

Catalytic Reaction Kinetics in the Pressure Gap

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I will present a new technique developed at KTH to help close the "pressure gap" between surface science and applications of catalysis. Near-Ambient Pressure Velocity Map Imaging (NAP-VMI) allows the measurement of microsecond time-resolved kinetics of catalytic reactions on metastable surfaces formed in the presence of reactant gases, giving details about the reaction mechanisms and the energy barriers along the reaction path. I will show results from the simple systems we have studied while developing the instrument and provide an outlook on the more complex systems we plan to investigate. Information from these experiments can give a better understanding of existing catalysts and help to develop the new catalysts needed for a sustainable future.