



Secteur des Sciences
et Technologies

Invitation à la soutenance publique de thèse de
Simon CERFONTAINE

Master en Sciences chimiques à finalité approfondie

Pour l'obtention du grade de Docteur en sciences

« Tuning the excited state deactivation pathways of multinuclear
ruthenium(II) polypyridyl complexes : from synthesis to
photochemistry »

qui se déroulera
le vendredi 11 décembre 2020 à 16h
En visioconférence
1348 Louvain-la-Neuve

Membres du jury :

Prof. Benjamin Elias (UCLouvain), supervisor
Prof. Yann Garcia (UCLouvain), chairperson
Prof. Clément Lauzin (UCLouvain), secretary
Prof. Michel Devillers (UCLouvain)
Prof. Daniel Escudero (KU Leuven, Belgium)
Dr. Murielle Chavarot-Kerlidou (Université Grenoble Alpes, France)



 UCLouvain

The light is the most important source of energy as it is at the basis of photosynthesis which is the origin of life on earth. The photosynthesis is a beautiful and complex machinery in which the absorption of light allows, via multiple electron transfer processes, the synthesis of molecular oxygen and carbohydrates. By following nature's example, the chemist tries to use light to achieve useful chemical transformations in the aim to synthesize molecules of interest. Taking advantage of light is probably the only way to sustain life on earth for a long time.

During this Ph.D. thesis, we have investigated the photophysical properties of some novel luminescent Ru(II) polynuclear complexes. We emphasize the substantial influence of the bridging ligand geometry on the deactivation pathways. Indeed, a suitable geometry allows obtaining a highly delocalized excited state which increases significantly the excited state lifetime. This strategy was implemented with success to polynuclear complexes based on bridging ligands constituted of bipyridine as well as terpyridine chelating moieties. Some developed polynuclear complexes were successfully used as photosensitizers in a photocatalyzed reaction, they have shown to be able to perform the reaction with a higher yield, lower catalytic loading and with less energetical light than the well-known $[\text{Ru}(\text{bpy})_3]^{2+}$ complex.