

ICIQ^R

Institut
Català
d'Investigació
Química



www.iciq.es

New Group Leaders join the ICIQ

A new year begins, and the Institute keeps growing by incorporating new group leaders.

Last November, Prof. Kilian Muñoz joined the center and his group's research specializes on the design of homogeneous transition metal catalysts with a focus on oxidative amination and diamination chemistry. In January, Dr. Atsushi Urakawa joined the ICIQ as a group leader supervising a research group which works on the development of *in situ/operando* spectroscopic tools and on the rational design of heterogeneous catalytic processes potentially pivotal for solving environmental and energy-related problems by means of combined experimental-theoretical approaches.

In February, Prof. Vladimir V. Grushin started carrying out his research projects at ICIQ, which include activation and functionalization of hydrocarbons and mechanistic organometallic chemistry of particular relevance to homogeneous catalysis.



Profs. Vladimir Grushin (left) and Kilian Muñoz, new ICIQ group leaders

Profs. Piet van Leeuwen and Emilio Palomares, ERC Grants holders

ICIQ hosts two ERC grant awarded researchers. On the one hand, Prof. Piet van Leeuwen, ICIQ group leader, has been awarded with a European Research Council Advanced Grant for his project "*A New Vision on Nanocatalysts (NANOSONWINGS)*". On the other hand, Prof. Emilio Palomares, group leader at ICIQ as well, was awarded an ERC Starting Grant to develop the project "*Control of the Electronic Properties in Hybrid-Quantum Dot/Polymer-Materials for Energy Production (PolyDot)*".

The ERC Advanced Investigators Grants (ERC Advanced Grants) aim to encourage risk-taking and interdisciplinarity, and supports pioneering frontier research projects.

The ERC Starting Independent Researcher Grants (ERC Starting Grants) aim to support up-and-coming research leaders who are about to establish or consolidate a proper research team and to start conducting independent research in Europe.

i More info: <http://erc.europa.eu/index.cfm>



Profs. Emilio Palomares (left) and Piet van Leeuwen, ERC grant holders.

ICIQ's Strategic Projects

In the ICIQ Strategic Plan 2007-2012, ICIQ committed to promote up to three strategic projects during this period, to address the global problems of sustainability, climate change and alternative energy sources and to entail, in each case, the training of internal multidisciplinary teams from three or more ICIQ research groups, as well as the option of minority participation by groups unrelated to the Institution. The ICIQ sees this research as a risk activity. As such, it requires a long-term timeframe and must not be subject to undue pressure for the hasty publication of results, but of course results with a very high potential are also expected.



Researchers of the Strategic Projects lab. at ICIQ.

With this aspects in mind, three research projects have been approved: “Solar Power for Sustainable Energy and Green Catalytic Chemistry” (Prof. Antoni Llobet, coordinator, Prof. Emilio Palomares, Prof. Pau Ballester, Prof. Ricard Garcia Valls (URV); “Activation of Methane and Other Alkanes with Electrophilic Gold Complexes” (Prof. Antonio Echavarren, coordinator, Prof. Pedro J. Pérez, Universidad de Huelva); “New Conversions of Glycerol” (Prof. Piet van Leeuwen, coordinator, Prof. Javier Pérez Ramírez). For this purpose one laboratory at ICIQ will be fully dedicated to develop these projects.

Briefs

PhD Thesis Defenses: Drs. Guzmán Gil, Xisco Caldentey, David Rivillo and Georgiana Stoica, pre-doctoral students at ICIQ, have defended their PhD thesis recently. Dr. Gil presented a thesis entitled “Supramolecular Chemistry of Aryl Extended Calix[4] Pyrroles”; Dr. Caldentey did his presentation on the “Engineering of Modular Ligands for Asymmetric Catalysis: Evaluation and Fine-Tuning”; Dr. Rivillo defended his work on “Metal-templated self-assembled diphosphines”; and Dr. Stoica presented her thesis entitled “Chemistry of Dawsonites and Application in Catalysis”. All four were awarded the highest honors for their work.

