ICIQ

Institute of Chemical Research of Catalonia

We pave the way for your research career in Chemistry

Institució CERCA
Centres de Recerca de Catalunya

A world leading institution in chemical research*

* Mapping Scientific Excellence, Nature Index

ICIQ People

The institute hosts over 300 researchers, technicians and support staff from various different countries.

ICIQ's scientific personnel represents 82% of the total staff. It includes group leaders, master and Phd students, postdoctoral and project researchers, laboratory technicians and research support specialists and technicians.

The institute's management and administration team create a perfect environment to allow our researchers to stay focused on their fundamental task: to conduct excellent chemical research.

One of our greatest satisfactions at ICIQ is that our researchers leave here with world-wide opportunities

ICIQ is a non-profit foundation created by the Government of Catalonia. We conduct basic and applied research since 2004

We provide facilities, state-of-the-art equipment and most importantly, excellent scientists and professionals to assure you a rewarding career.

At ICIQ we promote a workplace culture that encourages innovation in a happy and creative atmosphere. Here, you'll find an international and inspiring environment and a robust career development programme tailored to your needs.

Inspiring researchers within ICIQ's tradition of excellence

We're preparing a new generation of researchers with the skills and knowledge needed to tackle the most important challenges in chemical research. ICIQ students and researchers benefit from a comprehensive training programme and courses to foster a fruitful career.

50%
Students from abroad

Starting Career Programme

Postdoctoral Stays
55
researchers

PhD Programme
102
students

Master Projects
7
students

Summer internships

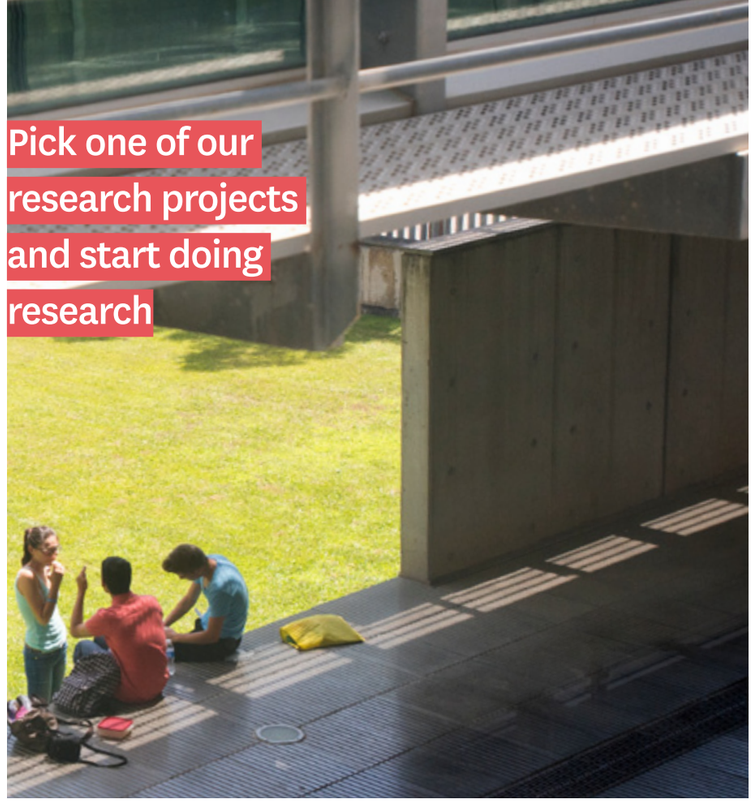
Dec. 2020

Summer Internships

A three-month paid internship for undergraduate students in one of ICIQ's research groups during the months of July, August and September. During their stay, students have access to ICIQ seminars and dedicated courses and work on a research project under the supervision of ICIQ researchers. ICIQ Summer fellows are in an excellent position to carry out Master studies at ICIQ and then apply for a future PhD position in our institute.

This programme is funded by "la Caixa"

Obra Social "la Caixa"



Pick one of our research projects and start doing research

Master Projects

Nuria Llorente
Master student
Graduated at Universidad de Valladolid, Spain

My year at ICIQ as a master student has allowed me to participate in research at the highest level. The facilities comprise a wide variety of instrumentation that is not available in every research institute. Making the most of all the advantages granted by ICIQ will provide me with a wide skill set that will launch my chemistry career.

