

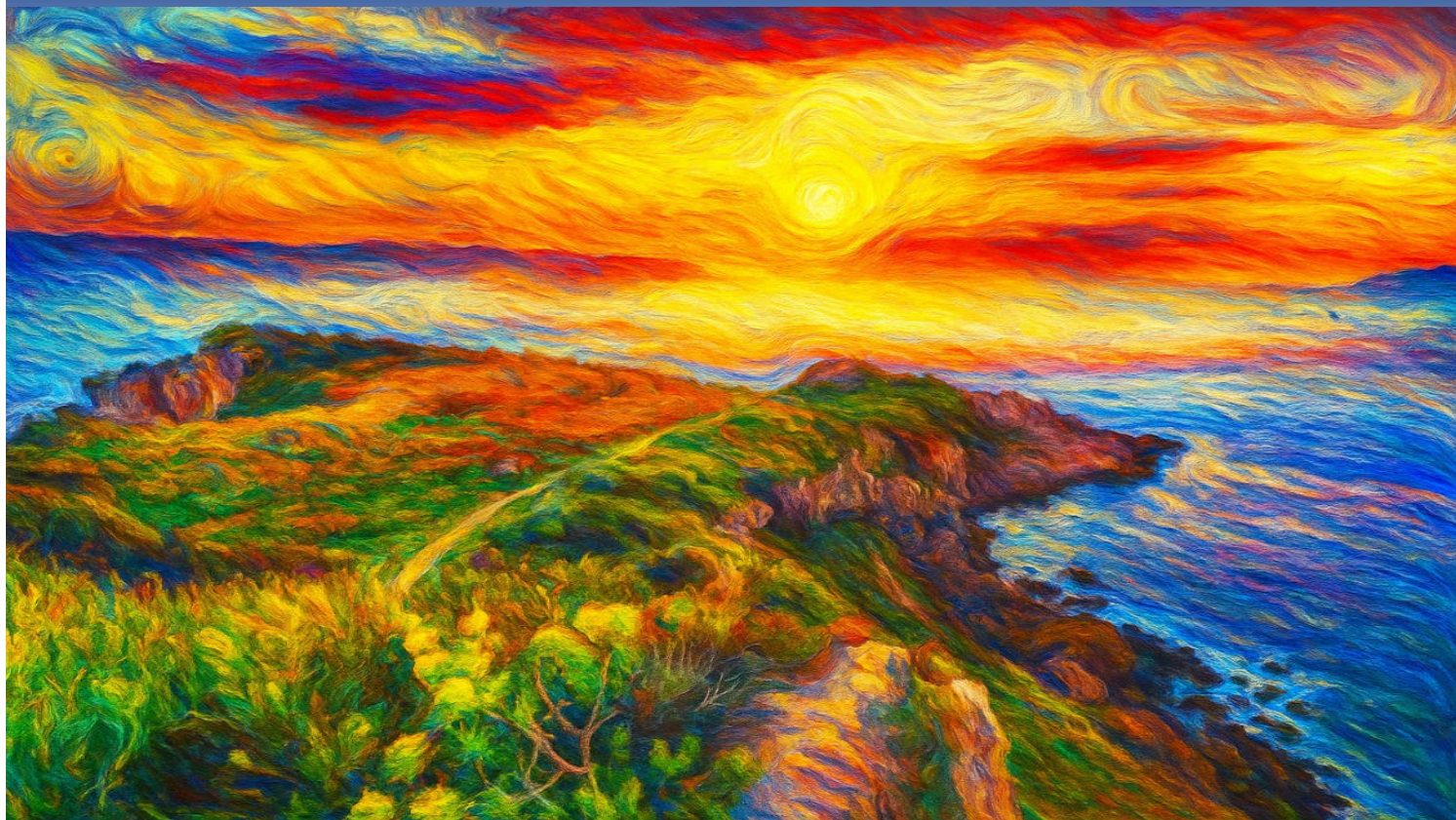


26th ISPPCC

International Symposium on the
Photochemistry and Photophysics of
Coordination Compounds
and
γ-ISPPCC 2025

7 – 12 July 2025
Trifiletti Theater and Villa Vaccarino
Milazzo (ME) - Italy

<https://isppcc2025.unime.it/>





Insights into the photophysics of molecular and supramolecular systems based on porphyrins

B. Ventura

*Institute for Organic Synthesis and Photoreactivity (ISOF) – National Research Council (CNR)
Via P. Gobetti 101, Bologna (Italy)
barbara.ventura@isof.cnr.it*

Porphyrins are key components for the construction of molecular and supramolecular systems with light-induced functions, since they possess unique photophysical and electrochemical properties that can be finely tuned by proper functionalization. Their combination with organic or organometallic components leads to the exploration of a variety of photoactive systems, with applications ranging from energy collection and conversion to photocatalysis [1, 2].

Our interest in the study of multicomponent arrays based on porphyrins stems from the complex interplay of photoinduced processes that can come into play and lead to the final exploitable function. Ultrafast transient absorption spectroscopy is one of the most useful tools to gain information on the formation and deactivation of excited states and transient species, such as ions and radicals, formed within photoinduced reactions.

Here we will present some of our recent studies on molecular and supramolecular multicomponent systems where porphyrins have been combined with organic units or transition metal complexes [3, 4]. These architectures present intricate and unusual photophysical behaviors, that have been elucidated by means of steady-state and time-resolved luminescence techniques and ultrafast transient absorption spectroscopy. They find application in energy collection, charge separation and photocatalytic processes such as CO₂ reduction.

Aknowlegments

Thanks to 2022FWAF2M_PE4_PRIN2022-CADIVAPE “CARbon Dioxide VALorization by chemical, Photo- and Electro-chemical processes” and to H2020-MSCA-ITN-2017-765297-NOAH “Network of Functional Molecular Containers with Controlled Switchable Abilities”

References

- [1] P. D. Frischmann, K. Mahata, F. Würthner, *Chem. Soc. Rev.* **2013**, 42, 1847-1870.
- [1] E. Nikoloudakis, I. López-Duarte, G. Charalambidis, K. Ladomenou, M. Ince, A. G. Coutsolelos, *Chem. Soc. Rev.* **2022**, 51, 6965-7045.
- [2] A. Edo-Osagie, D. Serillon, F. Ruani, X. Barril, C. Gourlaouen, N. Armaroli, B. Ventura, H.-P. Jacquot de Rouville, V. Heitz, *J. Am. Chem. Soc.* **2023**, 145, 10691-10699.
- [3] S. L. Pons Alles, D. Veclani, A. Barbieri, B. Therrien, B. Ventura, *Dalton Trans.* **2025**, DOI: 10.1039/d4dt03154g