Narcís Monturiol Award: On 16th December, the Catalan Government agreed to award the Narcís Monturiol Prizes to thirteen researches and three entities, among which the ICIQ. These awards were founded by the Catalan Government on 1982 and reward the scientific and technological merit of people and entities which have contributed outstandingly to the development of science and technology in Catalonia. The prize-giving ceremony will be celebrated on 14th April at the Palau de la Generalitat.

i More info: www.gencat.cat

Chemistry for Families: On 19th November, nearly 80 children could enjoy performing amazing chemical experiments such as getting energy out of lemons, inflating balloons without blowing, and many more. The workshop, which took place at the ICIQ Auditorium, was very successful, and it was shown on the TV program InfoK.



First steps towards the Periodic Table.

i www.tv3.cat/videos/1640859/Experiments-casolans

ICIQ's h-index: The current h-index for the ICIQ is 46, according to the Web of Knowledge database.

Prof. Javier Pérez-Ramírez: His new challenge

Although he already speaks Dutch and Norwegian, it won't take long before he has also a good command of Swiss German. Prof. Javier Pérez-Ramírez, who has been ICREA research professor and group leader at ICIQ since May 2005, is leaving to Zurich in March, where he will hold a Full Professor position at ETH.

Prof. Pérez-Ramírez arrived at ICIQ five years ago, being one of the few group leaders who came from the world of industry instead of university. The intense research activity in his group has been focused on the design of nanostructured and hierarchical materials as well as reactor engineering concepts for application in heterogeneous catalysis. He has published 8 patents, and when we asked him about the secret of his success, he stated "It is essential to be tightly in touch with companies". His work at ICIQ has yield more than 70 publications with almost 700 cites, although he does not care much about these results. What he would really wants is to develop at least three processes which will have a real application for the chemical industry. For the time being, he has already achieved one: 20 tons of his catalyst, which is involved in the decomposition of a major greenhouse gas, nitrous oxide, are produced every year.

His research in hierarchical zeolites is, from all what has flourished in these five years at ICIQ, his most visible topic. And the most visual as well – two papers related to this issue have been published in journal covers, one of them being specially interesting from an artistic point of view, since it is a watercolor (1).

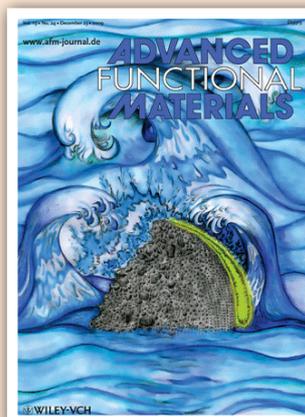
In his opinion, researches must face a great challenge which is the development of materials aimed to energetic and environmental improvements. In fact, his research in the near future will be mainly oriented to the understanding and development of hybrid systems combining several energy sources such as light or electrons (photocatalytic or electrocatalytic processes). Moreover, he will also try to understand the basis of catalytic scale-up by using stochastic methods.



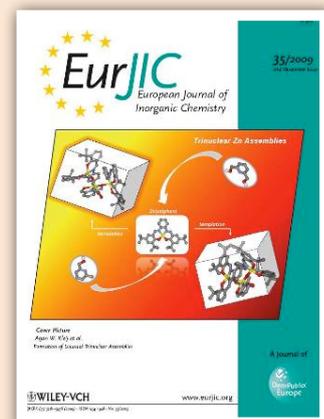
Prof. Javier Pérez-Ramírez

He declares that his stay at ICIQ has been very positive and satisfactory, allowing him to learn how to translate his work so that it fits a fundamental environment ("It is very difficult for an engineer to publish in certain journals", he states). Moreover, not only he has learnt a bit of chemistry (as he points out, he is not a chemist but an engineer, and did not even study chemistry the last year of secondary school), but above all he has learnt how chemists think. We asked him if he would be around sometimes, and he said "of course, whenever I am invited to come!".

ICIQ's highlighted papers



1. Co-authored by
Prof. Javier Pérez-Ramírez



2. Co-authored by
Dr. Arjan W. Kleij

The Assistants' team

In one ICIQ's kitchens, chocolate croissants and tiny ensaimades on the table, and a friendly cozy atmosphere. The ICIQ research group assistants (they all agree on refusing to be called "secretàries") meet to discuss their work at ICIQ.

What do you like most of your job? Again, they all agree. "You do a lot of different things, you're in contact with a lot of people, many from different countries and cultures and you're always improving and learning new aspects of your work". And what's the worst? "Short deadlines! Projects and economic justifications deadlines!"

