

Interface- and Defect-Engineering of Energy-Functional 2D Nanostructured Materials



• Time: 2025.11.18. (Tue) 16:00-17:15

• Place: 104-E206 Classroom

Speaker

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Abstract

Highly anisotropic 2D nanosheets of layered metal compounds (metal oxides, layered double hydroxides, metal chalcogenides, metal carbides, metal nitrides, and carbon nitrides) have evoked great deal of research activity because of their outstanding performances as functional materials. A great diversity in the chemical compositions, crystal structures, and defect structures of inorganic nanosheets provides this class of materials with a wide spectrum of physical properties and functionalities. The inorganic nanosheets can be used as powerful building blocks for exploring high performance hybrid catalysts. Since the crystal defect and interfacial interaction have profound influence on the electrochemical and catalytic activity of hybrid materials, the energy functionalities of 2D metal compound-based nanohybrids can be greatly enhanced by defect- and interface-engineering. In this talk, several classes of 2D metal compound nanosheets and their nanohybrids applicable for renewable energy technology will be presented together with the discussion about the relationship between chemical bonding nature and functionalities. The crucial role of interface/defect engineering in optimizing the energy performances of 2D nanosheet-based metal compounds will be highlighted.

