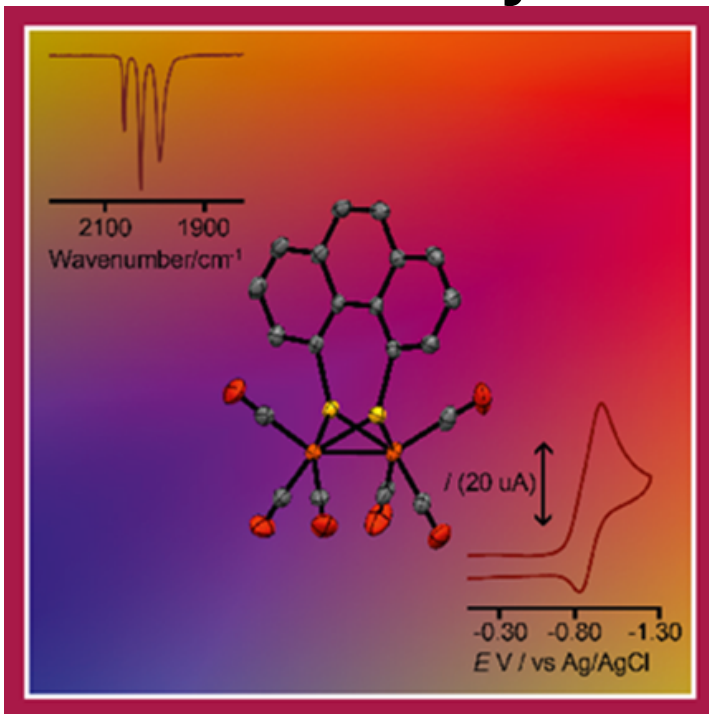
UCA Department of Chemistry Seminar

February 17, 2012 2 pm Laney Hall Rm 102

Charles Mebi

Arkansas Tech University



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Toward Efficient Hydrogen Evolution Catalysts-One Model at a Time

The need to develop clean and renewable fuels is of great importance for environmental, sustainability, and sociopolitical reasons. Hydrogen is considered a clean and primary energy carrier of the future. As a result, the development of cheap catalysts for the efficient production of hydrogen from water (an abundant and readily available resource) has gained a lot of attention. One approach for the design of such catalysts is biomimetic. In this talk, I will present studies in our laboratory toward making effective hydrogen producing catalysts by modeling the structure and function of the active site of [Fe-Fe] hydrogenase enzyme. We have prepared and characterized a series of diiron-carbonyl clusters coupled to polyaromatic thiolate ligands. These compounds have been structurally (X-ray crystallography) and spectroscopically (IR, UV-visible and NMR) characterized, and examined as catalysts for the electrochemical reduction of proton to hydrogen. Our catalysts generate hydrogen from acidic water at milder reduction potentials than similar complexes reported in the literature. I will discuss a design strategy for the development of efficient and stable hydrogenase models.

Lunch provided for students with the seminar speaker from 12 – 1 pm in Rm 105.
Contact P. Desrochers (patrickd@uca.edu) for more information.