The first step towards your doctorate

In partnership with the Universitat Rovira i Virgili (URV) we offer an MSc. in Synthesis, Catalysis and Molecular Design to pursue afterwards doctoral studies. This MSc (1 year course, 60 credits) is given in English and provides comprehensive knowledge on synthetic and catalytic processes, from laboratory to industrial scale. Students are expected to follow one semester of theoretical lectures and one of laboratory research under the supervision of one of the ICIQ group leaders. Students can also pick other URV masters related with the research carried out by the research group you would like to join.

ICIQ master students receive a scholarship for full-time studies in order to achieve the Master's degree.

PhD Programme

Rohit Gaikwad
PhD student
MSc from University of Pune, India

It´s truly gratifying to do a PhD at ICIQ. The dynamic research environment and the enthusiastic support from ICIQ staff have given me confidence to bring new dimensions into my work. This will surely help me to achieve a successful research career.

Fostering graduate students on their path to thinking, designing and executing a research project

The ICIQ International Graduate Programme targets highly qualified and talented graduate students with an enthusiastic interest in chemical research and has been successful in attracting students from all over the world.

ICIQ PhD students have the opportunity to follow an individual research project under the direction of one of the ICIQ group leaders for a period of 4 years. Our predoctoral students make the most of an excellent team of researchers and highly specialised technicians in ICIQ's cutting-edge core facilities.

Our programme also offers opportunities for short stays in renowned international research institutions (Caltech, ETH Zürich, FAU, University of Michigan…) and weekly seminars by leading scientists at the forefront of chemical research, as well as complementary training designed to ensure a successful career in a variety of areas, including hands-on training in the use of state-of-the-art scientific instrumentation, IP management, entrepreneurship, knowledge and technology transfer and communication skills.

ICIQ Fellowship Programmes

- "la Caixa"- Severo Ochoa PhD Fellowship Programme
- ICIQ International PhD Fellowship Programme
- BIST International PhD Fellowship Programme

We believe in empowering postdoctoral researchers and promoting their leadership skills

Postdoctoral Stays

ICIQ is the place for highly talented scientists seeking advanced research training and career development in a competitive international environment. Postdoctoral researchers at ICIQ have an outstanding opportunity to develop their research career by leading research projects under the mentoring of our group leaders in a stimulating and multidisciplinary scientific environment.

Postdoctoral contracts at any of ICIQ's research groups are for a period of 1-5 years. During this time postdoctoral researchers broaden and deepen their research skills and boost their career perspectives so they can become successful independent research scientists.

Stefano Serapian
Postdoctoral researcher
PhD from Imperial College London, UK

At ICIQ, there is never one minute of boredom: despite the very prolific research output, the weekly seminars, and the high-level scientific work carried out, one almost doesn't feel the workload. People are pleasant and the climate handsomely plays its part.

Starting Career Programme

The ICIQ-SCP programme is aimed at attracting highly talented young researchers, with an outstanding postdoctoral record and willing to start an independent scientific career with their own independent research group.

Junior Group Leaders of the ICIQ-SCP programme receive a generous start-up package, a completely equipped laboratory (three positions) and full access to the state-of-the-art ICIQ facilities.

Start your own research group at ICIQ

Comprehensive Training

ICIQ Seminar Programme

Our seminar programme is a meeting point for top-class chemists undertaking ground-breaking research. Weekly seminars are scheduled to keep the ICIQ community updated on the latest research results from scientists based all over the world. We have hosted the most prestigious international scientists, including Nobel Prize laureates K.B. Sharpless, R.R. Schrock, R. Grubbs, and A. Suzuki. Moreover, the Industry seminars series provide an insight into the R&D carried out in leading chemical and pharmaceutical industries.

BASF We create chemistry

The ICIQ Seminar Programme is funded by BASF

Hands-on-training

Basic training in the use of ICIQ's scientific instrumentation (NMR,spectroscopy, parallel synthesis reactors, chromatography, etc.) and advanced training in the interpretation of analytical data (X-ray diffraction, high resolution mass spectrometry and kinetics data from spectroscopy analysis).

International conferences and symposiums

We enable the participation of both graduate and postdoctoral researchers in national and/or international conferences and we encourage the presentation of talks and posters.

Intellectual property, technology transfer and entrepreneurship

Courses by ICIQ experts and renowned external specialists introducing the basic concepts of intellectual property, the patent system, and technology transfer strategies. We also nurture the entrepreneurial spirit of our researchers so they can move from science to business.

Communicating science

ICIQ students and researchers participate and acquire communication skills through science outreach activities such as chemistry workshops, science talks and chemistry courses for high-school students. Their support is fundamental for helping us to raise public awareness of chemical research as a key factor in the progress of our society and to boost scientific vocation among youngsters.

