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Newsletter Editor:

Prof. Paola Ceroni

Department of
Chemistry
Giacomo Ciamician
University of Bologna
Bologna, ITALY

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Institute of Physics and Chemistry of Materials of Strasbourg (IPCMS)
Université de Strasbourg
67034 Strasbourg, France
norbert.hoffmann@ipcms.unistra.fr

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Edificio Robert H Grubbs, Campus de El Carmen, 21007 Huelva, Spain
uwe.pischel@diq.uhu.es

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University of Geneva
1211 Genève 4, Switzerland
alexandre.fuerstenberg@unige.ch

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w.nau@jacobs-university.de

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Département de Chimie – PPSM. Ecole normale supérieure Paris-Saclay – Universté Paris-Saclay, 5 Avenue des Sciences,
91190 Gif-sur-Yvette, France
cedric.mongin@ens-paris-saclay.fr

Newsletter Editor

Prof. Paola Ceroni
Departmento of Chemistry "Giacomo Ciamician"
University of Bologna
Via Selmi 2
40126 Bologna, Italy
paola.ceroni@unibo.it

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Nanoscience Center
University of Jyväskylä
FI-40014 Jyväskylä, Finland
tatu.s.kumpulainen@jyu.fi

EDITORIAL

President's Letter

Dear Members of the European Photochemistry Association (EPA),

It was with great sadness that we became informed about the decease of two esteemed colleagues Professor Jakob (Joggi) Wirz and Dr David Worrall. We highly appreciate their scientific contributions to our research domain and we are very grateful for their commitment to our community.

The year 2023 was once again characterized by wars and international conflicts. In addition to the terrible consequences for the affected population, these developments also have an impact on our work and on the scientific exchange at an international level. Let's hope that 2024 will be better. Scientific cooperation and exchange can contribute to this.

For some time now we are experiencing serious technical problems with our website. This has considerably hampered our work and the exchange of information between our members. There have been some complaints and I would like to apologize for the inconvenience. The problems are now almost solved. I would like to thank Cédric Mongin and Alexandre Fürstenberg for their efforts in this matter.

In the current issue of the EPA Newsletter, again PhD theses abstracts are published. I would like to ask the supervisors of PhD theses in photochemistry to encourage their students to submit such abstracts to the Newsletter. It is a good opportunity for them to present their scientific work to our community.

Finally, I would like to wish you every success in your professional work in 2024.

Norbert Hoffmann
CNRS, IPCMS, Université de Strasbourg

AWARDS

EPA Prize for Best PhD Thesis

Call for Nominations

Dear member of the European Photochemistry Association (EPA),

The EPA Prize for the best PhD thesis in Photochemistry will be awarded during the IUPAC Symposium on Photochemistry in Valencia in July 2024 (https://www.photoiupac2024.com).

The prize is 1000 €, plus travel costs to Valencia (within the limit of 500 €) AND three free years of EPA membership.

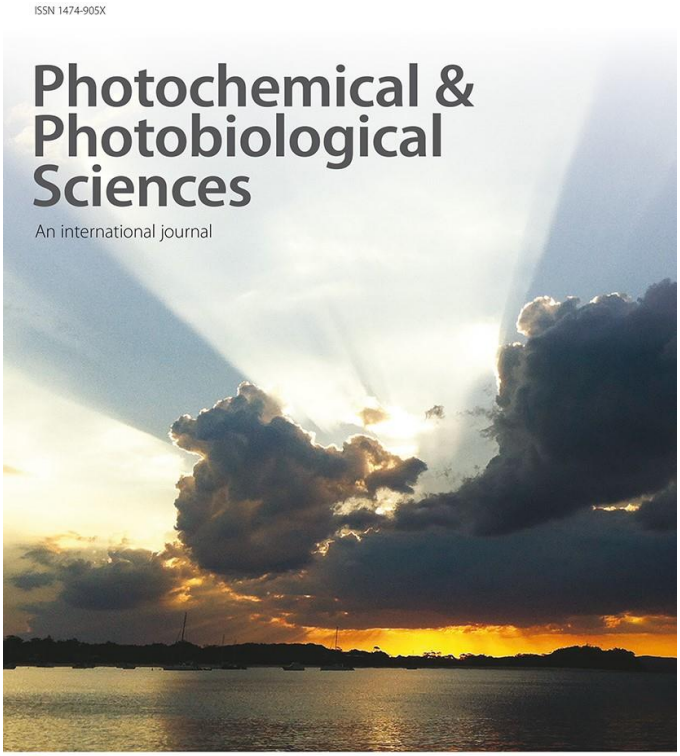
The candidate must have defended their PhD thesis between 2021-2023 and be nominated by an EPA member.

Nominations for this prize are now open and all nominations should be sent directly to wnau@constructor.university.

The nomination package (electronic version only) should include:
• Curriculum vitae of the candidate
• An abstract of the thesis in English of no more than five pages in length
• A publication list, with publications that arose from the thesis underlined
• A letter of support
• Copy of the thesis

The closing date for the receipt of nominations: 15th March 2024

PHOTOCHEMICAL & PHOTOBIOLOGICAL SCIENCES



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PUBLICATIONS

Novel Technologies for Sustainable and Energy-efficient Flow Photochemistry

Michael Oelgemöller,[1,*] Lijing Zhang,[2] Fang Zhao[3] and Yuanhai Su[4]
[1]Faculty of Chemistry and Biology, Fresenius University of Applied Sciences, 65510 Idstein, Germany. Email: michael.oelgemoeller@hs-fresenius.de
[2]School of Chemistry, Dalian University of Technology, 116024 Dalian, China.
[3]State Key Laboratory of Chemical Engineering, School of Chemical Engineering, East China University of Science and Technology, Shanghai 200237, China.
[4]Department of Chemical Engineering, School of Chemistry and Chemical Engineering, Shanghai Jiao Tong University, Shanghai, China.

Recently, synthetic photochemistry has seen a remarkable renaissance in academia and industry.[1] This interest was driven by the development of novel synthesis procedures, photoactive materials, light-sources and reactor technologies.[2] Photochemical investigations on laboratory scales are now routinely conducted under continuous-flow conditions in micro- or mesoreactors (Figure 1).[3] Pre-industrial applications on larger scales have likewise been successfully realized.[4] Novel photoactive materials and catalysts that can be readily embedded into flow reactor channels have also been developed.[5]

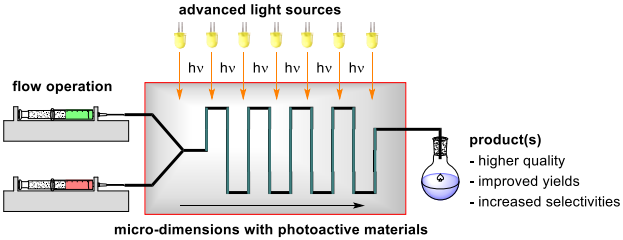

Figure 1. Sustainable and Energy-efficient Flow Photochemistry.

