Tata Institute of Fundamental Research
Survey No. 36/P, Gopanpally Village, Serilingampally, Ranga Reddy Dist., Hyderabad – 500 046

Webinar

Understanding the Dissociation Dynamics of CO_2 on Cu(110) and Developing Techniques for State Selected Molecule-Surface Scattering Experiments

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Understanding the dissociation dynamics of small molecules on metal surfaces under well-controlled conditions is an essential step toward comprehending the complexities of chemical transformations on catalytic surfaces. Among these, CO_2 dissociation is significant due to its relevance to climate change mitigation and catalytic applications such as CO_2-to-methanol conversion. Copper surfaces, particularly Cu(110), are key model systems for studying these chemical transformations. However, the dissociation dynamics of CO_2 under ultra-high vacuum (UHV) conditions remain underexplored.

This study provides the first detailed insights into CO_2 dissociation on Cu(110) under UHV conditions, offering fresh knowledge about this important catalytic process. I will discuss the dissociation dynamics of CO_2 on Cu(110), highlighting key findings and comparing them with previously established knowledge of the system. Additionally, I will present the development of advanced experimental techniques enabling state-selected molecule-surface scattering experiments. These findings provide new insights into CO_2 dissociation mechanisms on copper surfaces and set critical benchmarks for theoretical models, advancing our understanding of catalytic processes.

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14:00 Hrs