Language courses

Catalan, Spanish and English courses free of charge for staff members.

Improving quality of life through chemical research

21
ERC Projects

24,85
Nature index

2.540
papers published

84%
of papers published in journals ranked in the first quartile

122.819
total citations

48,35
citations/article

April 2021

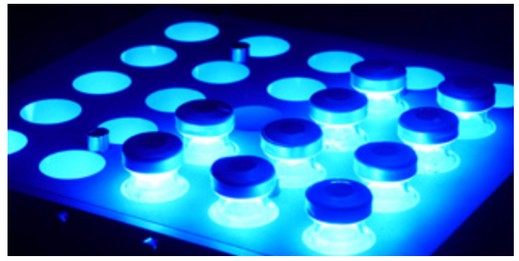
We envisage a multidisciplinary research model based on collaboration between different research groups both at internal and external levels.

As members of the Barcelona Institute of Science and Technology (BIST) we have set up an interdisciplinary framework for research collaborations in the areas of biomedicine, photonics, genetics, nanotechnology and high energies.

Catalysis

We aim to develop processes and products for industrial use that make use of resources more efficiently and minimise waste. Our approach to catalysis combines the expertise of theoretical and experimental research groups to design more efficient and sustainable processes.

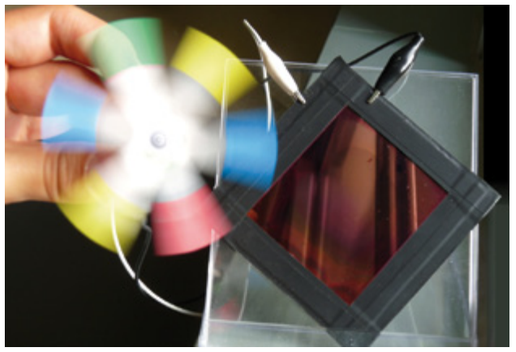
- Supported catalysts and flow processes
- Asymmetric organocatalysis
- Computational approaches to catalysis



Renewable Energies

Chemistry plays a critical role in the search for new energy solutions by providing sustainable alternatives to fossil fuels. We help to decrease fossil fuel dependence through research into new technologies for transforming solar energy into electricity or fuels.

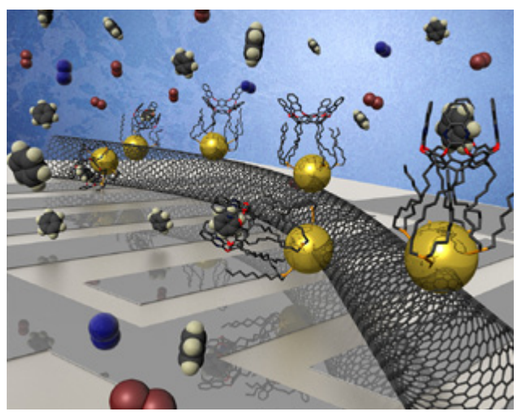
- Water splitting
- Molecular photovoltaics



Materials for Bio-applications

We work on the preparation of new materials that can be applied in medicine for diagnosis and theragnosis.

- Diagnosis of cystic fibrosis
- Sensor selective for creatinine



CO_2 Recycling

High amounts of CO_2 are released daily into the atmosphere, contributing significantly to climate change and the greenhouse effect. With the aim of minimizing this impact we focus on the conversion of CO_2 into substances of interest.

- Transportable fuels (MeOH)
- Organic carbonates
- (Bio)polymers

Research Groups

Groups have their own culture and strategy for targeting and addressing their research challenges

ICIQ is structured in different research groups led by internationally renowned scientists. Each group has its own field of research constantly adapting to the ever-changing science environment.

Laboratory engineers, Master and PhD students and postdoctoral researchers join forces together with the group leader to achieve excellent research results.


Prof. Arjan W. Kleij


Prof. Carles Bo


Prof. José Ramón Galán-Mascarós


Prof. Pau Ballester


Prof. Antonio M. Echavarren

Prof. Pau Ballester

Molecular self-assembly for the construction of complex architectures. Design and synthesis of molecular containers for the development of new sensing devices.

Prof. Carles Bo

In-silico studies in the service of catalysis. Application of computational methods to a variety of subjects such as homogeneous catalysis, polyoxometalates and supramolecular chemistry.

Prof. Antonio M. Echavarren

Gold catalysis and development of new catalytic reactions for the synthesis of molecularly complex and biologically active natural products.

