UCZELNIA BADAWCZA
INICJATYWA DOSKONAŁOŚCI

UAM Excellence Visiting Professors

Prof. Olivier Siri

“A journey into the world of dyes”

23 czerwca 2025 r.

godz. **12:30**

WYKŁAD ODBYWA SIĘ W RAMACH PROJEKTU

UAM Excellence Visiting Professors (IDUB, POB3)

Wykład w formie tradycyjnej

Sala 3.65, Wydział Chemii UAM

Abstract Colors are essential to our lives. They are everywhere and they call out to us every day. But what lies behind this colorful life? What's going on at the very heart of color? What's going on at the molecular level? This presentation looks at dyes and colors from different angles, from physics and biology (briefly) to chemistry (in details from organic synthesis and supramolecular chemistry to coordination chemistry and industrial applications). A critical element in designing and fabricating dyes is the control and fine tuning of their color. An approach for controlling the color of dyes is to develop a family of modular chromophores and tune their photophysical characteristics at will. 2,5-Diamino-1,4-benzoquinonedimine **1** is a very long known molecule (1887)[1] that has been poorly investigated owing to its low solubility and its instability in solution. We decided to revisit the chemistry of **1** in order to elaborate new dyes that are of major interest in many technological sectors. Our strategy is based on: 1) the use of **1** as ligand in coordination chemistry,[2,3] 2) the incorporation of **1** in extended pi-system,[4] and 3) the tuning of the molecular structure **1**.[5] Herein, various emerging families of chromophores and fluorophores based on **1** with multiple and controlled colors will be presented. The different approaches and the key role of the quinoidal precursors will be described and discussed in the presentation. In addition, the related molecule **2** will be also reported in order to highlight the crucial influence of the heteroatoms in the construction of a wide range of dyes with tunable colors.[6]

Selected references:

[1] R. Nietzki, E. Hagenbach, Ber. Dtsch. Chem. Ges. **1887**, 20, 328.
[2] L. Pasquini, S. M. Beyan, A. Khamidov, V. Jubault, T. Munteanu, G. Canard, P. Knauth, O. Siri *Eur. J. Inorg. Chem.* **2025**, doi.org/10.1002/ejic.202400649.
[3] A. Cahlik, M. Ondracek, Ch. Wackarlin, M. Svec, A. Pinar, O. Siri, P. Jelinek *ACS Nano* **2024**, *18*, 9576.
[4] Z. Chen, M. Gary-Bobo, D. Jacquemin, O. Siri et al. *ACS Appl. Mater. Interfaces* **2021**, 13, 30337.
[5] Z. Chen, M. Giorgi, D. Jacquemin, M. Elhabiri, O. Siri *Angew. Chem. Int. Ed.* **2013**, 125, 6370.
[6] V. Tarpa, J.-F. Longevial, M. Giorgi, G. Canard, S. Pascal, D. Jacquemin, O. Siri *J. Org. Chem.* **2025**, doi.org/10.1021/acs.joc.4c02100.

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