Synthesis and Study of NHC Functionalized Diarylethene Ligand for Photoswitchable Catalysis

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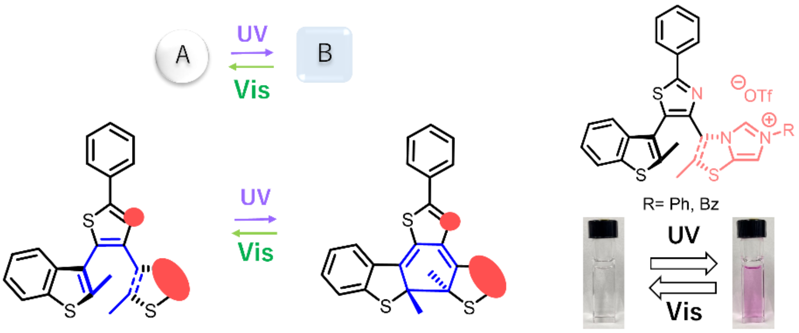
This research aims to synthesize new, low-cost and environmentally friendly catalysts based on cheap earth-abundant metals (such as iron, nickel, and manganese) whose structures can be externally controlled through light irradiation. To do so, we focus on the development of photochromic ligands, more particularly on diarylethene. Indeed, upon UV light-irradiation, these compounds undergo chemical bond rearrangement known as photocyclization, resulting in electronic and structural changes, which dramatically alter their intrinsic properties. [1]

Although previous examples of terarylene-based ligands applied to photoswitch catalysis have been reported, most are limited to the ON/OFF control of the catalytic activity even though examples of enantiodivergence or reaction specificity have been highlighted [2].

In this presentation we will introduce a new NHC-carbene functionalized terarylene, whose coordination site is located close to the photoreactive carbons to maximize both electronic and steric variations to optimize the impact on the metal center and its coordination sphere. Synthesis, theoretical and photophysical analysis will be discussed along with preliminary complexations trials.



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