

Editorial

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Preface for Special Issue of the 28th IUPAC Symposium on Photochemistry, Amsterdam, 2022

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The 28th IUPAC Symposium on Photochemistry was held in Amsterdam, The Netherlands, July 17–22, 2022 as the latest in a long series that originates from a meeting in Strasbourg organized in 1964 by the legendary photochemist George Hammond.¹

The conference was initially planned to take place in July 2020, but after the COVID-19 pandemic spread across the globe in the beginning of that year it was clear that it would have to be cancelled. Luckily, we managed to convert *PhotoIUPAC 2020* into *PhotoIUPAC 2022*, and shift the conference to 2022, with mostly the same plenary and invited lecturers.

The evolution of the corona virus responsible for COVID-19 into a milder form together with increasing levels of vaccination made it possible to have the conference as an on-site event in July 2022. Three contributions were presented remotely, which was easy to arrange after two years of experience with on-line meetings. The number of participants on site was 462, somewhat smaller than expected pre-COVID, because China was still locked and other Asian colleagues faced travel limitations, with COVID-19 restrictions e.g. in Japan still being severe. Moreover, the war in Ukraine further troubled the situation, and hindered travel especially between Europe and Asia. Due to these factors, only 16 % of the participants were from outside Europe.

We were fortunate to have access to the facilities of the University of Amsterdam at the recently renovated Roeterseiland campus, which provided an excellent location for the meeting, with great support from the University's conference office. Use of the UvA site, together with generous contributions from sponsors, allowed us to keep the registration fees relatively low.

The program comprised plenary lectures by Ben Feringa, Miguel Garcia-Garibay, Susan Quinn, Serge Mor-don, Junko Yano, Benedetta Mennucci, Hiroshi Miyasaka, Claudia Turro, and Lizhu Wu (on-line). In parallel sessions, 20 invited lectures were presented, as well as 160 oral communications and 197 posters. For most participants, this was the first time in two years to enjoy a live scientific meeting, so it was not surprising that the mood was very cheerful. Everybody enjoyed being able to meet and discuss face to face without the restrictions of two-dimensional vision and one-dimensional sound.

The IUPAC Symposium in Photochemistry is the traditional occasion to award prizes by the European Photochemistry Association, which also held its general assembly during the conference. This year's winners were Lorenzo Casimiro (Bologna, Italy, EPA PhD Prize) and Oliver Wenger (Basel, Switzerland, best paper award). We were also happy to have the Porter medal award back on the program. On behalf of the photochemical

¹ The history of the conference up to 2016 is extensively described by Silvia Braslavsky in the newsletter of the European Photochemistry Association (https://www.photochemistry.eu/wp-content/uploads/2018/03/2016_01_epanewsletter.pdf).

Article note: A collection of invited papers based on presentations at the 28th IUPAC Symposium on Photochemistry (PhotoIUPAC 2022) held in Amsterdam, 17–22 July 2022.

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societies, Hiroshi Miyasaka presented the medal to Prashant Kamat (Notre Dame, USA), who presented his lecture entitled “Light Energy Harvesting with Halide Perovskite-Molecular Hybrids”.

In the past decades, photochemistry has become a very broad research area, with diverse applications and a big impact on human life. Many scientists use photochemical methods, without identifying themselves as photochemists. Examples are biologists, using dyes as labels and probes in microscopy, and synthetic chemists, exploiting the power of energy and electron transfer in photocatalysis. Designing new and improved probe molecules and fine-tuned sensitizers, and exploring novel reactions, however, is still a core activity of the photochemical community, based on fundamental understanding and using the latest specialist techniques.

Both fundamental topics and more applied ones were on the program, such as light-energy conversion, photo-medicine, photobiology, molecular motors and photoswitches, photo-mechanical materials, imaging and sensing, emerging techniques, and computational photochemistry. The participation of sponsors and exhibitors added an extra dimension to the conference because they showcase the progress in the technology underlying our science.

This special issue of Pure and Applied Chemistry presents contributions from a number of scientists related to the work presented at the conference. It was initiated by former editor Hugh Burrows, who unfortunately passed away in March 2023. Hugh was a photochemist himself and actively participated in the symposia over the years. He organized the 24th IUPAC Symposium on Photochemistry in Coimbra, Portugal in 2012.

The contributions to the special issue cover a range of topics in biological and molecular photochemistry, representative for the content of the conference. One special contribution comes from Silvia Braslavsky, who writes about the history of photochemistry in IUPAC. Let me take this opportunity to encourage all photochemists to work with the IUPAC sub-committee on photochemistry and engage in projects that help the broad community of photochemists as well as users of photochemistry to apply good practices and standardized procedures.

Hiroshi Miyasaka discusses “Reaction dynamics of molecules in highly electronically excited states attained by multiphoton and multiple excitation methods”. While the laser-based techniques in his group go well beyond routine use, they operate within the UV–Vis–NIR wavelength range. Junko Yano writing about “Room temperature X-ray absorption spectroscopy of metalloenzymes with drop-on-demand sample delivery at XFELs”, on the other hand, moves out the usual energy ranges and demonstrates the recent advances in the use of X-ray probe techniques. We can expect more from X-ray based techniques in photochemistry, now that Free Electron Lasers become more available, but also laboratory-based High-Harmonic generation of soft X-rays is within reach of many laboratories. Jacek Waluk (“Coupling between tautomerism and radiationless deactivation in porphyrines”) shows that there are still many discoveries to be made in the spectroscopy of supposedly well-known molecular systems. Representing the numerous applications of organic photochemistry, but taking the viewpoint of the specialized photochemist, Tito Scaiano writes about “The nitro to amine reduction: from millions of tons to single molecule studies”, and Maria Luisa Marin considers “Organic photoredox catalysts: tuning the operating mechanisms in the degradation of pollutants”. Applications of inorganic photochemistry come from Roberto Etchenique and coworkers “Tuning strategies for Ruthenium-bipyridine phototriggers” and from Si Wu and Yang Zhou and coauthors “Photocontrolled Self-Assembly Based on Photoresponsive Ruthenium Complexes”.

On behalf of the organizing committees listed below I would like to thank the photochemical community for allowing us to organize PhotoIUPAC2022, and we all look forward to the 29th IUPAC Symposium on Photochemistry, July 14–19, 2024 in Valencia, Spain.

Local Organizing Committee: Sylvestre Bonnet, Leiden University, Fred Brouwer (chair), University of Amsterdam, Wesley R. Browne, University of Groningen, Sonia Castellanos, Advanced Research Center for Nanolithography, Amsterdam, Roberta Croce, Vrije Universiteit Amsterdam, Wolter Jager, Delft University of Technology, Nathalie Katsonis, University of Twente, Michel Orrit, Leiden University, Hong Zhang, University of Amsterdam.

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