In recognition of these recent advances, the journal *Frontiers in Chemistry* has published a dedicated special issue on *'Novel Technologies for Sustainable and Energy-efficient Flow Photochemistry'*. The issue was led by Prof. Michael Oelgemöller of Fresenius University of Applied Sciences, Associate-Professor Lijing Zhang of Dalian University of Technology, Associate-Professor Fang Zhao of East China University of Science and Technology and Prof. Yuanhai Su of Shanghai Jiao Tong University, respectively (Figure 2).[6]

Figure 2. Guest-Editors of the special issue.

Yan, Wu and co-workers constructed a novel three-dimensional Fe^{3+}-TiO_2@CGS photoelectric system and applied it to the degradation of methylene blue (Figure 3).[7] A Ti/RuO_2-IrO_2-SnO_2-CeO_2 electrode was used as an anode, while the cathode was made of a titanium sheet with Fe^{3+}-doped TiO_2 loaded on coal gasification slag (Fe^{3+}-TiO_2@CGS) as a photocatalyst. Various parameters that affected the degradation efficiency such as the supporting electrolyte, current density, and initial pH were systematically investigated. Using NaCl as a supporting electrolyte and applying optimal operation conditions (pH 11 and a current density of 18.76 mA cm^{-2}), the device reached a degradation yield of 99.98% after 60 minutes of photoelectric treatment, thus proving the potential of this technology for the removal of organic contaminants. The photoelectrical degradation reactor was equipped with inlet and outlet points, thus potentially enabling circulating or continuous flow operation.

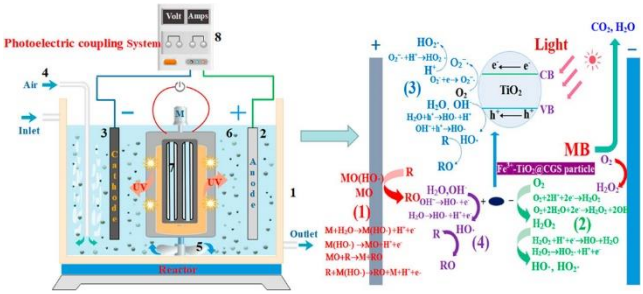

Figure 3. Photoelectric system for methylene blue degradation.[7]

Dinter, Kockmann et al. described the construction of a flexible and affordable microfluidic photochemical flow reactor for rapid prototyping (Figure 4).[8] The reactors' base cases were 3D-printed from UV-resistant PLA material (BASF, Inofil3D, Netherlands). The initial batch prototype reactor **A** comprised of a stirred batch microliter tube (2 mL), while the flow prototype **B** consisted of a 4 m long coiled FEP tube with an inner diameter of 0.8 mm, an outer diameter of 1.6 mm and a reaction volume of 2.07 mL. LED strips with 18 individual 368 nm-LEDs were attached to the inside of the reactor chamber and the chamber was cooled by convection air cooling by fans. The fabricated module was first employed to optimize the photopinacolization of benzophenone in isopropanol. For the batch reference reactor, doubling the irradiation time from 1 minute to 2 minutes increased the conversion from 17% to 44.2%. In contrast, conversions improved from 36.6% to 60.1% for the flow reactor. Further optimization of the conversion rates was performed in the modular flow photoreactor by varying the inner diameter of the capillary. An advance modular flow-photoreactor model was subsequently constructed and was applied to DNA-tagged substrates by switching to LEDs with a wavelength of 454 nm. The successful recovery of DNA demonstrated the suitability of the developed reactor system as a DNA-encoded library technology (DELT).

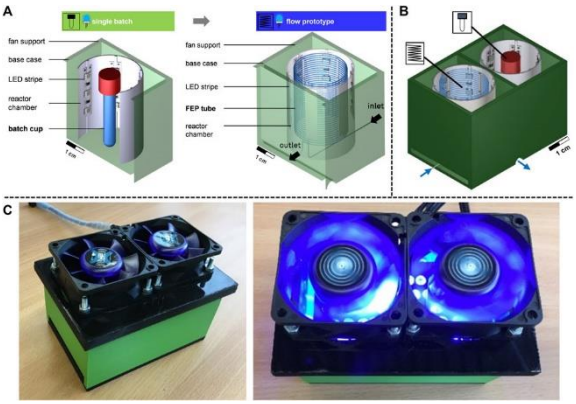

Figure 4. Initial prototype concepts and reactors: (**A**) schematic overview of the batch and flow reactors, (**B**) parallel operation of batch and flow photoreactors and (**C**) 3D-printed and constructed reaction chamber with fans for cooling.[8]

Dubnová and co-workers investigated the role of the lamp type for photocatalytic hydrogen production under batch and flow conditions (Figure 5).[9] The authors initially determined the efficiency of six commercial lamps with various radiation intensity and distribution characteristics in a 100-mL batch reactor using a methanol-water solution and a NiO-TiO_2 photocatalyst.

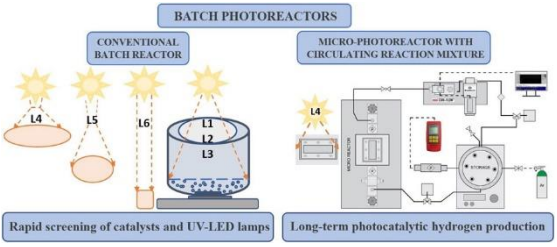

Figure 5. Conventional batch and micro-photoreactors for photocatalytic hydrogen production.[9]

Using a circulating microphotoreactor system (Ehrfeld, Germany) with a total internal volume of approx. 130 mL and equipped with a UV-LED solo

P lamp and a Borofloat glass coated with a thin film of TiO_2 photocatalyst, continuous and stable hydrogen formation of 333.7 ± 21.1 μmol H_2 or 252.8 ± 16.0 mmol.m^{-2} was achieved over a period of 168 hours.

Liu et al. reviewed recent advances in catalyst development for the photocatalytic hydrogenation of nitrobenzene to the important platform chemical aniline (Figure 6).[10] In contrast to harsh thermal methods, photocatalysis allows for the selective and sustainable production of aniline at room temperature and low hydrogen pressures. Photocatalysts were divided based on the characteristics of their light harvesting units into semiconductors, plasmonic metal-based catalysts and dyes. The challenges, opportunities and future development prospects of these photocatalytic materials were subsequently discussed in detail. These included:

- The problematic, selective hydrogenation of the nitro-group in the presence of other functional groups.
- The challenges in simultaneously achieving high photocatalytic activity and selectivity.
- The need for low-cost and high-performance photocatalysts.
- The demand for photocatalysts that can harvest visible (sun)light.
- The necessary understanding of the photocatalytic reaction mechanism through additional catalytic process analysis.
- The possible implementation of biomass or renewable materials as hydrogen sources.