Prof. José Ramón Galán-Mascarós

Photomagnetic materials and bioinorganic models for energy applications. Design and development of new catalysts for water splitting.

Prof. Arjan W. Kleij

Design of new catalysts for reactions that use CO_2 as a building block for obtaining chemicals of interest such as organic carbonates or (bio)polymers.

Prof. Antoni Llobet

Inspired by Nature: artificial photosynthesis. New catalysts for water oxidation reactions for the photo-production of hydrogen from water and sunlight.

Prof. Julio Lloret-Fillol

Solar fuels production and new light-driven catalytic transformations of organic substrates to obtain molecules of added value.

Prof. Núria López

Atomistic simulation addressed to developing more rationalized heterogeneous catalysts and to determining the performance and stability of new materials of interest in the field of energy.

Prof. Rubén Martín

Development of new metal-catalyzed methodologies for the activation of CO_2 with the aim of producing relevant molecules such as carboxylic acids that are fundamental in many pharmaceutical products and other compounds of industrial interest.

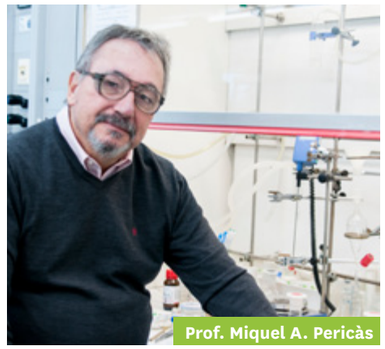
Prof. Feliu Maseras

Improving the efficiency of catalytic processes by computational methods. Main research focus on homogeneous catalysis.

Prof. Paolo Melchiorre

Combination of metal-free enantioselective organocatalysis and visible light photocatalysis, two powerful modern chemical research strategies with extraordinary potential for the sustainable preparation of organic molecules.


Prof. Rubén Martín


Prof. Miquel A. Pericàs


Prof. Antoni Llobet


Prof. Feliu Maseras


Prof. Marcos G. Suero


Dr. Mónica H.Pérez-Temprano


Prof. Emilio Palomares


Prof. Paolo Melchiorre


Dr. Elisabet Romero


Prof. Julio Lloret-Fillol


Prof. Núria López

Prof. Emilio Palomares

Design and development of new materials for energy and bio-applications. Third generation photovoltaic devices for transforming sunlight into electricity and the development of nanomaterials for biomedical applications.

Prof. Miquel A. Pericàs

Polymer-supported and magnetic nanoparticle-immobilized catalysts with high-induced stereoselectivity and extended life cycle. Development of single-pass, catalytic and enantioselective flow versions of the most relevant processes for organic synthesis.

Dr. Mónica H.Pérez-Temprano

Understanding the reactivity and mechanisms of chemical processes to achieve the rational design and development of novel catalytic transformations: Bimetallic catalysis and C-H activation using first-row metals.

Dr. Elisabet Romero

Generation of bio-inspired macromolecular systems able to convert solar energy to fuel. Design and construction of chromophore-protein assemblies based on abundant and biodegradable materials with the capacity to absorb, transfer and convert sunlight into electrochemical energy with high efficiency.

Dr. Marcos G. Suero

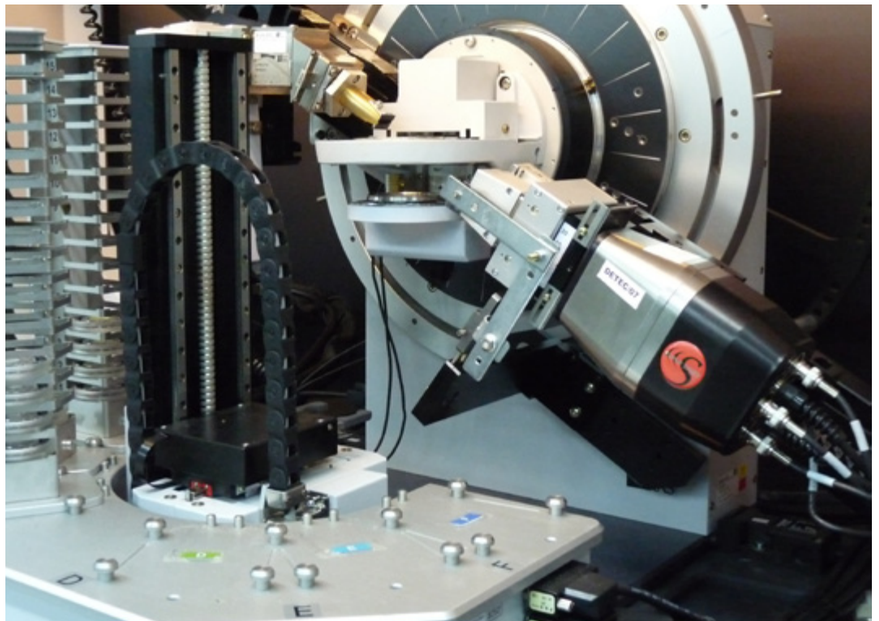
Use of new catalytic methods that combine efficiency and selectivity for the development of inno-vative, cost-effective drug molecules that address significant unmet medical needs. Development of new crop protection products with highly selective biological activity.

