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Conference Report

SCS Photochemistry Section Symposium

Online Conference, June 19, 2020

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Abstract: In response to the global pandemic causing world-wide travel restrictions, the SCS Photochemistry Section decided to organize its annual symposium online. The conference could be attended free of charge without geographical restrictions. This opened up many boarders and resulted in a record high number of registered participants from 24 different countries. Most of the participants were from Switzerland followed by Germany and the United Kingdom. On the day of the event, over 90 participants gathered behind their screens to hear about the latest findings in photochemistry research in Switzerland and abroad. The organizing committee, consisting of the board of the Photochemistry Section, had selected a scientific program including 3 invited lectures, 4 short talks and 10 elevator talks that replaced the poster session. In addition, the general assembly of the Section was held online after the symposium.

The morning started with opening remarks from the Photochemistry Section President and conference chair, ***Prof. Olivier Nicolet***. During his remarks, Olivier emphasized the importance of financial support from the sponsors, the Swiss Chemical Society (SCS), the European Photochemistry Association (EPA), Quantum Design Europe, and *Helvetica Chimica Acta*. This was followed by a brief introduction to the activities of EPA by one of their board members, ***Dr. Alexandre Fürstenberg***.

The first session, chaired by ***Dr. Tatu Kumpulainen***, begun with an invited lecture by ***Prof. Peter Vöhringer*** from the University of Bonn, Germany. Peter started with a topical introduction to global warming focusing on the staggering amount of CO_2 emissions from air travel. This highlighted the potential role of online conferences in reducing unnecessary greenhouse gas emissions. After the introduction, Peter gave an overview of different binding modes of a CO_2 ligand on iron complexes and elucidated the full photochemical reaction cycle of ferrioxalate by time-resolved UV/IR spectroscopy. Ironically, excitation of ferrioxalate results in release of CO_2, directly observed in the time domain for the first time, but Peter emphasized that his research may reveal novel ways for CO_2 activation and hence its capture from the atmosphere. Peter's lecture was followed by two short talks. First, ***Dr. Sara Cembellín*** from the Autonomous University of Madrid, Spain, presented her work on the metal-free, visible-light promoted synthesis of isothiazoles. Sara demonstrated the applicability of the approach on a large scope of substrates and discussed the detailed reaction mechanism. The session was concluded by ***Dr. Yinyin Bao*** from ETH Zurich, Switzerland, who demonstrated how the emission color of a single molecular fluorophore can be tuned in polymers. With a combination of experiments and multiscale modeling, he showed that the color tunability originates from through-space charge-transfer processes between the monomeric fluorophore and the polymer side chains or end groups.

The second session, chaired by ***Dr. Silvio Canonica***, was started with an invited lecture by ***Prof. Kristopher McNeill*** from ETH Zurich, Switzerland. First, Kris gave a brief introduction to the role of triplet states in the photochemistry of chromophoric dissolved organic matter (CDOM). He further showed how a combination of laser spectroscopy and molecular probes can be used to obtain detailed mechanistic understanding on aquatic photochemistry. The main challenge arises from the complex and poorly defined mixture of chromophores present in the natural water samples. Therefore, comparative experiments with well-defined molecular probes are of key importance. During the discussion, it was ironically pointed out that most surface waters in Switzerland are poorly suited for his research due to the rather low CDOM content. Despite this, Kris continues his research in Zurich. Kris's lecture was followed by ten elevator talks that replaced the poster session. During these three-minute talks, the audience was introduced to various topics from thermally-activated delayed fluorescence to photosensitizers for various applications. Last talk of the session was given by ***Julien Dumouchel*** representing Quantum Design Europe. Julien gave a brief overview of their company and outlined the latest developments in Andor cameras for time-resolved applications.

The last session, chaired by ***Prof. Oliver Wenger***, started with an invited lecture by ***Prof. Luisa De Cola*** from the University of Strasbourg, France. After a brief introduction to photophysics of Pt-complexes, Luisa explained how to take advantage of molecular interactions to switch on the emission of these complexes. With the careful control of substituents and solvent properties, aggregates with different shapes (dots, rods and stars) and emission properties could be prepared. She then answered the puzzling question of how many Pt-units are required for aggregation-induced emission. Spoiler alert, the answer is three. She also demonstrated how the Pt-aggregates can be coated with capsid proteins to achieve virus-like nanoparticles with enhanced emission properties. Last, she showed her latest results on a 3D-imaging platform based on hydrogels labeled with luminescent iridium-complexes. The last session featured also two short talks. ***Prof. Paul Elliot*** from the University of Huddersfield, UK, presented his detailed studies on unravelling the photophysics of iridium-based luminescent complexes. He demonstrated how the relative energies of the excited states can be tuned by chemical modification of the ligands to achieve dual emission. Last, ***Dr. Bogdan Dereka*** from the University of Chicago, USA, discussed his findings on solvent tuning of photochemistry upon excited-state symmetry breaking in quadrupolar and octupolar compounds. He demonstrated that symmetry breaking in polar solvents is fast and results in strong enhancement of the photochemical reactivity.

Before the closing remarks by Olivier, the managing editor of *Helvetica Chimica Acta*, ***Dr. Richard Smith***, awarded the prizes for the best short talk and two elevator talks sponsored by the same journal. The organizers wish to congratulate ***Dr. Sara Cembellín***, the Autonomous University of Madrid, for the best short talk and ***Dr. João Avó***, the University of Lisbon, and ***Dr. Steffy Becht***, the University of Heidelberg, for the best elevator talks.

Following the success of our events in two consecutive years and very positive feedback received from its members, the SCS Photochemistry Section is committed to continue their efforts

Winners of the Helvetica best Presentation Award: Sara Cembellín, João Avó and Steffy Becht.

in providing a platform for dissemination of latest findings and increasing the visibility of Swiss photochemical research abroad. Next activities are already being planned for 2021 and will be communicated in due course.
https://scg.ch/pcs/2020

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