Figure 6. Strategies for photocatalytic selective hydrogenation of nitrobenzene to aniline.[10]

Immobilization of these advanced future photocatalysts inside the reaction channels of flow devices may provide textile, pharmaceutical and dye industries with an effective tool for the continuous production of aniline and its derivatives.[5]
All contributions received demonstrate the importance and potential of flow-photochemistry and photocatalysis as sustainable and energy-efficient technologies.

Acknowledgment – The authors thank all colleagues who have contributed to this special issue and Yelena Macias, Orneste Buitkute and Shannon Lee of *Frontiers* for their support.

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Photochemistry in IUPAC: the Committee (1976–2001) and the Sub-Committee (2001–)

Silvia E. Braslavsky
Max Planck Institute for Chemical Energy Conversion, 45413 Mülheim an der Ruhr, Germany

The history of the IUPAC Photochemistry Committee since its creation in 1976 and its transition in 2001 to the IUPAC Photochemistry Sub-Committee are reviewed in the paper published in *Pure and Applied Chemistry* **95** (2023), https://doi.org/10.1515/pac-2022-1207. The connections of Committee and Sub-Committee to the various photochemical associations (European Photochemical Association, EPA,[1] Inter-American Photochemical Society, I-APS[2] and Asian and Oceanian Photochemistry Association, APA[3]) are described.

The rapid growth of the photochemical community in the '70s, the variety of methods used and the multidisciplinary character of the projects requiring spectroscopic and photochemical tools unveiled the need of reaching agreements regarding specific procedures, techniques, terms and units used in the field, of course in agreement with the already established terms, units and nomenclature as proposed by the IUPAC bodies. Attending these needs, in 1976 Kurt Schaffner (Director of the Max Planck Institute for Radiation Chemistry) succeeded in the proposal to the IUPAC Organic Chemistry Division to create a Photochemistry Commission, located in that Division. In fact, there is a permanent need of updating the techniques, procedures and terms used. Thus, the participation of young colleagues proposing and elaborating new projects is of great importance. The present Sub-Committee on Photochemistry should **not** be considered a collection of "old established scientists", but rather a dynamic group of active photochemists. We strongly encourage the members of the photochemical communities to get involved with suggestions and new ideas.

The participants in both the Commission and the Sub-Committee over the years are listed in the paper as well as all the Recommendations and Technical Reports produced since the creation of the Committee until the present days. The complete list of references in the above-mentioned paper with the titles - excluded in the *PAC* publication - is as follows:

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ABSTRACTS OF THESIS ON PHOTOCHEMISTRY

Organic photosensitizers and nanostructured semiconductors for photoredox catalysis and artificial photosynthesis

Elena Bassan
Department of Chemistry "G. Ciamician", University of Bologna, Via Selmi 2, 40126, Bologna (Italy)

Supervisor: Prof. Paola Ceroni

Over the course of evolution, Nature has elegantly learned to use light to drive endergonic chemical reactions while, on the other hand, humans have only recently started learning how to play with and harness this powerful tool. In particular, a great leap forward was made with the advent of molecules and materials that are able to absorb visible light, and consequently trigger a series of energy or electron transfer processes that can initiate chemical reactions. However, heavy metals or scarce elements have so far been extensively employed in the design of most of these compounds, so that considerations on their scarcity and toxicity has sparked interest in the development of alternatives based on earth-abundant elements.

In this framework, the focus of this thesis has therefore been the development and employment of heavy-metal free chromophores and earth-abundant semiconductors in the fields of photoredox catalysis and artificial photosynthesis.

Part A: Organic photosensitizers

One of the challenges of using organic compounds as photosensitizers is to gain access to their long-lived triplet excited state, which is of fundamental importance in order to efficiently initiate a photochemical reaction in solution.[1] In the first part of this thesis, we therefore focused on boron dipyrromethene (BODIPY) derivatives, which have traditionally been known for their high fluorescence quantum yields but which can also be functionalized in order to enable the population of their triplet excited state.[2]

In particular, the strategy of forming BODIPY dyads, in which an electron donating moiety (e.g. methoxynaphtalene) is orthogonally connected to the boron dipyrromethene unit (as in compound **NPT-BDP**) proved to allow both for efficient intersystem crossing and control over the compound's redox potentials. Based on these results, we investigated the possible role of **NPT-BDP** as a photosensitizer to carry out a C–C bond formation reaction in the presence of a palladium catalyst[3] in collaboration with Prof. Pier Giorgio Cozzi (University of Bologna). Optimization of the reaction conditions using the model substrate 2-(o-tolyl)pyridine afforded the procedure shown in Figure 1A, which overcomes the need to use heavy-metal based photosensitizers for this reaction.

We then continued our investigation into fully-organic photosensitizers by focusing on those that display thermally-activated delayed fluorescence (TADF). In particular, an isophthalonitrile dye (compound **3DPA**) was used to promote the enantioselective allylation of aldehydes under blue light irradiation in the presence of a chiral nickel complex as the catalyst, and Hantzsch's ester as the sacrificial electron donor (Figure 1B).[4] Detailed time-resolved emission measurements demonstrated that **3DPA** is reductively quenched by Hantzsch's ester via static quenching, and further mechanistic investigations allowed to disclose the nature of the chiral nickel catalyst, overall allowing for the understanding of the synergistic interplay between the photosensitized cycle and the dark catalytic one.

Given the photophysical and electrochemical properties of isophthalonitrile TADF compounds, we also investigated their use as photoredox sensitizers for CO_2 reduction in collaboration with Prof. Osamu Ishitani (Tokyo Institute of Technology). In fact, although these compounds have been extensively used in the field of photoredox catalysis, only one example is reported so far of their utilization in the field of artificial photosynthesis. We therefore coupled organic TADF dyes together with an earth-abundant Mn(I) complex as the catalyst and BIH as the sacrificial electron donor to reduce CO_2 to CO and HCOOH under blue light irradiation (Figure 1C).[5] Comparison of the chromophores' photophysical and electrochemical properties allowed for the rationalization of the observed catalytic activities, with **4DPA** showing the highest turnover number thanks to its red-shifted absorption spectra and strong reducing power of its one-electron reduced species.

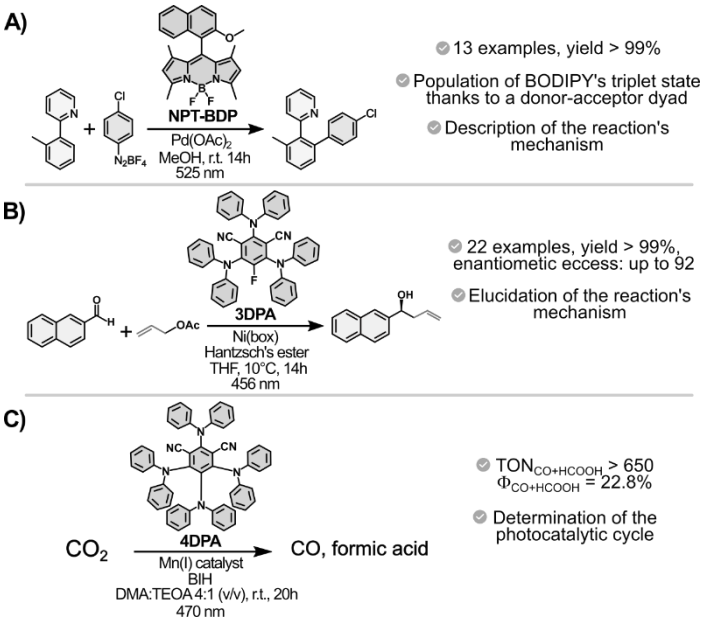

Figure 1. Studied reactions in the fields of photoredox catalysis (A and B) and artificial photosynthesis (C).

