where she would go on holidays.
3. During Uni she worked in a theatre where she met people like Janelle Monáe (Hidden Figures), and Cillian Murphy (Peaky Blinders).
4. She is not sporty, but she has completed a 65km triathlon.



# THE LAST WORD

## HIGH PROFILE

# Aleksandra Boskovic

**Research Director, Optics, Surfaces and Integration Technologies, Corning Incorporated**

### How and why did you start prioritize spending so much time and energy supporting women in science?

It started later in my career, after I had already built a track record for myself. I felt it was important to secure my personal success before I could help and support others. It was also a point when I truly started to notice the differences in the scientific community and in the work place and how biases (even when very small or unintentional) can have an enormous impact on minorities in particular. It was the right moment to lend the experience and recognition I had built to advocate for and empower others.

### You have an impressive CV with a long list of accomplishments and honors. What is the achievement you are most proud of?

I have a deep love for science and I feel extremely excited about technology in general. It is what gets me going every morning. However, what I feel most proud of are the achievements that do not come across on a CV. I feel proud of consistently leaving organizations in a better place than when I arrived and with scientists that are better recognized for their impact. I have been passionate about science since I was a child, but knowing that I have made a difference for someone else is what makes me proud.



*“I feel proud of consistently leaving organizations in a better place than when I arrived and with scientists that are better recognized for their impact.”*

### Based on your combined business and scientific experiences, would you say that women have gained more ground in the corporate or scientific world?

I'd say in both. Every day I see more women in science and at higher level positions in industry. I am often not the only woman in the room any longer – it used to happen all the time about ten years ago – and that is a great feeling. However, we still have a long road ahead of us. There are still way fewer women than men when I look at conference attendance and publications lists in my field. In technology based businesses very few women get to be general managers for example. It will take time to reach true equality but we are making visible progress every day.

### What is CORNING doing right in its effort to support women in science?

We have many formal efforts to support women and that helps. They go from support groups for female engineers and scientists, to having our executive female leaders committing and coach at least two other upcoming women, to leadership training focused on midcareer females. But, the most important and impactful thing that Corning does is that our top leaders are true supporters of diversity – that establishes a culture of valuing diversity that permeates the entire organization.

*“It will take time to reach true equality but we are making visible progress every day.”*

### Many talk about the positive impact that a mentor can have on career growth, especially as a woman in science. As a mentor, what do YOU get out of the experience?

Shunryu Suruki (a teacher of Zen Buddhism) wrote, “In the beginner’s mind there are many possibilities, but in the expert’s there are few”. Apart from the pure joy of seeing others succeed, I learn a lot from the people I coach or mentor. For example, it allows me to keep in touch with the way younger generations think and the challenges they face. It is also fascinating to see how others internalize and interpret different situations; and the solutions they come up with. The people I coach and mentor broaden my possibilities.

## Science Quiz

Match the researcher with her discovery/invention

- 1) Parity violation
- 2) Artemisinin, lifesaving malaria drug
- 3) Spread-spectrum technology
- 4) Dark matter

\* Find answers on pg. 2



Vera Rubin



Chien-Shiung Wu



Youyou Tu



Hedy Lamarr

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