Versatility, resolution, decision making, autonomy, psychology, these are the qualities they consider a good assistant has to possess. As for their role at ICIQ the answer is conclusive: "the research groups would sink without us". You don't know how to apply for a fellowship? Ask them; Need a good budget spreadsheet? They'll make it; This has to be translated! It's done. And many more things they do everyday that even their group leaders ignore (yes, "most of our bosses are not aware of the great amount of matters we solve every day. They often believe things are done by themselves"). But not complaint about that, they all are satisfied with their work, bosses and the eternally young group members. "Can you imagine?"

Some years from now they will call us the ladies from the administration area".

Chemistry is always surrounding them. Difficult words to pronounce beyond their first syllable; strings of words tied with hyperons with no meaning and products you are not able to spell (1,2-dinitrobenzene), any idea on where to put this word in an alphabetically arranged list?). But that's for sure, they might know what Schrödinger's cat is.



ICIQ assistants to research groups.

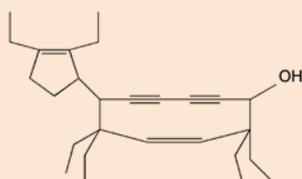
Now, there are just two or three croissants left and nothing else but powdered sugar in the *ensaimades* tray. The voice recorder turned off and someone says loud and clear "Now we'll tell the truth" (laughs).

Fun Chemistry

Extracted from "Old MacDonald Named a Compound: Branched Enynenylnols", by Dennis Ryan (*J. Chem. Ed.* **1997**, 74 (7) 782).

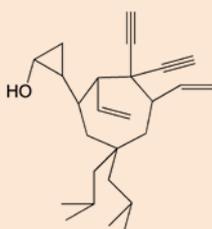
Cowenynenylnol

(Z)-6-(2,3-diethylcyclopent-2-enyl)-7,7,10,10-tetraethylcyclodec-8-en-2,4-diyn-1-ol