Part B: Earth-abundant photoanodes

A second project regarding artificial photosynthesis consisted in the study of hematite (α-Fe_2O_3) photoanodes for the oxidation of biomass-derived compounds. In fact, an important advancement for the large-scale implementation of photoelectrochemical cells (PECs) is the replacement of the sluggish water oxidation reaction. To this aim, in partnership with Prof. Stefano Caramori (University of Ferrara), Ti-doped hematite photoanodes formed by columnar nanostructures were prepared and tested for the oxidation of HMF, an abundant molecule obtained from biomass, to FDCA, an industrially-relevant monomeric precursor of bioplastics, in the presence of a redox mediator (TEMPO).[6] The selectivity of this reaction was finally improved thanks to the deposition of a cobalt phosphate (CoPi) layer on top of the hematite surface, which further enhanced HMF oxidation (Figure 2).

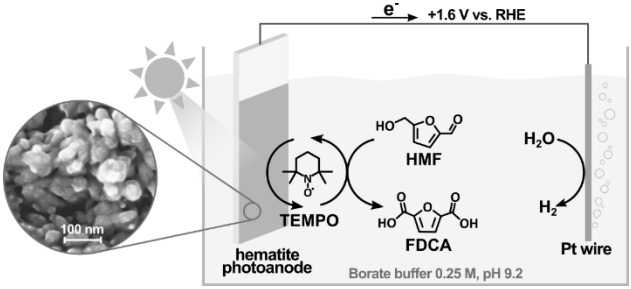

Figure 2. Schematic representation of the studied photoelectrochemical cell and SEM image of the hematite electrode.

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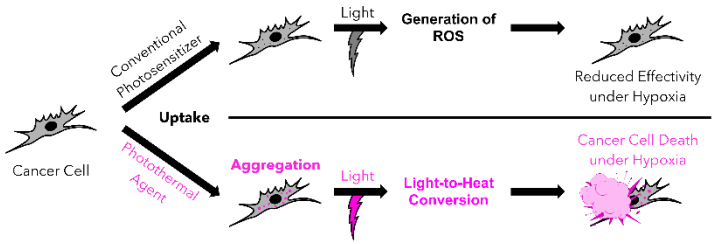
Throwing Light on Cancer – Novel Photoactivatable Agents for Cancer Treatment

Lukas Schneider,
Department of Chemistry, University of Zurich, CH-8057 Zurich, Switzerland;
lukas.schneider@chem.uzh.ch, ORCID: 0000-0003-0052-4560

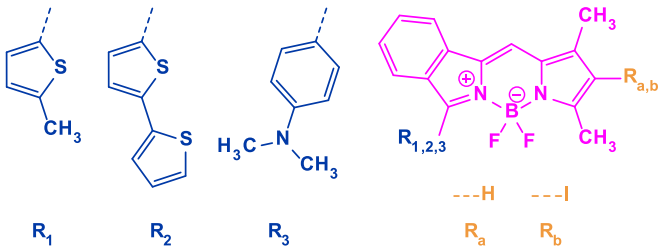
Research Group of Prof. Dr. Bernhard Spingler
Department of Chemistry, University of Zurich, CH-8057 Zurich, Switzerland;
spingler@chem.uzh.ch, ORCID: 0000-0003-3402-2016

Photodynamic therapy (PDT) has become a widely used therapeutic method for the treatment of a variety of premalignant and malignant diseases in the last couple of decades. Conventionally, PDT involves the application of a photosensitizer (PS) that is activated by light in the tissue to be treated. The mechanism of action (MOA) consists of the PS-mediated generation of reactive oxygen species (ROS) from its first excited triplet state.[1] This method has many potential applications due to the advantages it presents as a non-invasive therapy. An important indicator for the potency of a PS is the phototoxic index (PI), which is defined as the ratio of dark to light toxicity. As ideally a PS is non-toxic in the dark and efficiently destroys cancer cells upon irradiation, high PI values are desired.[2]
Different approaches regarding the optimization of phthalocyanine-, porphyrin-, and BODIPY-based agents for light-induced cancer treatment are presented in this PhD thesis.[1-3] As one of the major drawbacks of PDT is a reduced efficiency in solid tumours due to the invariably less well-oxygenated environment compared to normal tissue, alternative phototherapeutic treatment methods such as photothermal therapy (PTT) have emerged. PTT applies functional nanomaterials activated by light in the near-infrared (NIR) range to eliminate tumour cells via the generation of heat upon irradiation. Despite the advantages of PTT, drawbacks concerning biocompatibility, biodegradation, long-term toxicity, and threats of these nanomaterials to the environment remain unresolved. One of the presented approaches therefore involves single molecule-based photothermal agents for cancer treatment.[3]



In contrast to established PSs for PDT these novel easily accessible BODIPY-based agents show photothermal activity and their cytotoxicity does not depend on the presence of O_2 in the tissue. They show high toxicity upon irradiation with light and low dark toxicity in different cancer cell lines in 2D culture as well as in 3D multicellular tumour spheroids (MCTSs). The PI of these BODIPY-based agents reaches values exceeding 830'000 after irradiation with energetically low doses of light at 630 nm. Under hypoxic conditions (0.2% O_2), which are known to limit the efficiency of conventional PSs, a striking PI of 360'000 was observed, indicating a photothermal MOA. Both PI values are the highest reported to date.

BODIPY-Based Photothermal Agents



Unprecedented Phototoxic Indices:
Up to >830'000 Times More Toxic upon Excitation in HeLa Cells

The O_2-dependent MOA of established PSs hampers effective clinical deployment in hypoxic environments. It is anticipated that small molecule-based agents with a photothermal MOA, such as the presented BODIPY-based compounds, may overcome this barrier and provide a new avenue to cancer therapy.

