UNIVERSITÉ DE GENÈVE
FACULTÉ DES SCIENCES

LE DEPARTEMENT DE CHIMIE PHYSIQUE

a le plaisir de vous inviter à la

CONFERENCE

Intitulée

TAILOR-MADE METAL COMPLEXES FOR EFFICIENT PHOTOCATALYSIS AND ENERGY CONVERSION

donnée par

Prof. Christoph KERZIG

UNIVERSITÉ DE MAINZ

le VENDREDI 3 JUILLET à 10h

SALLE 1S059 Tissières
Sciences III

30 quai Ernest-Ansermet ou 4 bld d'Yvoy

Responsable : Prof. Eric VAUTHEY

Abstract:

Many photoreactions suffer from lousy quantum yields owing to poorly understood and chemically unproductive loss channels. To improve the light-to-chemical-energy conversion efficiencies, we develop new concepts that rely on molecular dyads consisting of a metal complex unit and a covalently attached organic chromophore. These dyads were employed for efficient key reaction steps in photocatalysis[1,2] and a novel approach for controlling the triplet quenching mechanism was established[3]. Guided by our recent study on Coulomb effects on the energy transfer kinetics,[4] we have developed the Coulombic dyad strategy for obtaining the advantages of molecular dyads without the time- and resource-consuming synthesis of tailored photocatalysts.[5]
Challenging photoreactions such as light-induced polymerization or hydrogen formation usually require UV light and cannot be driven by one visible photon for thermodynamic reasons.[6,7] With the aim in mind to replace inefficient UV light sources, we are working on different strategies to pool the energy of two visible photons for achieving similar photochemical reactivities as obtained upon direct (one-photon) UV excitation.
All projects are characterized by a synergistic interplay of molecular design, time-resolved optical spectroscopy and lab-scale irradiation experiments, which allows us to obtain deep mechanistic insights.

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[5] M. Schmitz, M.-S. Bertrams, A. C. Sell, F. Glaser, C. Kerzig, J. Am. Chem. Soc. 2024, 146, 25799.
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