

## ACTIVIDADES DE FORMACIÓN DOCTORAL TRANSVERSAL 2018

<b>Título de la actividad</b>
Nuevos Retos en Síntesis Química V
<b>Programa(s) de doctorado que proponen la actividad</b>
Química Sintética e Industrial
<b>Persona de contacto</b>
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<b>Breve descripción de la actividad</b>
<p>Esta actividad consistirá en una serie de conferencias /seminarios, que organizan este Programa de Doctorado. Se articulará en una Jornada, que se celebrará en la Facultad de Ciencia y Tecnología, campus de Bizkaia, junto con unas conferencias/seminarios impartidos por el Prof. H. Yamamoto tanto en el campus de Bizkaia como en el de Gipuzkoa. Esta actividad tiene como objetivo completar la formación científica de los doctorandos y las doctorandas a lo largo del periodo de la realización de su tesis doctoral, permitiéndoles conocer de primera mano los últimos avances científicos.</p> <p>Las conferencias /seminarios versarán sobre temas de actualidad en el área de síntesis química impartidos por expertos reconocidos internacionalmente, provenientes de diferentes Universidades, que expondrán y analizarán con los asistentes diversos aspectos novedosos en Química.</p> <p>Este objetivo general se concreta en los siguientes objetivos específicos:</p> <ul style="list-style-type: none"> <li>a) Analizar algunos de últimos avances y tendencias en diferentes aspectos de la Química</li> <li>b) Integrar conceptos que el estudiante ya posee en su formación académica, aplicándolos a entornos nuevos</li> <li>c) Interactuar con expertos ajenos a nuestra Universidad reconocidos internacionalmente.</li> </ul> <p>En la Jornada sobre <i>Nuevos Retos en Síntesis Química</i>, que se celebrará el 21 de noviembre de 2018 en la Facultad de Ciencia y Tecnología en Leioa, participarán los siguientes ponentes:</p> <p><b>1. Prof. Dr Gregorio Asensio, catedrático de Química Orgánica de la Universidad de Valencia</b></p> <p>Doctor en Química por la Universidad de Zaragoza, Gregorio Asensio fue profesor de Química Orgánica en la Universidad de Oviedo hasta que se incorporó, en 1984, a la Universidad de Valencia, donde ha desempeñado numerosos puestos de gestión. Fue decano de la Facultad de Farmacia de 1987 a 1992 y director del Departamento de Química Orgánica de 1993 a 1995. Asimismo, fue coordinador del Programa Interuniversitario de Doctorado con Mención de Calidad 'Química Orgánica en la Industria Químico-Farmacéutica' y presidente de la CEPE del Máster Interuniversitario 'Química Orgánica Experimental e Industrial'. Por otro lado, tras ser adjunto al coordinador de la</p>

ANEP para Química Orgánica, fue coordinador de Química (QMC) de la ANEP de 2006 a 2008.

En 2017 se ha reconocido en el ámbito nacional la calidad de la actividad investigadora realizada por Gregorio Asensio con el Premio Reconocimiento a una Carrera Distinguida 2017" de la Real Sociedad Española de Química (RSEQ). Los resultados de su investigación se han publicado no sólo en las mejores revistas científicas del área de la química, sino también en las más prestigiosas en cualquier ámbito de la ciencia, como lo es 'Science'. Destaca especialmente en su labor como investigador la excelencia que ha alcanzado en las numerosas y diversas líneas de investigación que ha abordado, resultando difícil destacar un tema sobre el resto. Actualmente su atención está centrada en el desarrollo de estrategias para la funcionalización catalítica de enlaces carbono-hidrógeno que no se encuentran activados, tanto en reacciones en disolución como empleando métodos menos convencionales (CO<sub>2</sub> supercrítico, nuevos catalizadores inmovilizados,...).

## **2. Prof. Dr. Kilian Muñiz, Instituto Catalán de Investigaciones Químicas (ICIQ), Tarragona**

Kilian Muñiz was born in 1970 in Hildesheim, Germany.

From 1990 to 1996 he studied Chemistry at the Universities of Hannover (Germany) and Oviedo (Spain) and at the Imperial College London (UK). In 1996 he graduated with a Diploma in Chemistry from Hannover University.

In 1996 he joined the group of Carsten Bolm at the RWTH Aachen (Germany) to obtain his Doctorate in Organic Chemistry in 1998. In 1999/2000 he worked as an Alexander von Humboldt/JSPS-postdoctoral associate with Professor Ryoji Noyori at Nagoya University (Japan).

He started his independent research in 2001 at the Kekulé-Department of Bonn University (Germany) as a Liebig fellow and defended his Habilitation thesis in 2005 and the same year moved to the University of Strasbourg as an Associate Professor. He was promoted to Full Professor in 2006. In November 2009 he joined the Institute of Chemical Research of Catalonia (ICIQ) as Group Leader. He has been an ICREA Research Professor at the Catalan Institution of Research and Advanced Studies since October 2010.

Kilian Muñiz was featured in the "Author Profile" section of *Angewandte Chemie* (ACIE 2011, 50, 4260), on the occasion of his tenth publication in this journal since the year 2000.

The research of Kilian Muñiz has been recognised among other awards by the Borchers Medal of the RWTH Aachen, a German-Israeli Foundation Young Investor Grant (2002/2003), the ADUC-Prize for Habilitands for 2004 and a Chaire d'Excellence from the French ANR in 2006. He was elected to the Institute Universitaire de France as a Junior Member in 2008.

