Steering the Conversion of CO₂ and Ethane

Scientific Achievement
Scientists identified key catalytic features to drive the transformation of carbon dioxide (CO₂) with help from ethane into higher-value chemicals.

Significance and Impact
In this study, the researchers solved the challenge of discovering the right catalytic pathway to convert CO₂ using ethane to gas for generating electricity, liquid fuels, or ethylene.

Research Details
- Discovered two descriptors to control the selectivity of the C₂H₆–CO₂ reaction to favor one catalytic reaction product.
- Performed X-ray studies at the ISS & QAS beamlines at NSLS-II & 17-BM-B at APS.
- Used materials characterization & computational tools at the CFN as well as computational resources at NERSC.


Work was in part performed at Brookhaven, Argonne, and Lawrence Berkeley National Laboratories.