CHEMISTRY

Photocatalytic reduction of carbon dioxide by metal-organic framework materials. HANNAH BROOKS, BANGBO YAN, Department of Chemistry, Western Kentucky University, Bowling Green, KY 42101.

The design and application of new chemical materials for solar energy harvesting and renewable fuel producing is a very promising and demanding technology because of the diminishing fossil fuel deposits. Our research is to make new photocatalytic metal-organic framework materials consisting of ruthenium polypyridyl complexes and 3*d* transition metal ions. In this presentation, we will report our study on the reduction of carbon dioxide to formic acid using the new metal-organic framework ([Ru(H2bpc)Cu(bpc)(Hbpc)2(H2O)], H2bpc=2,2’-bipyridine-4,4’-dicarboxylic acid) synthesized in our lab as the photocatalyst. The structures of the catalysts contains zigzag chains of [Ru(bpc)3]n- complex ions linked by copper complex ions, and shows strong visible light absorption. Its photocatalytic reduction of carbon dioxide to formatted and its stability of the material under visible light radiation are studied.