

## **Seminar**

**Understanding dissociation dynamics of CO<sub>2</sub> on Cu(110) surface and developing techniques for state-selected molecule-surface scattering experiments**

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The dissociation of CO<sub>2</sub> on copper surfaces is a key model for understanding CO<sub>2</sub> to methanol conversion catalysis. Despite extensive exploration through experiments and simulations, the dissociation dynamics under ultra-high vacuum (UHV) conditions still need to be explored. This study sheds light on dissociation dynamics under well-controlled UHV conditions using molecular beam surface scattering methods. Notably, our measurements reveal a lower limit of the average dissociation barrier, approximately 2eV which is three times higher than previously accepted values.

In this talk, I will discuss the possible reasons behind such large differences. These findings are important for understanding the elementary steps in CO<sub>2</sub> dissociation on Cu surfaces and critically assessing theoretical estimates. Additionally, my work includes the development of techniques such as high precision wavemeter and ion imaging setup for enabling state-selected surface scattering experiments, contributing to a deeper understanding of CO<sub>2</sub> dissociation dynamics on copper surfaces.

***Thursday, Feb 29<sup>th</sup> 2024***

***14:30 Hrs (Tea / Coffee 14:15 Hrs)***

***Auditorium, TIFR-H***