

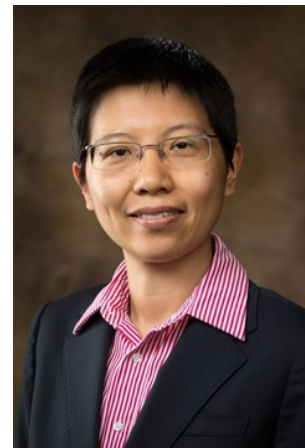
McElvain Materials Seminar

Professor Jingyi Chen

University of Arkansas
Department of Chemistry and Biochemistry

*“Nonprecious Metal Nanostructures: Syntheses,
Properties, and Application”*

Controlling the 3-D morphology of nonprecious metal nanostructures is important for understanding the structure-property-performance relationship, but challenging to achieve due to their highly-reactive nature. In turn, the high reactivity of nonprecious metals opens up the possibilities to use them as templates for access to well-defined hollow nanostructures or to convert them into corresponding metal compound nanostructures. In this presentation, I will take Cu as an example to illustrate the research progress on the shape-controlled synthesis of nonprecious metal nanostructures in our laboratory. The metallic form of Cu exhibits a number of unique properties including distinct optical properties in the visible region. However, once metal Cu is oxidized, their unique properties will diminish. Through surface chemistry, the oxidation of Cu could be prevented to some degree as monitoring by its optical properties. On the other hand, Cu can be used as templates to synthesize well-defined hollow nanostructures and to convert into Cu compound nanostructures. These new nanostructured materials provide more tools for new discovery. I will share some interesting findings on the structural sensitivity of Cu_2S nanoplates under electron beam irradiation and elucidate the possible mechanism and pathway of the reversible structural changes. Furthermore, I will extend the discussion to the synthesis of other nonprecious metals, the Ni-Fe-based nanostructures for the oxygen evolution reaction. This study highlights the importance of the effects of 3-D morphology, composition, and crystallinity on the electrocatalytic activity and stability of nanocatalysts.



Thursday
April 18th

12:15 p.m.
1315 Chemistry

Coffee & cookies
at 12 p.m.

Hosts: Curtis Green & Ben Bachman



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