

Conference Report

SCS Photochemistry Section Meeting

Fribourg, June 14, 2019

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Abstract: On June 14, 2019, nearly 50 photochemists from all over Switzerland and beyond gathered together at the Haute Ecole d'Ingénierie et d'Architecture in Fribourg (HEIA-FR) for the annual SCS Photochemistry Section meeting to discuss their latest findings in the field. The organizing committee consisting of the board of the SCS Photochemistry Section put together a program consisting of 3 invited talks, 9 oral communications and a poster session with 24 posters to revive this event which, they hope, will take place annually. In addition, the general assembly of the Section was held at the premise during the day.

The morning started with the opening remarks from the Section President and conference chair, **Prof. Olivier Nicolet** during which he emphasized the importance of the financial support from the sponsors, namely the Swiss Chemical Society (SCS), the European Photochemistry Association (EPA), General Microtechnology and Photonics (GMP), Helvetica Chimica Acta (HCA), and HEIA-FR. The first session, chaired by Prof. Eric Vauthey, started with an invited lecture by **Prof. Steve Meech** from the University of East-Anglia, UK. Steve demonstrated how a combination of ultrafast spectroscopic techniques together with potential energy surfaces from computational chemistry provides a much richer picture on the excited-state dynamics of unidirectional molecular motors synthesized in the group of recent Nobel prize laureate Prof. Ben Feringa. Despite the inspiring lecture, it is safe to say that photon-fueled molecular motors are not going to replace the more conventional combustion engines in a foreseeable future. Steve's talk was followed by four presentations by younger researchers. First, **Alexander Aster** from the University of Geneva demonstrated how excitonic interactions in a perylene-based bichromophoric system are dictated by the overall geometry that can be controlled utilizing host-guest interactions. Second, **Rebecca Ingle** from EPFL showed how the broad and heavily convoluted transient absorption spectra of a platinum-based metal complex can be disentangled with the aid of anisotropy measurements and ab initio calculations. Subsequently, **Stephanie Remke** from Eawag discussed the role of short- and long-lived photo-oxidants in photochemical transformations of pollutants present in surface waters. Last, **Svenja Neumann** from the University of Basel showcased the role of light-induced charge recombination in donor-photosensitizer-acceptor triads using a double-pulse excitation scheme.

The second session, chaired by Dr. Silvio Canonica, was started with a lecture by **Prof. Natalie Banerji** from the University of Bern, Switzerland. Natalie explained how novel non-fullerene acceptor:polymer blend materials have led to significant increases in the efficiencies of organic solar cells during the past few years. Despite the complex dynamics observed in the blends, she demonstrated that both the charge and hole transfer in these materials is ultrafast, which is a prerequisite for efficient charge separation and transport. Furthermore, Natalie showed how THz spectroscopy can be utilized to get a detailed insight into the mobility of charge carriers in different structural domains of more conven-

tional fullerene:polymer-based materials. The second session also featured two short presentations. **Dr. Nestor Guijarro** from EPFL discussed his novel in operando experiments on the semiconductor-liquid junctions of photoelectrochemical hydrogen-evolution catalysts. Next, **Dr. Andrea Pannwitz** from Leiden University (The Netherlands) demonstrated how precisely aligned chromophoric systems on phospholipid bilayers can be utilized to mimic natural photosynthetic and light harvesting complexes.

The last session, chaired by Dr. Alexandre Fürstenberg, featured **Prof. Katja Heinze** from the University of Mainz (Germany) as an invited speaker. Katja emphasized her general strategy to try to replace rare metals in photochemically active complexes and sensors by more abundant 3d elements. She showcased her recently developed molecular thermometer for contactless measurement using infrared light based on a water-soluble chromium complex ('molecular ruby'). Impressively, this molecular ruby can be further combined with a pH-sensitive fluorescein derivative, an inert reference dye, and a porphyrin into 100-nm sized silica-coated polystyrene nanoparticles to form a nanosensor for simultaneous measurement of the biologically relevant analytes temperature, oxygen, and pH at a single excitation wavelength. After Katja's lecture, three short presentations concluded the day. **Dr. Teresa Delgado** from the University of Geneva described how the optical characterization of a single crystal of an extraordinarily long-lasting phosphor containing Eu²⁺ and Dy³⁺ led to a better understanding of the effect of the co-dopants in the long-phosphorescence mechanism. **Prof. Christian Reber** from the University of Montréal (Canada) discussed his efforts to rationalize the effect of pressure on the luminescence properties of square-planar d⁸ metal complexes. Finally, **Bahman Golesorkhi** from the University of Geneva explained how, for the first time, linear molecular light up-conversion from the near infrared to the visible could be achieved using a molecular erbium complex.



Richard Smith, Managing Editor of Helvetica, awards Fabian Brunner (left) and Yongpeng Liu (right) for the best poster presentations.

The poster session with 24 posters on display led to lively exchanges. The organizers want to congratulate **Fabian Brunner**, UniBas, (winner) and **Yongpeng Liu**, EPFL, (runner-up) for the poster awards sponsored by HCA and **Patrick Herr**, UniBas, for winning the iPad from the contest sponsored by GMP.

Given the success of this event and the very positive feedback given by the participants, the meeting can be anticipated to take place again on a yearly basis. The next edition for June 19, 2020, at the same location is already being planned.

<https://scg.ch/pcs/2019>

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