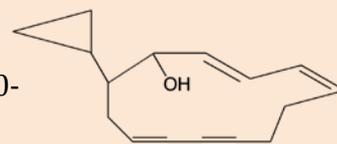
Turkenynenylnol

2-(3,3-diethynyl-2,4-divinyl-6,6-diisobutylcycloheptyl)cyclopropanol



Goosenynenylnol

(2E,4Z)-13-cyclopropyl-cyclo-tridec-2,4-dien-8,10-diyn-1-ol

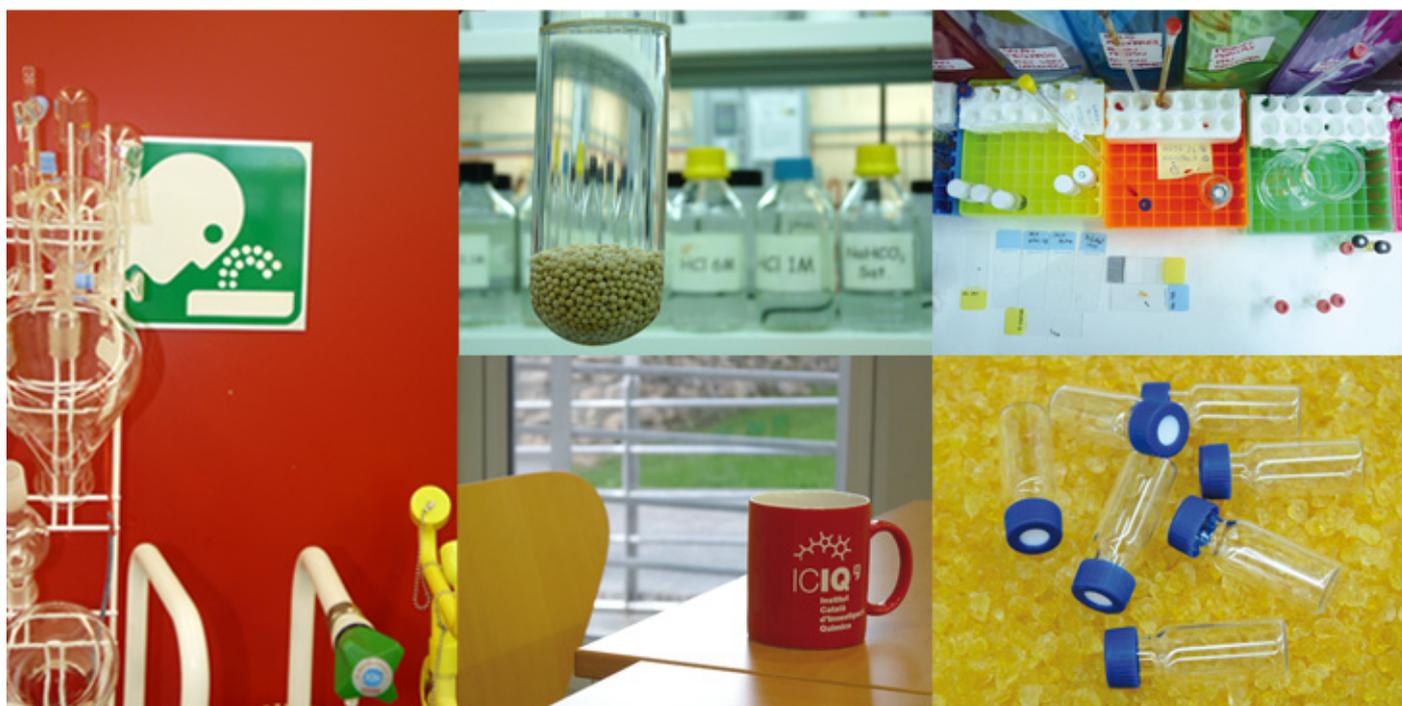


Serpentenynenylnol

(Z,Z)-11-(2-isopropylcyclopentyl)undeca-6,10-dien-4,8-diyn-1-ol



The Colors of ICIQ



Agenda

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Saló de l'Ensenyament

17 - 21 March, Montjuïc Venue (Barcelona)

 www.ensenyament.cat

GENERA

19 - 21 May (Madrid)

 www.ifema.es

PhD Thesis Defence

March 25th 11:00 am ICIQ Auditorium
Patricia Pérez "Solving the Mechanistic Puzzle of Gold-Catalyzed Cyclization of 1,6-Enynes and Beyond"

March 26th 11:00 am ICIQ Auditorium
Elisa Huertas "Self-assembly Based on the 2-Ureido-4(1H)-pyrimidinone Motif: From Cyclic Arrays to Molecular Capsules for Fullerene Separations"

April 13th 11:00 am ICIQ Auditorium
Sílvia Subirats "Lligands catalítics modulars derivats d'èpòxids enantiopurs: Aminoalcohols, aminotiols i isòsters peptídics"

April 15th 11:00 am ICIQ Auditorium
Paula de Mendoza "Design and Synthesis of New Polyaromatic Scaffolds for Nano-Scale Applications"

April 30th 11:00 am ICIQ Auditorium
Mónica García Mota "Theoretical studies of selective processes in heterogeneous catalysis"

ICIQ Seminar Program (March/April/May)

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

- Mar. 5th:** Prof. Mark MacLachlan (University of British Columbia)
"Supramolecular chemistry with schiff base macrocycles"
- Mar. 12th:** Prof. Phil Gale (University of Southampton)
"New anion receptors and transporters"
- Mar. 19th:** Prof. Jiri Srogl (Institute of Organic Chemistry and Biochemistry)
"Bio-inspired synthetic chemistry. From Cow Stomach to Apple"
- Apr. 9th:** Dr. Guillem Aromí (Universitat de Barcelona)
"Design of coordination molecules as pairs of quasi-independent magnetic spins"
- Apr. 23th:** Dr. Stephan F. Kirsch (Technische Universität München)
"Novel strategies for the synthesis of cyclic systems"
- Apr. 30th:** Dr. Igor Larrosa (Queen Mary University of London)
"From C-H to C-C activation: New methodologies for the construction of C-C bonds"
- May. 7th:** Prof. Dr. Herbert Waldmann (Max Planck Institute of Molecular Physiology)
"Charting and exploiting natural product chemical space by synthesis and biology"
- May. 21st:** Prof. Romano VA Orru (VU University Amsterdam)
"Molecular complexity and diversity by multicomponent reaction design"
- May. 28th:** Prof. Jonathan Nitschke (University of Cambridge)
"Complex self-assembling systems from simple building blocks"