

Catalytic behavior of 2D Materials



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Key features

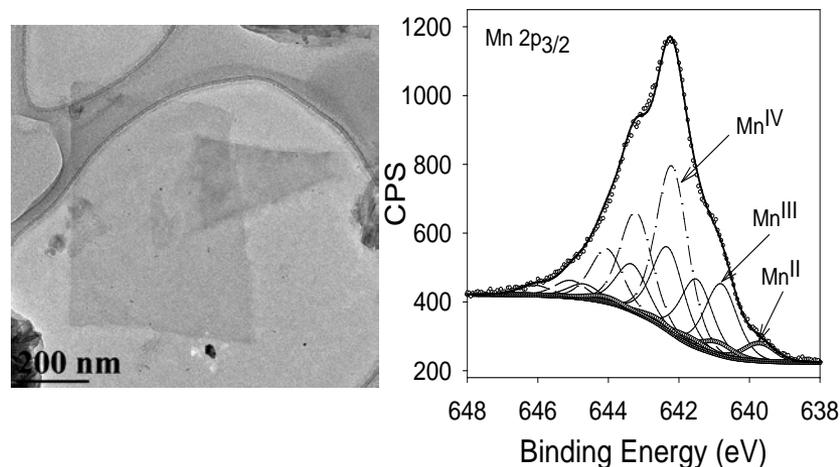
- (photo)catalytic chemistry
- electron spectroscopy
- electron microscopy

Scope of effort

- Understand the surface (photo)chemistry of layered semiconductors as a function of layer number
- Determine the catalytic activity of materials for water splitting and carbon dioxide reduction
- Evaluate 2D materials predicted by theory to have electronic properties favorable for energy related catalysis

Challenges to address

- Effective catalytic surface for water splitting and carbon dioxide reduction
- Increase activity of nanosheets via isolation of electron and hole through the use of heterojunctions



(a) TEM of exfoliated-single layer birnessite (b) XPS of birnessite