The best support for better research

Built up area of 12.800 m²

Available Techniques

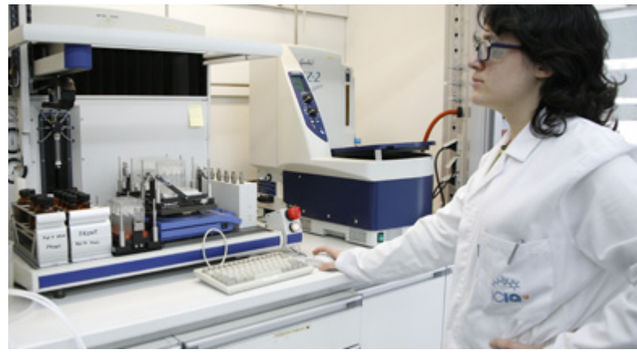
- NMR & EPR
- X-Ray Diffraction (powder & single crystal)
- High resolution mass spectrometry
- Chromatography (GC/LC/SFC)
- Thermal Analysis (TGA/DSC/ITC)
- Electrochemistry
- FT-IR, UV-Vis, polarimetry, fluorescence, Raman, NIR and circular dichroism
- In situ reaction monitoring
- Parallel & flow chemistry
- Microwave reactions & photochemistry
- Automated chemistry
- Heterogeneous catalyst testing and characterisation
- Molecular photovoltaic and electroluminescence device characterisation
- Glove boxes & solvent purification systems

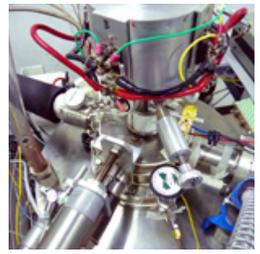


Facilities

ICIQ counts on a wide range of cutting-edge facilities. Our Research Support Area provides the scientific instrumentation and highly specialized technicians to assist the research groups in their daily research tasks. Researchers and students at ICIQ are trained in preparing samples, in the use of the state-of-the-art equipment and its applications, and in processing data.

- **26** Research laboratories
- **8** Research support laboratories
- **2** High pressure labs
- **1** Computational lab
- **1** Computational cluster
- **1** Clean room
- **1** Dark lab
- **1** HTE laboratory
- **1** Opto-electronic workbench
- **1** Mechanical workshop
- **1** Glass blower workshop
- **2** Auditoriums





A World of Opportunities

ICIQ's jobs and grant opportunities are published on the Jobs and Grants section in our website. You can also browse the Research Groups' open positions in their respective group homepages. We launch different Fellowship calls throughout the year to recruit outstanding students willing to join our undergraduate, Master, PhD or Postdoctoral programmes. Applications must be sent through our online submission system.

Keep track of these and all other job opportunities through our website and social media channels (Facebook, Twitter, LinkedIn). We'd love to hear from you!

Be part of ICIQ

We love to make life (and research) easy. You just have to experience ICIQ!

If you join us, you will be part of our challenging research in an international collaborative working environment. We will provide you with the tools and sense of community to make your stay at ICIQ an experience worth living. Rest assured that our researchers, technicians and all of the administrative staff will take care of you.

ICIQ

Institute of Chemical Research of Catalonia

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Tarragona is located 100 km South of Barcelona at the heart of the Costa Daurada, where some of the best beaches in Spain can be found.

Tarragona, designated by UNESCO as a World Heritage Site, also enjoys some of the best preserved Roman ruins in the Iberian Peninsula.

Trustees:

Generalitat de Catalunya Departament d'Empresa i Coneixement

Universitat Rovira i Virgili

BASF We create chemistry

REPSOL

covestro

ESTEVE

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Excelencia Severo Ochoa

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