



**Universitat de Lleida**

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## Editorial

# Interfaces Against Pollution 2016: Environmental Challenges and Opportunities

This special issue of *Environmental Chemistry* brings together selected contributions presented at the 9<sup>th</sup> international conference 'Interfaces Against Pollution' that took place in Lleida (Catalonia, Spain) from 4<sup>th</sup> to 7<sup>th</sup> September 2016 and was organized by members of the Department of Chemistry of Lleida University. The guiding theme of the IAP2016 conference was '*Environmental Challenges and Opportunities*'. The IAP conference in Lleida added to the past sequence of biannual IAP conferences that started 20 years ago: the first IAP conference was organized in Wageningen (The Netherlands) by Prof. Luuk Koopal, back in 1997 followed by the IAP conferences held in Miskolc (Hungary 2002), Jülich (Germany 2004), Granada (Spain, 2006), Kyoto (Japan, 2008), Beijing (China, 2010), Nancy (France, 2012) and Leeuwarden (The Netherlands, 2014).

The IAP conference series has a highly interdisciplinary character and brings together researchers active in the broad field of surface and colloid science with a focus on the fate and impacts of pollutants in natural and engineered systems. Over the past two decades, the IAP conference series has contributed to advancing a more fundamental understanding of the (bio-)physicochemical factors that underlie important processes (including partitioning, transformation, and speciation) and that determine the activity of pollutants in diverse environmental compartments and engineered systems. The conference series also has a tradition of highlighting exciting opportunities in fundamental and applied environmental research, which includes the development of theoretical and experimental approaches within the framework of contaminant (bio)remediation, risk assessment of current and emerging technologies (e.g. (nano)materials), and the sustainable development of chemical industries in the near future.

The Plenary Lectures given at the IAP2016 conference nicely illustrate the general scope, objectives, and the interdisciplinary nature of the biennial IAP conference series: '*Interfaces Against Pollution: Learning from nature to meet society's challenges*' by Susan Stipp (Copenhagen, Denmark), '*New Frontier of Bio-Nano interactions*' by Kenneth Dawson (Dublin, Ireland), '*Strong and weak chelators conspire to control the bioavailability of trace metals to microbes*' by François Morel (Princeton, NJ, USA), '*Influence of interfacial phenomena on metal uptake by aquatic organisms*' by Peter Campbell (Quebec, Canada), '*Advanced experimental techniques to probe environmental interfacial processes*' by Laurent Charlet (Grenoble, France), and '*The electrosorption process for energy generation*' by Bert Hamelers (Leeuwarden, Netherlands).

In addition to the plenary lectures, all sessions entailed keynote lectures by international experts in their respective research fields: Yasuhisa Adachi (Tsukuba, Japan), Pedro Alvarez (Houston, TX, USA), Marc Anderson (Madison, WI, USA), Juan Antelo

(Santiago de Compostela, Spain), Marcelo Avena (Bahia Blanca, Argentina), Renata Behra (Zurich, Switzerland), Marc Benedetti (Paris, France), Enric Brillas (Barcelona, Spain), Bill Davison (Lancaster, United Kingdom), Angel Delgado (Granada, Spain), Jean-François Dufrêche (Montpellier, France), Benjamin Erable (Toulouse, France), Martha Gledhill (Kiel, Germany), Marek Grzelczak (San Sebastian, Spain), Nicole Hondow (Leeds, United Kingdom), Keld Jensen (Copenhagen, Denmark), Luuk Koopal (Wageningen, Netherlands), Jamie Lead (Columbia, SC, USA), Jose Paulo Pinheiro (Nancy, France), Takumi Saito (Ibaraki, Japan), Pascal Salaun (Liverpool, United Kingdom), Vera Slaveykova (Geneva, Switzerland), Wenfeng Tan (Wuhan, China), Raewyn Town (Odense, Denmark), Nathalie Tufenkji (Montreal, Canada), David Waite (Sydney, Australia), Liping Weng (Wageningen, Netherlands) and Lenny Winkel (Zurich, Switzerland).

A total of 213 participants from all over the world attended the IAP conference in Lleida. The conference had six plenary lectures, 29 keynote lectures, 54 regular oral presentations and 139 poster presentations. The sessions of the conference revolved around the following topics:

- 1.- *Water treatment and soil remediation technologies*: (Bio)catalysis and interfaces; bioelectrodes; Capacitive deionization (CDI); Electrochemistry at interfaces; Membranes; Flotation and coagulation; Flocculation.
- 2.- *Instrumental techniques for probing interfacial processes*: Neutrons and X-rays in environmental sciences; Imaging techniques; Confocal and other microscopy techniques; AFM
- 3.- *Sensors and Biosensors*: Elemental speciation; Biouptake, bioavailability and toxicity; Analytical environmental methods; Ecotoxicology; Dynamic and equilibrium modelling
- 4.- *Natural and engineered colloids and nanoparticles*: Environmental fate and behavior; Characterization techniques; Transformations; Humic substances
- 5.- *Fundamentals of colloid and interface science*: Modelling and molecular simulation; Adsorption and bioadhesion; Electrokinetics; Reaction kinetics; Catalysis; Transport in porous media
- 6.- *Global environmental processes*: Energy capture, storage and recovery; Biogeochemistry of carbon cycle; Ocean acidification; Multi-scale modelling.

The conference was followed by a tutorial on Capacitive Deionization given by M. Suss (Technion, Israel) and M. Biesheuvel (Wetsus, Netherlands). Please refer to the conference website <http://www.iap2016.org/> for more detailed information on the conference sessions and content.

During the closing ceremony of IAP conference in Lleida, the new chair of the IAP International Advisory Board (IAB) and, at the same time, new IAP president, Jérôme F. L. Duval (CNRS, Nancy, France), together with the IAB co-Chair and IAP co-President, Michael Sander (ETH, Zurich, Switzerland), warmly thanked their predecessor in the conference series, David Waite (University of New South Wales, Sydney, Australia), for his tremendous contributions, ideas, guidance and input, all of which were instrumental to continuous the success of the IAP conference series beyond the first years with Luuk Koopal as IAP president. In the name of all IAP contributors and the current members of the IAB, we would like to thank David for his commitment to and enthusiasm for the IAP conference series in the past six years over which he served as IAB Chair and IAP president. We are looking forward to working with David

in his new role of IAP Honorary President, a status he now shares in the Conference Board with Luuk Koopal.

The local IAP2016 organizing committee, the IAP2016 scientific committee, and the IAB board warmly thank all scientists who attended the conference and contributed to making the IAP Lleida conference a successful and inspiring event: a gathering of and knowledge transfer between researchers with diverse backgrounds, with high-quality scientific contributions and exciting discussions. With this experience on our minds, we are eagerly awaiting the next IAP conference that will be held in 2018 in Montpellier (France) and will extend the tradition of excellence of this conference series.

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