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OBITUARY

Obituary: Professor Jakob Wirz

Petr Klán
Department of Chemistry
Faculty of Science, Masaryk University, Kamenice 5/A8, 625 00 Brno, Czech Republic

The photochemical community mourns the loss of one of its most respected and influential physical organic chemists, Professor Jakob (Joggi) Wirz, who died on 29 December 2022 in Basel, Switzerland.
Born in 1942, Joggi studied at the ETH in Zurich, where he obtained his Ph.D. degree in 1966 under the tutelage of Edgar Heilbronner. The 1967 Nobel Prize in Chemistry awarded to R. G. W. Norrish and G. Porter for the study of extremely fast chemical reactions sparked his deep interest in the properties and behavior of electronically excited states and mechanistic chemistry, which he further deepened through his stay with G. Porter at Royal Institution and Sir D. Barton at Imperial College in London in 1971. After returning to Switzerland, he joined the University of Basel, where he worked until his retirement.
Combining experimental and theoretical approaches, Joggi focused on studying the properties and fate of short-lived intermediates such as biradicals or triplet (ground and excited) states, keto-enol equilibria in solution, or the development of photoremovable protecting groups. He led a research group that built and used highly sophisticated time-resolved spectrometers but was not afraid of complex organic synthesis either. His work was decorated with rich scientific collaboration. As a visionary, mentor, teacher, and colleague, he inspired countless students and researchers with his sparkling creativity and wit and became a source of inspiration for his scientific environment.
Joggi worked as Dean of the Faculty of Science, Basel University from 2004 to 2006, as Deputy Editor-in-Chief of *Photochem. Photobiol. Sci.*, and served on editorial boards of *J. Photochem. Photobiol.*, *Chimia*, and *Helv. Chim. Acta*, or as a titular member of the Photochemistry Commission of the IUPAC. He received a number of awards, for example, the *Werner Prize of*

the Swiss Chemical Society, the *Theodor-Förster Memorial Lecture of the GDCh*, and the *Golden Medal* of Masaryk University, Brno. He published almost 200 publications and coauthored the textbook *Photochemistry of Organic Compounds: From Concepts to Practice*.

Joggi blended the sharpest of scientific minds with a gentle personality and a great sense of humor. He loved fine arts, jazz and classical music, Indian food, Czech beer, fast cars, and playing piccolo at Basler Fasnacht. He treasured his wife, Christine, their children and their families. He always looked forward to seeing them in their Basel, Waldenburg, or Wisfleck houses.

His memory will live on in the hearts of his family, friends, colleagues, and students.

The themed issue dedicated to the Joggi's 65th birthday:

D. Basani, D. Pagni, Introduction to the themed issue in honour of Jakob Wirz*, Photochem. Photobiol. Sci*., **2008**, *7*, 519.

Obituary: Professor David Worrall

Werner Nau
Jacobs University Bremen
Department of Life Science and Chemistry, Campus Ring 1, 28759 Bremen, Germany

It is with great sadness that we write to inform you that one of our former Presidents, Dr David Worrall, passed away on 21th February 2023.

David has served as President, Past President, Executive Committee Member, and Member of the European Photochemistry Association for many years. He was a Senior Lecturer in Chemistry and had worked at Loughborough University for 32 years.

David was born and bred in Walsall, Birmingham. After three years as an undergraduate in Sheffield, Dave moved to Loughborough in 1988 to do a PhD in photochemistry with Frank Wilkinson. This was noteworthy for several reasons, firstly it led on to a productive postdoctoral post and then a lectureship also at Loughborough, but more importantly, this is where he met his future wife, Sian Williams.

Dave published 89 papers during his academic career, was promoted to Senior Lecturer and owned many crucial roles including Head of Department, Admissions Tutor and Programme Director for Chemistry and Sport Science. Outside Chemistry, Dave was the Chair of both the RSC Photochemistry Group and held the aforementioned posts with EPA during his career. He also worked with many national and international academic and industrial collaborators around the world.

INTERNATIONAL FOUNDATION OF PHOTOCHEMISTRY

Objective:

The International Foundation for Photochemistry is a non-profit foundation (under the German law) providing financial support for the holding of scientific conferences in the field of photochemistry

Operation mode:

Upon a written request by the conference Chair, IFP can advance a certain amount of money in order to facilitate the organization of the conference. At the end of the conference, the Chair pays back to IFP the conference budget surplus, which will be used for the organization of future events. Inquiries should be made to the IFP Executive Board Chair in the first instance.

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CONFERENCE REPORT

French, Swiss and German Conference on Photochemistry, Photophysics and Photosciences (CP2P'23) from 15th to 17th May 2023 in Mulhouse, France

Olivier Soppera[1], Karine Loubière[2]
[1] Institut de Science des Matériaux de Mulhouse (IS2M), Université de Haute-Alsace, Mulhouse, France. olivier.soppera@uha.fr
[2] Laboratoire de Génie Chimique (LGC), Université de Toulouse, CNRS, INPT, UPS, Toulouse, France. Karine.Loubiere@cnrs.fr

The Subdivision of Photochemistry, Photophysics and Photoscience (SP2P) forms part of the Physical Chemistry Division, which itself is a unit within the French Chemical Society (Société Chimique de France, SCF) and the French Physical Society (Société Française de Physique, SFP).[1] Each year, this SP2P board organizes an Annual Meeting; the last one took place on June 7th to 8th 2022 at the École Normale Supérieure (ENS) Paris-Saclay in Gif-sur-Yvette.[2]

Figure 1. Banner of the *CP2P'23* conference

This year, the SP2P group has opened its Annual Meeting to the Swiss and German colleagues who also co-organized the conference, with the support of both the Swiss Chemical Society and the European Photochemistry Association. By this way, the French, Swiss and German Conference on Photochemistry, Photophysics and Photosciences (CP2P'23) could be held on May 15th to 17th 2023 on the campus of the University of Haute-Alsace in Mulhouse (Fig. 1).

The topics covered in this conference were the following :[3]

- Computational Photochemistry,
- Molecular & Organic Photochemistry,
- Fundamental Photosciences,
- Light-Energy Conversion & Photocatalysis,
- Photochemistry at the Nanoscale,
- New Spectroscopic Tools & Techniques,
- Photopolymerization, New Functional Materials & Photochemical Applications.

By bringing together photochemists and photophysicists, this three-day meeting offered an interdisciplinary platform for students and young

Figure 2. Snapshots of the *CP2P'23* conference: (a) SP2P board. (b) Local organizing committee. (c) Best Poster Prizes (Auriane Perrin & Sankar Jana) and Best Oral Presentation (Marine Labro). Keynote speakers: (d) Coffee break, Lunch and Poster Session.

researchers to present their research achievements in a relaxed, constructive and stimulating atmosphere (Fig. 2).

This conference also presented an opportunity to listen to 3 experienced researchers as keynote (J. Millic, S. Hecht, M. Chavarot-Kerlidou) and 6 Invited Speakers (C. Kerzig, C. Grazon, M. Oppermann, C. Bizzari, L. Favereau et D. Wöll), from France, Switzerland or Germany. The conference ran in 9 sessions with a total of 43 scientific oral presentations (Table 1). The meeting included 2 separate poster sessions with 60 poster presentations and allowed for lively discussions among participants.

