

# The Chemist's Interactions

Seminars @ the Chemistry Department

Friday, 14<sup>th</sup> March 2025

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Industrial Chemistry Department 'Toso Montanari',  
University of Bologna



Room  
G14  
h 14.30

## Photoexcitation of Catalytic Intermediates: A Powerful Tool for Asymmetric Catalysis

The chemical reactivity of molecules in electronically excited states differs fundamentally from that in the ground state,<sup>1</sup> forming the foundation of photochemistry<sup>2</sup> and enabling unique transformations unattainable through ground-state pathways. Our work explores how catalytic intermediates—metal, bio<sup>3</sup>-, and organocatalytic<sup>4</sup>—with established ground-state reactivity can be directly photoexcited using visible light to activate entirely new redox mechanisms. This strategy enables enantioselective radical transformations and asymmetric catalytic processes beyond the reach of conventional methodologies.

<sup>1</sup>Balzani, V.; Ceroni, P.; Juris, A. Eds. in *Photochemistry and Photophysics*, Wiley-VCH, 2014.

<sup>2</sup>Albini, A.; Fagnoni, M. Eds. in *Handbook of Synthetic Photochemistry*, Wiley-VCH, 2010.

<sup>3</sup>Tseliou, V.; Kqiku, L.; Berger, M.; Schiel, F.; Zhou, H.; Poelarends, G. J.; Melchiorre, P. *Nature* 2024, 634, 848–854.

<sup>4</sup>Silvi, M.; Melchiorre, P. *Nature* 2018, 554, 41–49.



The event will be streamed on  
MS Teams for external participants!

For registrations: [seminari.dipchi@unimi.it](mailto:seminari.dipchi@unimi.it)



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