Photoactive Complexes: from photocatalysis to supramolecular assemblies

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Host: Assoc. Prof. John Yip
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Abstract

Visible light photoredox catalysis has exploded into the consciousness of the synthetic chemist. The large majority of the conditions used rely on ruthenium or iridium based photocatalysts. Issues pertaining to toxicity of these compounds and sustainability must be addressed in order for photoredox catalysis to become more widely adopted by industry. In the first part of my presentation, I will focus on our development of Cu(I) and Co(III) photocatalysts and their use in a number of relevant organic transformations.

Surprisingly, despite the great interest in the development of photoactive functional 3D nanomaterials, only a handful of examples of phosphorescent supramolecular architectures have been developed to date, while the number of luminescent supramolecular systems based on compounds that emit via a thermally activated delayed fluorescence mechanism even smaller. In the second part of my presentation, I will detail our recent efforts towards the development of photoactive supramolecular systems, highlight their photophysical properties, their interactions with guest molecules and show how supramolecular interactions can govern the properties of these materials in downstream applications such as electroluminescent devices.

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