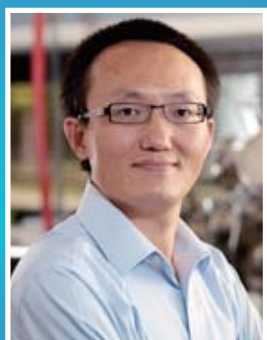


# Atomic-Scale Observations of Catalyst Structures with STM under Reaction Conditions and during Catalysis



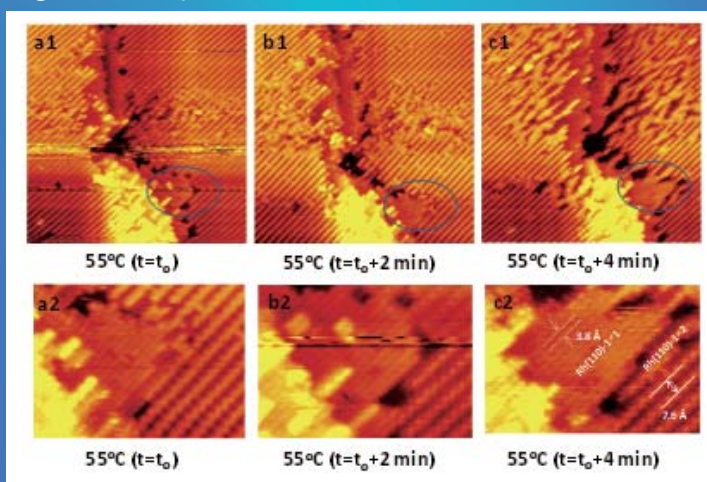
**Prof. Franklin (Feng) Tao**

The University of Kansas

**Date & Time: 2018/7/17 (Tue.) 16:00-**

**Place: IMS Research Building Room 201**

Heterogeneous catalysis is a chemical process performed at a solid-gas or solid-liquid interface. Direct participation of catalyst atoms in this chemical process determines the significance of the surface structure of a catalyst in a fundamental understanding of such a chemical process at a molecular level. High-pressure (or called ambient pressure) scanning tunneling microscopy (HP-STM) has been used to observe catalyst structure in the last few decades. I will present instrumentation of high pressure (or called ambient pressure) STM for in situ/operando of model catalyst surfaces and scientific findings on catalyst structures under reaction conditions and during catalysis with the following objectives: (1) to present the fundamental aspects of in situ/operando studies of catalysts; (2) to interpret the observed restructurings of catalyst and evolution of catalyst structures; (3) to explore how HP-STM could reveal structural details under reaction conditions and during catalysis; and (4) to discuss the future challenges and prospects of atomic-scale observation of catalysts in understanding of heterogeneous catalysis.



Reference: Tao, F. and Crozier P. A. Chem Rev. 2016, 116, 3487.

Tao, F. et al. Science, 2010, 327, 850.