

INORGANIC CHEMISTRY SEMINAR



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“Ultrathin Wavy Nanowires as Highly Efficient Anode Electrocatalysts for Fuel Cell Application”

Abstract: Direct alcohol fuel cells (DAFCs) are of tremendous interests for their higher volumetric energy density, safer storage, transport, and lower cost vs. hydrogen. However, the anode alcohol oxidation reactions are less kinetically favorable and require noble metal based electrocatalysts, which are costly and limits the widespread adoption. Therefore, an important challenge is to develop highly efficient electrocatalysts with high mass activity (MA) to lower the required amount of noble metal and the overall cost. Ultrathin wavy nanowires represent a class of attractive electrocatalysts with high specific surface area, rich catalytic hotspots and excellent charge transport. In this talk, I will discuss my effort in the design, synthesis and characterizations of the ultrathin Rh wavy nanowires and ultrathin alloy Pt₃Ag wavy nanowires as highly effective electrocatalysts for the alcohol oxidation reactions, by considering the most fundamental design criteria to simultaneously improve the specific activity (SA) and the electrochemical active surface area (ECSA). In addition, I will briefly discuss my ongoing effort to extend this system to Rh/Ni(OH)₂ wavy nanowires and high entropy alloy wavy nanowires for the oxidation reactions of alcohols and hydrazine.

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4:00 p.m. | Via Zoom