## **3. Prof. Dr. Juan R. Granja Catedrático de Química Orgánica de la Universidad de Santiago de Compostela.**

Prof. Juan R. Granja received the PhD in chemistry from the University of Santiago de Compostela in 1988, under the guidance of Profs. Antonio Mouriño and Luis Castedo, working on the synthesis of main metabolites of vitamin D<sub>2</sub>. After twenty one months of postdoctoral studies in the group of Prof. Barry M. Trost at the Chemistry Department of Stanford University working on the synthesis of macrolides using Pd chemistry, he returned to the University of Santiago de Compostela as Assistant Professor (Ayudante de Universidad, Oct-

1991). In 1995 he was promoted at the University of Santiago de Compostela to associate professor (Professor Titular) and in 2006 to Full Professor (Catedrático de Universidad) after a national habilitation in 2005 in Barcelona.

In 1992 he spent six months in the group of, at that time, Assistant Professor M. Reza Ghadiri at The Scripps Research Institute in La Jolla, starting a long and productive scientific collaboration, including several visits at The Scripps. As a consequence of this scientific collaboration, novel studies on peptide chemistry were developed, such as self-assembling peptides, peptide nanotubes, supramolecular antimicrobial agents or self-replicating processes.

His research interest is devoted to the synthesis of complex structures by efficient methods, especially those based on supramolecular chemistry. One of his research programs is seeking for the synthesis of functional nanotubes by self-assembling process of cyclic peptides. Specially, he is interested on peptide nanotubes based on cyclic peptides that contains cyclic gamma-amino acids. The goal is to create tubular shaped structure with tailor-made properties and use their internal and external characteristics to create new tools for material sciences and biology.

At this respect we are specially interested to create this type of structures with pre-designed properties to interfere with the phospholipid membranes to change their biological properties. Therefore, we are interested in developing transmembrane nanotubes that mimics the natural protein channels in their transport properties and selectivity. In addition, the nanotubes can be used to lay on the membrane and change the stability properties of the biological bilayers. Those nanotubes would have cytotoxic properties and because of that they might have, depending on their cell membrane selectivity, antibacterial or anticancer properties.

Por otra parte, el Prof. H. Yamamoto, impartirá las conferencias los días 12 y 13 de Noviembre.

**Breve CV Prof. H. Yamamoto.**

*Education:* 1971 Ph.D. Organic Chemistry, Harvard University 1967 BS Organic Chemistry, Kyoto University

*Research and professional Experience*

1971-1972 Researcher, Toray Industries, Inc. (Prof. J. Tsuji, Adviser)

1972-1976 Instructor, Kyoto University

1976-1977 Lecturer, Kyoto University

1977-1980 Associate Professor, University of Hawaii

1980-1983 Associate Professor, Nagoya University

1983-2002 Professor, Nagoya University 2003 Professor Emeritus, Nagoya University

2002- Professor, The University of Chicago

2012- Professor Emeritus, University of Chicago

2012- Professor and Director of Molecular Catalyst Research Center, Chubu University

2012- Research Supervisor, JST Crest Project of Molecular Technology

*Publications*

483 original papers, 107 reviews

148 invited lectures

Advisory board of 21 journals

### Awards

The Roger Adams Award, 2017, Fujiwara Prize, 2012, Noyori Prize, 2011, Member of American Academy of Arts and Sciences, 2011, Grand Prize of Synthetic Organic Chemistry of Japan, 2009, ACS Award for Creative Work in Synthetic Organic Chemistry, 2009, Honorary Member of the Chemical Society of Japan, 2008, The Japan Academy Award, 2007, Humboldt Research Award, 2007, The Karl-Ziegler Professorship, 2006, Tetrahedron Prize, 2006, Yamada Prize, 2004 Molecular Chirality Award, 2003, Fellow of American Association for the Advancement of Science, 2003, Tetrahedron Chair, 2002. Medal of Honor with Purple Ribbon (Japan), 2002, Max-Tishler Prize, 1998, Le Grand Prix de la Fondation Maison de la Chimie, 2002, The Chemical Society of Japan Award, 1995. Toray Science and Technology Award, 1997, Prelog Medal, 1993, Merck-Schuchardt Lectureship, 1994, IBM Science Award, 1988, Houkou Award, 1991, Chunichi Award, 1992, The Chemical Society of Japan Award for Young Chemist, 1977

### Research interests:

Due in large part to the development of new reagents, chemists today have the ability to routinely carry out syntheses which would have been impossible to carry out a few decades ago. Proton plays an important role in most enzymatic reactions. A well designed acid catalysis is an excellent candidate, as a proton substitute, for man-made organic reactions. The goal of our research is to engineer an artificial proton of a special shape that can be utilized as an effective tool for chemical reactions by harnessing the high reactivity of the metal atom towards a variety of functional groups. This concept was initially researched by examining the influence of a specially designed organometallic reagent on various organic reactions. The successful discrimination observed lead to examine a more intricate question of enantioface differentiation, which was initially reported from our laboratory and is now widely expanded in the world. During the last decade the uninterrupted expansion of Lewis and Brønsted acid catalysis research has continued in organic synthesis. New catalysis research in our laboratory is targeting more versatile, more selective, and more reactive catalysts, aiming at environmentally benign systems. Nonetheless, the full potential of acid catalysts is still not yet realized.

### Calendario

La Jornada se celebrará el 21 de Noviembre de 2018 en la Facultad de Ciencia y Tecnología, Leioa, y las conferencias los días 12 y 13 de Noviembre