

## Editorial

# Preface to the Special Issue on Selected Papers from the Second International Conference on Semiconductor Photochemistry SP-2

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The Second International Conference on Semiconductor Photochemistry (SP-2) was set up following the highly successful SP-1 meeting held in Glasgow in July 2001. The conference was scheduled over three days from Monday 23rd July to Wednesday 25th of July 2007 (coincidentally the same days over which SP-1 was held in 2001) at The Robert Gordon University in Aberdeen in the north east of Scotland. As with SP-1, the primary objective of the organisers was to host an inclusive and affordable conference designed to reach as wide an audience as possible. As a result, the meeting again was organised on a nonprofit basis, with an intense programme and few additional “added extras.” The delegate fee was established at an affordable rate of £150 for full delegates and £75 for students which covered attendance of the full conference programme, morning and afternoon tea, and lunch. The ability to allow the low registration fee was facilitated by the very generous support of the conference sponsors and we are extremely grateful to these sponsors who included: Degussa-Huels, Millennium Chemicals, Johnson Matthey, Pilkington Technology, Apache, Halliburton, the Robert Gordon University, the Society of Chemical Industry (SCI), and Hindawi Publishing Corporation for their support. This sponsorship was in various forms, including, money (Degussa-Huels, Millennium Chemicals, Johnson Matthey, Pilkington Technology, and the Society of Chemical Industry), the conference venue (The Robert Gordon University), conference bags (Halliburton and Apache), and support for the conference proceedings (Hindawi Publishing Corporation). The Aberdeen Ambassadors provided an

accommodation booking service covering a range of hotel accommodation across the city, and alternative accommodation in the university halls of residence was also available.

The programme started each day at 8.30 am and finished at 18.00. In order to ensure that all participants were able to attend the whole programme, no parallel sessions were scheduled. On Monday and Tuesday evenings, a poster session was held with some liquid refreshment to “facilitate” the networking process. All those who wanted to lecture were given the opportunity to speak, usually for 25 minutes and only three specially invited lecturers were given extended lecture slots of 40 minutes. It was very heartening to find that all the big names in the field agreed unhesitatingly to be present at the conference, even when offered only a 25-minute slot so as to allow many others, possibly less well known, to speak. The conference proved to be exceptionally popular, attracting 200 participants from 34 nations; and the papers contained in this special edition provide just some measure of the diversity of subjects presented and discussed. The conference concluded with a civic reception at the historic Town House in Aberdeen City kindly provided by the Lord Provost and Aberdeen City Council. Plans for SP-3 are already well developed and it is planned to hold this in Glasgow in 12–16th April, 2010 (see <http://sp3.ukspc.org.uk/> for further details).

Semiconductor photochemistry has been a topic of intense research interest over the past 25 years, especially with respect to studies utilising titanium dioxide. The research activity has significantly diversified from the early

work on photomineralisation of contaminants in water. This is demonstrated by the range of subjects covered in this special edition which include materials preparation, water and air purification, antibacterial effects, sensing properties of semiconductor films, and reactor engineering.

The properties of titania sol-gel catalysts depend strongly on the preparation conditions. The factors involved are discussed in the article by Marugan et al. Visible-light activation of titania photocatalysts is a widely sought objective; Irvine et al. describe a new approach to the preparation of such catalysts. Although titania has been the most widely studied photocatalyst, other transition metal oxides also warrant attention: Liang et al. report the photoelectrochemical characterisation of iron-oxide thin films. Yates et al. describe the visible and UV activity of thin silver films prepared by atmospheric pressure chemical vapour deposition (CVD). Mills and Crow have investigated the factors influencing the wettability of titania films, while Sheel et al. describe the photoactivity of thin silver films and of silver-titania composite films, particularly for biocidal activity. The thin-film theme is continued by Skubal et al., who reviewed their work on self detection and decontamination. The use of oxide semiconductors to detect oxygen through UV-activated luminescence is reported by Mills et al. Dye-sensitized solar cells were reviewed in a plenary presentation by Michael Grätzel; in this volume Holliman et al. describe studies of the uptake of dyes by titania. Mills et al. report a new rapid method for assessing the photocatalytic activity of thin titania films. Reaction pathways in the gas-phase degradation of decane and methanol have been investigated by Balcerski et al., using DRIFT spectroscopy, while Pucher et al. have combined adsorption and photocatalysis in a reactor for gas cleaning. Flores et al. have assessed the durability of silver-modified titania catalysts for degradation of dichloroacetic acid. Removal of hydrocarbons from water, with particular emphasis on reactor design, is covered by Adams et al., while photocatalytic degradation of pesticides is described by Boxall and Muneer. Finally, Mohamed et al. report on the partial oxidation of organic compounds via photocatalysis, a rather neglected subject in comparison with complete oxidation or degradation.

In conclusion, semiconductor photochemistry remains a very active field of research from which a range of practical applications with vast commercial potential is emerging. It will be interesting to see how the field has further developed at SP-3 in 2010. This conference will build on the aims of the previous meetings and feature an additional 1 day international *postgraduate* symposium so that the younger researchers in the field have an opportunity to present.

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