newsletter
DECEMBER 2013

Follow us!

No. 11

ICIQ
Institut Català d'Investigació Química

www.iciq.es

2014: ICIQ's 10th anniversary

Next year ICIQ celebrates its 10th anniversary. As part of the celebration, a series of events have been programmed through the week of 14th to 18th July, 2014.

Our celebration will start with ICIQ's Quinquennial Evaluation by ICIQ's Scientific Committee (Monday-Tuesday). Following will be ICIQ's 10th Anniversary Scientific Symposium (Wednesday, Thursday and Friday afternoon) with lectures delivered by the following speakers: Phil S. Baran (The Scripps Research Institute), Stephen L. Buchwald (MIT), Erick M. Carreira (ETH Zürich), Thomas Carrell (LMU München) Zoraida Freixa (Ikerbasque) David MacMillan (Princeton University), Javier Pérez-Ramírez (ETH Zürich), Andreas Pfaltz (University of Basel), Julius Rebek (The Scripps Research Institute), Amos B. Smith (University of Pennsylvania), Peter J. Stang (University of Utah), Ramon Vilar (Imperial College London), Jin-Quan Yu (The Scripps Research Institute). Friday morning, we'll host an Institutional ceremony with representatives of the Catalan government, scientific institutions and industry.

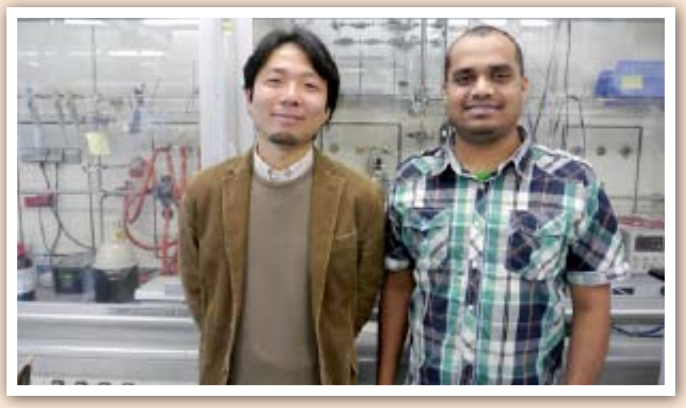
All in all, a great week to celebrate ICIQ's first brilliant 10 years!

Science highlights Urakawa's conversion of CO_2 to methanol

The latest issue of *Science* (Issue 6163) includes a highlight on the article published by Atsushi Urakawa and Atul Bansode on the nearly full conversion of CO_2 to methanol. The paper is one of the Editor's choice of the issue: *Pressuring CO_2 to React*.

Atsushi Urakawa has optimised the conversion process of CO_2 into methanol achieving close-to-full one-pass conversion. The method, published as Priority Communication in Journal of Catalysis consists of a stream of CO_2 and hydrogen that flows through a reactor filled with a catalyst of copper, aluminium and zinc at high pressure.

The process designed by Urakawa is very versatile and allows the conversion of the methanol generated in the reactor into other fundamental chemical products such as dimethyl ether, olefins and other hydrocarbons via simple modifications of the catalyst and/or the reactor pressure. This CO_2 transformation approach is highly productive and is convenient for the sites where CO_2 is captured and stored and small-scale plants are required.



Atsushi Urakawa and Atul Bansode

Prof. Urakawa's group Article abstract

ICIQ newsletter
DECEMBER 2013
No. 11

One step forward: Valorization of research results

One of ICIQ's endeavors is to identify and protect industrial relevant inventions arising from the Institute's research. Then, ICIQ starts a process of valorization of these inventions so they can reach a stage where they can be licensed to a company or be the basement to a future spin-off company. As an example, here are two cases of valorization in progress:

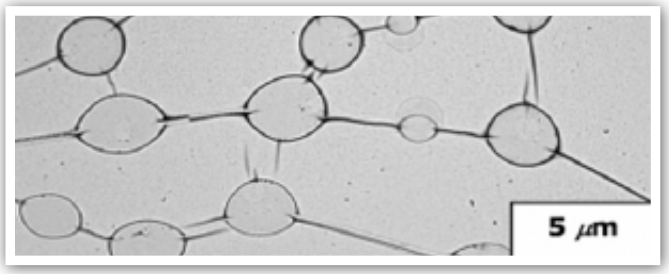
CSOL, one of ICIQ's Technology Development units, with the support of "la Caixa", has chosen three ICIQ research inventions for valorization due to their high potential in being transferred to the industry.