Day 1: Monday, May 15th 2023
Keynote 1 – Prof. Jovana Millic – University of Fribourg (CH) *"Enhanced functionality of hydrid materials in photovoltaics"*
Invited 1 – Prof. Christoph Kerzig – Johannes Gutenberg Univ. Mainz (DE) *"One UV photon or two bleu photons, that is the question"*
Ricardo J. Fernandez-Teran (CH) *« Ultrafast 2D-IR Spectroelectrochemistry of Transition Metal Complexes: One Electron Makes a Big Difference"*
Gregor Jung (DE) *"Intermediates of the Excited-state proton transfer"*
Christophe Humbert (FR) *"Quantum efficiency of excitonic enhancement in nanosensors by rainbow nonlinear optical spectroscopy"*
Gilles Lemercier (FR) *"Excited-states of 1,10 phenanthroline derivatives and related Ru(II) (nano)-edifices for potential applications"*
Invited 2 – **Dr Chloé Grazon** – University og Bordeaux (FR) *"From quantum dots to fluorescent organic nanoparticles: bright nanotools for biosening"*
Alexandre Furstenberg (CH) *"Probing hydration and molecular order locally and quantitatively with fluorophores"*
Marion Cranney (FR) *"Reversible photoisomerization within a 2D self-assembled layer of diarylethene molecules on HOPG"*
Riccardo Ossanna (FR) *"Control of the optical absorption properties of nanovectors for photoacoustic imaging"*
Julien Malletroit (FR) *"Steady-state and photokinetic spectroscopy to reveal negative photochromic secrets of DASA compounds"*
Estefania Sucre-Rosales (CH) *"Kinetic analysis of the Symmetry Breaking Charge Separation process in a PDI-based cage"*

Prescillia Nicolas (FR) *"New tetra-substituted chiral bipyrimidine actives for non-linear optics"*
Poster Session #1

Day 2: Tuesday, May 16th 2023
Keynote 2 – Prof. Stefan Hecht – Humboldt University Berlin (DE) *"Illuminating Materials, Devices, and Manufacturing with Photoswitches"*
Bernd Strehmel (DE) *"Photocatalysts Derived from Biomass as Used for Free-radical Photopolymerization, photo-ATRP and Cleaning of Waste Water Complement a New Concept of Sustainable Photochemistry"*
Ainhoa Oliden-Sanchez (ES) *"Energy transfer processes within Mg-doped ITQ-51 structure channels"*
Qunying Wang (DE) *"Photophysical Properties and Photochemical Performance of Cyanines Enable Activated Photoinduced Electron Transfer to Initiate Photopolymerization between 700-1100 nm"*
Elena Ishow (FR) *"Photoswitchable organic nanoparticles toward bioimaging"*
Invited 3 – Prof. Malte Oppermann – University of Basel (CH) *"Molecules in motion: Capturing and controlling molecular dynamics through chirality"*
Karine Loubière (FR) *"Combining LED-driven photochemistry and Rose Bengal-anchored polymer colloids as an efficient strategy for carrying out photooxygenation process"*
Marine Labro (FR) *"Photo-generated diazonia for an anticancer therapy using light"*
Nawel Goual (FR) *"Design and characterization of red-shifted photochromtic molecules"*
Liudmil Antonov (BU) *"Proton cranes: what they mean, how they operate"*
Peter Sebej (CZ) *"Structure-properties relationships in cyclic and linear fluorophores: two examples"*
Poster Session#2
Invited 5 – Dr. Claudia Bizzari – Karlsruhe Institute of technology (DE) *"Molecular photo-driven CO2 reduction by earth-abundant systems"*
Monica Martinez-Aguirre (ES) *"Heterogeneous photoredox reactions and recyclability of an iridium(III) photocatalyst"*
Krystyna Herasymenko (FR) *"Ultrafast excited state dynamics of the archae-rhodopsin 3 and its mutants"*
Mate Kurucz (FR) *"Ultrafast spectroscopy of semi-transparent dye-sensitized solar cells"*

Michael Karnahl (DE) *"Heteroleptic Copper(I) Complexes: Design Strategies, Excited State Properties and Photocatalytic Applications"*
Amira Gharbi (FR) *"Ultra-fast Energy transfer dynamics in dye-doped organic nanoparticles"*
Iago Modenez (FR) *"Photoinduced intramolecular electron and energy transfer in a photosensitizer-modified laccase"*

Invited 6 – Dr. Ludovic Favereau – Université de Rennes (FR) *"Chirality in molecular materials and related photophysical properties"*
Jean Rouillon (SE) *"Breaking the Resolution Limit in Two-Photon Microscopy Using Molecular Photoswitches"*
Philipp Sikora (DE) *"Excited state energy landscape of phosphorescent group-14 complexes"*
Saul Garcia-Orrit (ES) *"Panchromatic antenna induced by nanographene decoration in Ni-porphyrin"*
Moreno Teresa (ES) *"Multi-stimuli responsive chromic cyclometalated Pi(II) complexes"*
Raul Losantos (ES) *"Unravelling the photoprotection mechanism of synthetic MAA analogues"*
Corentin Bellanger (FR) *"How Do Phosphiranium Ylides React with Carboxylic Acids? Synthetic Scope and Mechanism."*

Day 3: Wednesday, May 17th 2023
Keynote 3 – Dr. Murielle Chavarot-Kerlidou – CEA Grenoble (FR) *"Fundamental challenges in the design of performant dye-sensitized photocathodes for solar fuels production"*
Albert Ruggi (CH) *"Good Kobolds: heptacoordinate Co(II) catalysts for hydrogen evolution"*
Kalina Peneva (DE) *"Design of noble metal-free perylene photosensitizers and their integration in soft matter matrices for light driven hydrogen evolution"*
Daniel Cruz (FR) *"Time-Resolved Spectroscopic Depiction of Photoinduced Electron Transfers in a Perfluorinated Zn-Porphyrin Sensitizer"*
Federico Droghetti (IT) *"CO2 Reduction in Organic/Water Mixtures with Heptacoordinated Polypyridine Complexes"*
Invited 4 – Prof. Dominik Wöll – RWTH Aachen University (DE) *"Super-resolution fluorescence imaging of microgels, New insights into their structure and properties"*
Norbert Hoffmann (FR) *"Photocycloadditions with lignin derived aromatic compounds"*

Attila Demeter (HU) *"Some interesting features of photoreduction kinetics of benzophenone"*
Nicolas Fournier Le Ray (FR) *"From molecular engineering to 3D functional materials for metal cations detection"*
Marie Le Dot (FR) *"Low-energy consuming initiating system based on a synergetic approach for the polymerization of elium-thermoplastic resins"*
Gurkan Kesan (CZ) *"Influence external voltage on excited state dynamics of 8'-apo- Œ-carotenal"*
Julien Eng (UK) *"Joint Experimental and Theoretical Investigation of Excited State Vibrational Coherences in Mn Single Molecule Magnets"*
Yixuan Li (BE) *"Exploring anti-Kasha Fluorescence in Azulene Derivatives for Proton Sensing applications"*
Asma Hasil (FR) *"Pas de Deux of a nitrosyl Couple: Synchronous Photoswitching from a Double-Linear to a Double-Bent in a metal dinitrosyl photoinduced linkage isomer"*
Polyssena Renzi (IT) *"Bench stable diarylmethylium salts as catalyst in the light-mediated hydrosulfonylation of alkenes"*
Concluding remarks - Awards ceremony

Table 1. Program and speakers of the CP2P'23 conference

The winners of the best oral presentation and poster awards were announced and honored during the conclusion session of the event (Fig 2c). Marine Labro received the best oral presentation award for her talk entitled "*Photo-generated diazonia for an anticancer therapy using light*"". The best poster presentation awards went to Auriane Perrin and Santar Jana for their poster intituled "*Photo-control of G-quadruplex DNA folding*" and "*Estimation of water content in microgels using super-resolution fluorescence lifetime imaging"* respectively.

