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Photocatalytic reduction by molecular systems combining Porphyrins and N-Heterocyclic Carbene-Metal complexes

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With photosynthesis, nature has mastered the art of using sunlight as sole source of energy to form energy rich compounds with H₂O and CO₂ as renewable sources. In the context of finding new ways to perform clean chemical transformations and production of sustainable energy forms, chemists are seeking to create chemical model to perform light-driven chemical transformations by assembling a photosensitizer and a catalytic unit.¹ Here, we develop a new molecular systems holding **porphyrins** as photosensitizer and **N-heterocyclic carbene (NHC)** metal complexes as catalytic sites for applications in **photocatalysis** (Figure 1). Characterization of the complexes was performed using electrochemical and spectroscopic techniques to investigate their photocatalytic and electrocatalytic properties for CO₂ reduction.

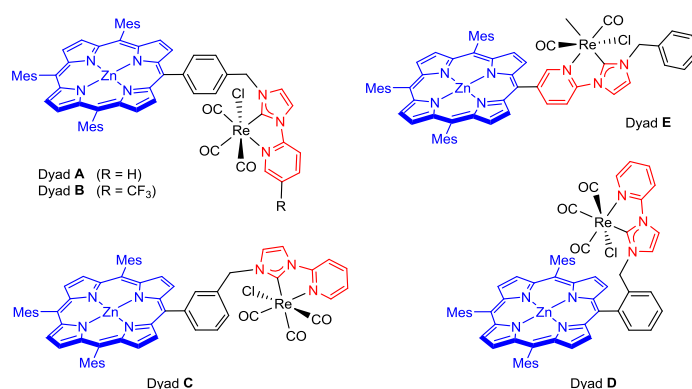


Figure 1. Structures of dyads based on Zn porphyrin and Re containing NHC ligand

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