CSOL Catalytic Solutions

Obra Social Fundació "la Caixa"

The chosen projects are **CCAPI** (development of new co-crystals from active pharmaceutical ingredients to improve the API properties) led by Dr. Jordi Cerón from Crysforma, **CatFlow** (development of anchored enantioselective catalysts and preparation of devices for asymmetric reactions in continuous flow) led by Prof. Miquel A. Pericàs and **IMADOT care** (development of Quantum Dots as agents to diagnose diseases) supervised by Prof. Emilio Palomares.

Arjan Kleij's research on a new chemical system formed by nanorings interconnected by nanorods which has shown an unexpected capability for transmitting electrical information (*Nature Communications*). Prof. Kleij will receive funding from Marie Curie Actions and ACC1Ó through a Tecniospring grant to develop new plastic composite materials in collaboration with Polymaterials AG. This fellowship guarantees a two-year contract funding for a researcher of Kleij's team to make this invention suitable for its transfer to the industry.

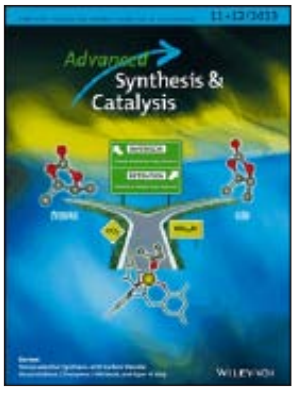


Transmission electron microscopy (TEM) image of the network

CSOL Website

Tecniospring (ACC1Ó) Website

Journal Covers



Stereochemical Divergence in the Formation of Organic Carbonates Derived from Internal Epoxides.

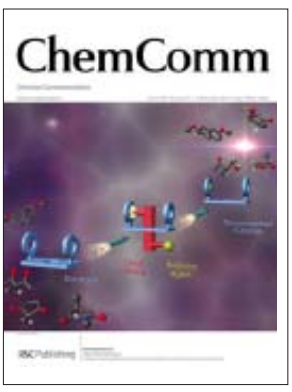
Access to the abstract

(*Adv. Synth. Catal.*, **2013**, 355, 2233-2239)
Christopher J. Whiteoak, Eddy Martin, Eduardo Escudero-Adán, Arjan W. Kleij

Trifluoromethylation of Aryl and Heteroaryl Halides with Fluoroform-Derived $CuCF_3$: Scope, Limitations, and Mechanistic Features

Access to the abstract

(*J. Org. Chem.*, **2013**, 78 (22), pp 11126–11146)
Anton Lishchynskyi, Maxim A. Novikov, Eddy Martin, Eduardo C. Escudero-Adán, Petr Novák, and Vladimir V. Grushin



Catalytic Enantioselective Reductive Desymmetrisation of Achiral and Mesocompounds

Access to the abstract

(*Chem. Commun.*, **2013**, 49, 10666-10675)
Héctor Fernández-Pérez, Pablo Etayo, Joan R. Lao, José L. Núñez-Rico and Anton Vidal-Ferran

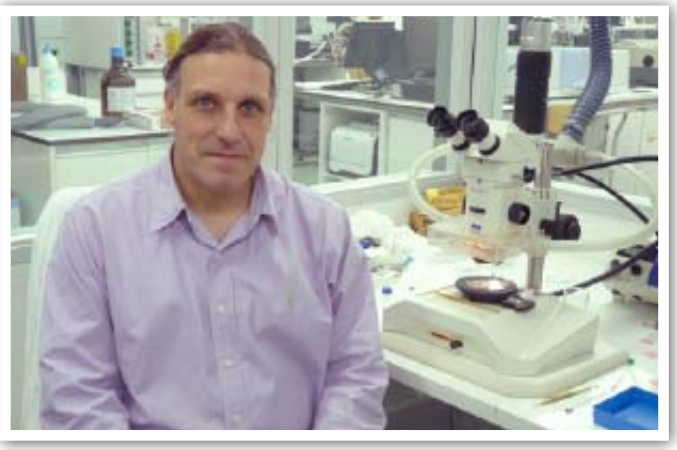
ICIQ newsletter
DECEMBER 2013
No. 11

The crystal master

Dr. Jordi Benet-Buchholz joined ICIQ in 2004 after six years as Bayer's chrystallografer in Leverkusen, Germany. "I first talked with ICIQ director during the Institute's inauguration back in 2003 and here I am," says Jordi. He set up ICIQ's X-Ray Diffraction Unit which now is a team of four: Eduardo Escudero, Marta Martínez, Eddy Martin and Jordi.