The CP2P'23 conference was well attended with a total of **160 registered participants** (Fig. 3). While the majority of the attendees naturally came from France, Germany and Switzerland, other participants came from Spain, Bulgaria, Italy, Sweden, Belgium, Hungria, United Kingdom and Czech Republic.

Figure 3. Group picture of the CP2P'23 conference

Overall, the CP2P'23 conference was a huge success with exciting presentations, active discussions and engaging interactions between participants and speakers.

The next annual meeting *SP2P'2024* will be held in May 21-23th 2024 in Grenoble.

Meanwhile, the SP2P Board will be associated to the organization of the VIII Jornadas Ibéricas de Fotoquímica (8'JIF)/I Franco-Iberian Conference on Photochemistry (1'FICP), which will hold in Lisbon (Portugal), from 11 to 13th September 2024, organized by The Photochemistry Divisions of the Portuguese and Spanish Chemical Societies (SPQ and GRUFO-RSEQ).

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Acknowledgements. The authors thank all members of the SP2P Board members and especially the local organizing committee in Mulhouse for their generous help and support. The sponsors of this event are also sincerely acknowledged (Idil, DCP, CNRS IS2M, SCS, EPA, ITI HiFunMat, Université de Haute-Alsace).

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Summer School Report on the Jyväskylä Summer School course on Ultrafast Spectroscopy, August 7–11, 2023

Kaila M. Yallum*[a] and Tatu Kumpulainen*[b]
[a]Department for Chemistry and Biochemistry, University of Bern, E-mail: kaila.yallum@unibe.ch; [b]Department of Chemistry/Nanoscience Center, University of Jyväskylä, E-mail: tatu.s.kumpulainen@jyu.fi

The 32nd edition of the Jyväskylä Summer School (JSS32) was in high demand for the ultrafast spectroscopy chapter. On August 7–11 2023 nearly 40 students gathered to Jyväskylä to tune in for the JSS32 course entitled *Ultrafast Spectroscopy: phenomena, experiments and data analysis methods*. The course was coordinated by Senior Lecturer Tatu Kumpulainen and featured lectures each morning from two invited speakers, Prof. Eric Vauthey, University of Geneva, Switzerland, and Assoc. Prof. Jens Uhlig, Lund University, Sweden. In addition to the lectures, the course featured four workshops in the afternoons aimed at introducing the participants to the practical aspects of steady-state and time-resolved spectroscopies. Besides the scientific content, JSS32 offered several social events where participants could network with other participants of the whole summer school.

The sunny Monday morning was started with the opening remarks from the course coordinator Tatu Kumpulainen. In his remarks, Tatu first highlighted the international nature of the course. The course had attracted 38 students from 15 different countries representing a total of 19 different nationalities. The furthest participants had travelled all the way to Jyväskylä from USA and India. Tatu also acknowledged the support from several local and international organizations, including Laserlab-Europe, European Photochemistry Association, Photochemistry Section of the Swiss Chemical Society and Alfred Kordelin foundation that enabled participation to the course free of charge.

After the introduction, coffee, and meeting other participants, the lectures began with Prof. Eric Vauthey's (**Figure 1**) revision of light-matter interactions, laying the foundation for electronic transitions and the

spectroscopic methods used to probe the photophysical behavior of molecules and materials. The overview of spectroscopic methods varied from absorption to emission, steady-state to ultrafast, and UV to infrared, providing the key observables each method offered to researchers. Having these tools in mind, Eric explained relaxation, energy transfer, and charge transfer processes that originate in excited molecules. Each process was presented along with case studies and examples of data from each of the methods introduced in the lecture.

Figure 1. Prof. Eric Vauthey, University of Geneva, Switzerland.

The afternoons were filled with hands-on experiences in 4 different workshops that the groups rotated through. The steady-state spectroscopy workshop took on the format of an escape room, where participants were tasked with calculating the radiative decay rate of an unknown compound with only steady-state absorption and fluorescence techniques at their disposal. Participants bonded in problem solving: finding the code to unlock the cuvettes necessary for the experiment; using a UV lamp to discover the molecular weight of the compound; and exploring the lab to find hidden clues as to the necessary equations and variables.

The FLuorescence UPconversion Spectroscopy (FLUPS), Transient Absorption (TA) and Time Correlated Single Photon Counting (TCSPC) workshops all allowed participants to see a demonstration measurement on home-built setups at the Laserlab-NSC of the University of Jyväskylä. These sessions were preceded by presentations of the operating principals and experimental design for each setup, and they were followed by data analysis workshops.

In the evenings, students could benefit from social and networking events. The welcome event featured the chance to share their work in poster format with a catered dinner. Aline Vanderhaegen from the ultrafast cohort was awarded the best poster presentation for her work on terahertz (THz) spectroscopy. The rest of the social schedule featured a game night, photography, and sauna experiences all organized by the University of Jyväskylä.

The second half of the week focused on lectures from Prof. Jens Uhlig (**Figure 2**). Jens spent the first morning to discuss the principals of data analysis of spectroscopic data. He presented his open-source program, KiMoPack, to the participants, explaining the motivation of making singular value decomposition (SVD) a more physical model by using kinetic models as constraints for the SVD. This lecture section was paired with its own afternoon workshop in which Jens helped participants to use KiMoPack on provided example data, or even on their own data sets, demonstrating the broad scope of KiMoPack.

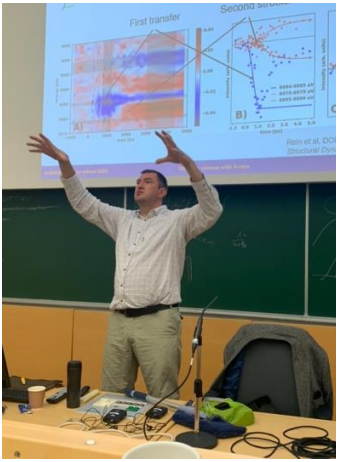


Figure 2. Prof. Jens Uhlig, Lund University, Sweden.

