

# Invitation à la soutenance publique de thèse

Pour l'obtention du grade de Docteur en Sciences

**Monsieur Quentin DERAEDT**

Master en sciences chimiques

**Design and photochemical tuning of Ir(III) and  
Ru(II) photophobes**

Species integrity is warranted by the information that is carried by DNA. The diversity allowed by Nature accounts for the substantial role of this biopolymer, notably for evolution. While DNA mutations are essential for species survival, they lie also at the basis of the triggering of some genetic diseases and, in some cases, cancer. Consequently, Nature has developed its own repair mechanisms to correct DNA defects but some of them can escape the control processes. The detection, and ultimately the correction of these defects is thus of high relevance for diagnostic and therapeutic applications.

In this context, the development of luminescent environment-sensitive probes able to target DNA defects, such as single-base mismatches, is promising. Transition metal complexes represent a particularly interesting choice due to their outstanding DNA binding and photochemical properties.

During this Ph.D. thesis, we aimed to tune the DNA binding and photochemical properties of transition metal complexes photoprobes by modifying either the ligands or the nature of the metal cation. The synthesized Ru(II) and Ir(III) derivatives have shown strong affinity for DNA, and selective targeting of mismatched DNA has been achieved by using dissymmetric ligands. In addition, tuning of the photoreactivity of these complexes has been achieved, allowing DNA photooxidation. Finally, the environment-sensitive properties of an organic phenazine derivative proved to be crucial for PDT.

**Mardi 25 octobre 2016 à 16h00**

Auditoire LAVO 51  
Bâtiment Lavoisier  
Place Louis Pasteur, 1  
1348 Louvain-la-Neuve



## Membres du jury :

Prof. Benjamin Elias (UCL), promoteur  
Prof. Jean-François Gohy (UCL), président  
Prof. Sophie Demoustier (UCL), secrétaire  
Prof. John Kelly (Trinity College Dublin, Irlande)  
Prof. Michaël Singleton (UCL)  
Prof. Mathieu Surin (Université de Mons, Belgique)