The unit uses two techniques: Powder X-Ray Diffraction and Single Crystal X-Ray Diffraction. The first technique is basically used as a screening method to get a finger print of each different crystalline form analyzed while the second technique is far more sophisticated. It delivers a 3D structure at atomic scale of a selected crystalline compound. " The Single Crystal Diffractometer equipped with a rotating anode is our Formula 1 equipment," adds Jordi. An stereomicroscope, a powder diffractometer and a single crystal diffractometer are the other unit's equipment in competition.

"We solve around 1.000 structures every year. But we also offer courses on how to crystallize. It's very important for us that ICIQ researchers know that we are at their service, to help them in any problem or doubt they might encounter," says Jordi. In fact, the X-Ray Diffraction unit tends to establish an stable and strong relationship with the Unit users. They end up knowing the preferences of the users, they anticipate their needs and they deliver the results according to their tastes. "It's a long relationship that we have with ICIQ researchers. They submit a crystal, we analyze its structure, then time passes by, they ask for... and after a short or a long while, maybe, a paper comes out." As life itself.



Dr. Jordi Benet-Buchholz

X-Ray Diffraction Unit

Crysforma's third workshop

The third edition of Crysmorfa's workshop on Pharmaceutical Solid State Development took place at ICIQ on the 19th-20th of November. The workshop is an example of ICIQ's policy in putting its expertise to the benefit of the pharmaceutical and chemical industry. Twelve participants from different countries attended the discussions of practical cases as well as the in-depth analysis of results from several characterization techniques.

The workshop speakers were: Dr. Jordi Cerón (Crysforma's unit manager), Dr. Jordi Benet-Buchholz (ICIQ's X-Ray Diffraction Unit manager and Crysforma's scientific advisor), Dr. Helmut Bushmann (Pharma Consulting Aachen) and Bernané Zea & Montserrat Jané (ZBM, a patents and trademarks firm).

Crysforma's website

ICIQ's new great hire

Ezequiel Soldevila is ICIQ's new Financial Manager. Graduated in Business Administration from the Universitat Rovira i Virgili, he also did a Master on Accounts Direction and Management Control at EAE Business School and a Management Development Programme from IESE Business School. Before joining ICIQ, Ezequiel was the Financial Director at Campa Iberia, SAU.

Ezequiel Soldevila

ICIQ newsletter
DECEMBER 2013
No. 11

Researchers on the roof

Paolo Melchiorre's research group has designed a new strategy of photochemical asymmetric catalysis which opens up new avenues for the design of new reactions in the field of photochemistry and asymmetric catalysis. This innovative strategy was published in *Nature Chemistry* and it uses visible light from a light bulb or the sun, to activate molecules (chiral enamines) and promote the formation of new carbon bonds in a controlled manner.

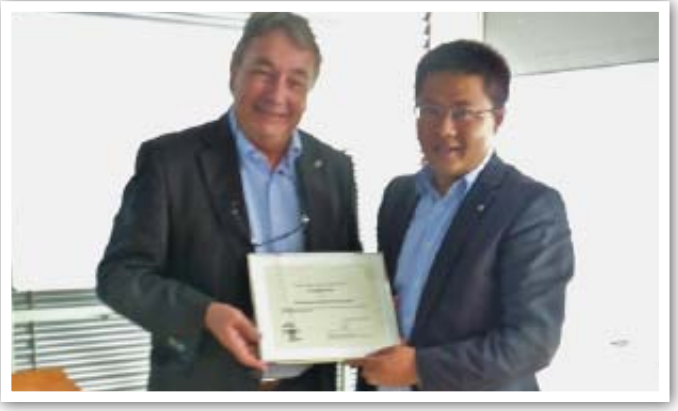
Paolo Melchiorre and his team at ICIQ rooftop doing a reaction

Melchiorre's group

Award to Dr. Ligang Zhao

The ICIQ's Board of Trustees agreed to award Dr. Ligang Zhao with the **ICIQ Honorary Industrial Group Leader** distinction.

With this award, ICIQ wants to recognise his valuable contribution to the establishment and consolidation of the Henkel-ICIQ Joint Unit.



Prof. Miquel A. Pericàs, ICIQ director, and Dr. Ligang Zhao

Henkel-ICIQ Joint Unit

News in brief

H-Index: The current h-index for ICIQ is 80, according to the Web of Knowledge database.