During the rest of his lecturs, Jens shared his expertise in x-ray spectroscopy. The lectures focused on everything from the practical realities of synchrotron-based x-ray techniques to the possibilities of table-top, home-built x-ray setups. Jens shared case studies as well, with demonstrative data to explain the rich information about bond distances and energy levels available through x-ray spectroscopy.

By the second half of the week, through the lectures and workshops, the ultrafast cohort grew quite close, and the evenings were filled by self-organized social events and dinners. Some participants went on walks and swims in the plethora of lakes around the beautiful city of Jyväskylä university campus. Some participants took advantage of a nearby water park, and others opted for biking. The end of most evenings ended all together, sharing a moment on the pier of the hotel or in the city. The social aspect served to motivate and inspire all of the participants.

Figure 3. Group photo of the participants at the end of the course.

The ultrafast spectroscopy summer school at University of Jyväskylä offered a highly engaging week of ultrafast theory and experience to all 38 participants lucky enough to take advantage of this amazing opportunity to network and learn from experts.

Conference Report on the VII Jornadas Ibéricas de Fotoquímica, September 5th – 8th, 2022, Alcalá de Henares

Mario de la Hoz#, Francisco Sánchez#, Alicia Maldonado-Medina#
Departamento de Química Física, Facultad de Ciencias Ambientales y Bioquímica, INAMOL, Universidad de Castilla-La Mancha, Avenida Carlos III, S/N, 45071, Toledo, Spain
#Equal contribution

The **VII Jornadas Ibéricas de Fotoquímica 2022 (VII JIF)**[1], held in the wonderful and historical city of Alcalá de Henares near Madrid (Spain) from September 5th to 8th of 2022. This congress was organized by Grupo Especializado en Fotoquímica de la Real Sociedad Española de Química (GRUFO) in collaboration with the Photochemistry Group of the Portuguese Chemical Society and brings together around 90 photochemists from different countries to share their results and experiences. For attendance at the congress, GRUFO provided scholarships for PhD students to attend the conference free of charge. Furthermore, a reduced fee for RSEQ members has been offered. The organizing committee, led by **Luis Manuel Frutos Gaite** (Universidad de Alcalá, Spain) has made a scientific program including 3 plenary lectures, 11 invited lectures, 28 oral communications and 45 poster communications, making these days a great an inspirational opportunity to discuss about cutting-edge photo-science, including, among others, photochemical reactivity, photocatalysis, theoretical photochemistry and photophysics, photochemistry of coordination compounds, photobiology, medicinal photochemistry, fluorescence methods or renewable energy production and storage.
From Monday to Wednesday, the plenary lectures delivered by **Prof. Stefan Hecht** (Humboldt-University of Berlin, Germany), "Enlightening material, devices, and manufacturing", **Prof. Johan Hofkens** (KU Leuven, Belgium), "The power of one: from single molecule investigations to materials research and beyond", and **Prof. Hiroshi Miyasaka** (Osaka University, Japan) "Photochemical processes in higher excited states produced by multiphoton absorption and multiple excitation in the condensed phase". These plenary lectures were followed by invited lectures and oral communications. In the afternoon, it was the time for the poster sessions, where all the attendants

had the opportunity to discuss their results with expert in the fields.The best two poster contributions of each sessions were awarded. On the last day of the conference, all the participants went for a guided tour to the Historic City of Alcalá de Henares.

The Ph.D. and MSc students had the opportunity to attend the Training School on Photochemistry held on September 7th and 8th, where experts from different fields presented the core concepts of photochemistry, with a strong emphasis on techniques and applications, including basic concepts, computational photochemistry, light sources, filters and experimental setups, photophysics tools and instrumentation, and applications of light-activated processes in chemistry, biology and materials science. The opening session, focused on experimental photochemistry, was presented by **Prof. Raúl Pérez Ruíz** (Polytechnic University of Valencia, UPV). In this lecture, basics concepts of absorption, fluorescence and phosphorescence together with some applications such as solar cells and LEDs were introduced and discussed. In the second session, **Prof. Pedro Braña Coto** (Materials Physics Center) gave an introductory class on Computational Photochemistry where the students were able to review different electronic structure methods and multi-reference-based methods, among others. After the break, **Prof. Boiko Cohen** (University of Castilla-La Mancha) presented the third session, focused on introduction to time-resolved spectroscopy. Basic concepts of time-resolved spectroscopy as well as time-correlated single-photon counting (TCSPC), fluorescence up-conversion and transient absorption techniques were explained in detail. The final session of the day was imparted by **Prof. Pedro M. R. Paulo** (University of Lisbon) and focused on single-molecule fluorescence microscopy.

The last day of the Training School, two workshops were held to provide a hands-on experience on the topics presented above. In small workgroups, selected papers were used to demonstrate the attendances how to extract and recognize relevant information on experimental techniques, setups and experimental and computational data. Finally, each group presented the main ideas of the paper, as well as new approaches and conclusions.

At the end of the sessions, the attendees agreed that the sessions were very inspirational for those who want to go deeper into the topics covered. For future editions, we confirm that this training school is a great opportunity for all MSc or Ph.D. students who are interested in photochemistry. In these sessions they will be able to explore different areas from the hand of great

experts, solving different doubts and meeting more colleagues with common

Figure 1. Group photo of the attendees at VII Jornadas Iberícas de Fotoquímica.

interests.

References.

1. https://congresosalcala.fgua.es/jif2022/

CONFERENCE ANNOUNCEMENT

Central European Conference on Photochemistry CECP 2024

CECP 2024 "Central European Conference on Photochemistry"

organized by **EPA** Austria

Sunday, February 18 to Thursday, February 22, 2024, Bad Hofgastein

Lectures **short talks** **poster sessions** **industrial exhibition**

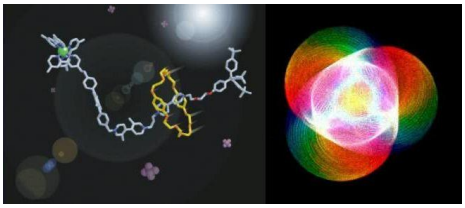
Bad Hofgastein in winter

Congress center

Let us meet for the 10th time in Bad Hofgastein!

Website: www.cecp.at **Email:** info@cecp.at

EPA IS ON FACEBOOK AND TWITTER



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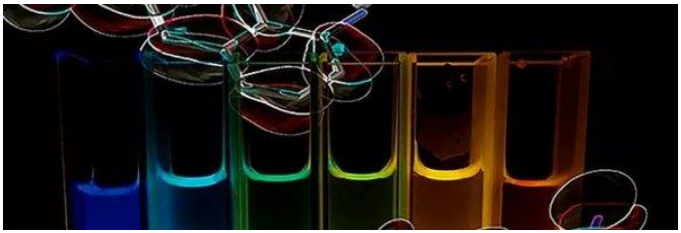

MEMBERSHIP APPLICATION

If you are interested in joining the European Photochemistry Association or would like to renew your membership, please visit our website: www.photochemistry.eu.