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**O 12: Invited Talk (Swetlana Schauermann)**

Time: Monday 15:00–15:45

Location: H36

**Invited Talk**

O 12.1 Mon 15:00 H36

**Interaction of Gas Phase Molecules with Nanostructured Model Supported Catalysts: Thermodynamics and Kinetics** — ●SWETLANA SCHAUERMANN — Fritz-Haber-Institut der Max-Planck-Gesellschaft

Atomistic-level understanding of surface processes is a key prerequisite for rational design of new catalytic and functional materials. In our studies, we investigate kinetics and thermodynamics of heterogeneously catalyzed reactions and adsorption processes on nanostructured model supported catalysts to provide fundamental insights into the surface chemistry. By employing pulsed multi-molecular beam techniques, IRAS and synchrotron-based spectroscopies on

Pd/Fe<sub>3</sub>O<sub>4</sub>/Pt(111) model surfaces, we investigate the mechanistic details of complex multi-pathway surface reactions, such as hydrocarbon transformation in presence of hydrogen or selective hydrogenation of multi-unsaturated hydrocarbons, to obtain the correlations between the reactivity, selectivity and the particular structure of the catalytic surface. Complementary, single crystal adsorption calorimetry is employed to address thermodynamics of adsorption processes and surface reactions, such as e.g. adsorption and reaction of oxygen and CO. Specifically, we focus on the particle size dependence of adsorption and reaction energies to obtain a fundamental-level understanding of how the nanometer scale confinement of matter effects the energetics of surface reactions.