Phd theses defences: Drs. Oriol Martínez, Natalia Nieto, Madeleine Livendahl, Isidoro López, Giulia Bergonzini, Mònica Espelt, Erhan Özkal, Crisa Vargas, Virginia Valderrey, Chunhui Liu and Carlo Cassani, pre-doctoral students at ICIQ have defended their PhD thesis. They were all awarded the highest honors for their work.

A new ICREA Research Professor: Rubén Martín has been appointed ICREA (Catalan Institution for Research and Advanced Studies) Research Professor. ICREA is a foundation supported by the Generalitat de Catalunya which aims to recruit top scientists for the Catalan R&D system. Prof. Martín joins ICIQ group leaders Profs. Palomares, Vidal, Melchiorre, Galán-Mascarós, Kleij, Muñiz and Ballester in receiving this distinction.

Prof. Rubén Martín

See you soon! ICIQ Summer Fellows presented their research results of their three-month stage at ICIQ at CaixaForum Tarragona. This event was chaired by Antonio M. Echavarren, Javier de Mendoza and Pau Ballester from ICIQ and Eduard Gené from La Caixa, sponsor of the ICIQ Summer Fellowship Programme.

ICIQ Summer Fellowship Programme

ICIQ newsletter
DECEMBER 2013
No. 11

We believe in Outreach

Professors i Ciència

As part of Professors i Ciència programme of the Fundació Catalunya-La Pedrera, ICIQ group leaders Emilio Palomares and José-Ramón Galán-Mascarós and ICIQ researcher Laia Pellejà delivered the workshop "Light as a source of chemical energy" where teachers learnt how to use the solar light for the generation of hydrogen as a vector of energy.

Laia Pellejà, center, with some of the high-school teachers

Professors i ciència

Crazy about Chemistry

Twenty-one students in their fisrt year of high school have been selected to participate in this year long course organised by ICIQ and sponsored by Fundació Catalunya-La Pedrera. This course is addressed to students who have a special interest and talent on chemistry and research and want to expand their scientific knowledge through hands-on experiments in an excellent research centre. Crazy about Chemistry includes a mixture of theoretical lectures and hands-on experimental activities. It takes place over 18 Saturdays throughout the 2014 calendar year. The course will cover 12 different chemistry topics, including the main chemical reactions, presented by ICIQ PhD students and Postdocs.

More info

Once again, Química en Família

150 kids with their families enjoyed two evenings of chemistry and experiments. They built a lava lamp with water, oil and an esfervescent tablet, blandiblú, a crazy bouncy ball and many other things. We ALL had a great chemistry time.

More info: Video TN Comarques Tarragona

Chemistry and Beer

In the frame of the Science Café series, Dr. José Luis Núñez (researcher at ICIQ) talked about the chemistry behind a beer to a thirsty audience at Pachito Lounge. It included a tasting of different types of beer.

More info

ICIQ newsletter
DECEMBER 2013
No. 11

Season's Greetings!

Agenda

Institute of Chemical Research of Catalonia (ICIQ)
Av. Països Catalans 16 - 43007 Tarragona (Spain)
Phone +34 977920200 - Fax +34 977920235

ICIQ Seminar Program
All seminars at 12p.m. in the ICIQ Auditorium

Jan. 17th	**Prof. Xavi Ribas**	Universitat de Girona
Jan. 31st	**Prof. Charlotte K. Williams**	Imperial College London
Feb. 14th	**Prof. Geraldine Masson**	Institut Chimie des Substances Naturelles, CNRS
Feb. 21st	**Prof. Herbert Mayr**	Ludwig-Maximilians Universität, München
Feb. 24th	**Prof. Qi-Lin Zhou**	Nankai University
Feb. 28th	**Prof. Karl-Heinz Ernst**	Empa - Swiss Federal Laboratories for Materials Science and Technology
Mar. 14th	**Prof. Michael Mastalerz**	Ruprecht-Karls-Universität Heidelberg
Apr. 4th	**Prof. Joseph M. Fox**	University of Delaware of Chemistry and Biochemistry
Apr. 11th	**Prof. Walter Leitner**	RWTH Aachen University
Apr. 25th	**Prof. Yasushi Tsuji**	Kioto University
May 16th	**Prof. Pierangelo Metrangolo**	Politecnico di Milano
May 23rd	**Prof. Ronny Neumann**	Weizmann Institute of Science
Jun. 6th	**Prof. Carmen Carreño**	Universidad Autónoma de Madrid

ICIQ's 10th Anniversary Celebration, July 14-18th
(Quinquennial Evaluation, Scientific Symposium and Institutional Ceremony).