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## ADVANCED X-RAY SPECTROSCOPIES FOR CATALYSIS AND BEYOND

Advanced X-ray spectroscopies, such as resonant X-ray emission spectroscopy (RXES) and high resolution X-ray absorption spectroscopy open windows to greater insight into the physical and electronic structure of materials compared to conventional X-ray absorption spectroscopy. I will describe how we are using these techniques in a variety of fields.

For example, platinum is an important element for catalysts. Although platinum nanoparticles (Pt NPs) are highly active, platinum is very expensive, and, depending on the reaction, Pt NPs suffer from accelerated deactivation or poor selectivity to the desired product. By varying the nanoparticle composition, the platinum electronic density of states near the Fermi energy can be modified to improve catalyst performance through increased reactivity or selectivity. RXES coupled with computation are used to understand these differences. This will ultimately lead to better predictive power of the computation and to better catalysts.

FRIDAY - FEBRUARY 8 - 12:10

Hayes Hall  
Room 211/213

Lunch will be served from  
11:50 - 12:10 in Hayes Hall 215.