

O 71: Overview Talk Edvin Lundgren

Time: Thursday 9:30–10:15

Location: TRE Phy

Invited Talk

O 71.1 Thu 9:30 TRE Phy

Surface dynamics under reaction conditions — ●EDVIN LUNDGREN — Department of Synchrotron Radiation Research, Institute of Physics, Lund university, Box 118, SE-221 00 Lund, Sweden

Catalysis is an important process and is widely applied on an industrial scale for many applications in either gas or in liquid phase. Industrial catalysts are complex materials, and consequently the gas/liquid-surface interaction between simplified single crystal surfaces and molecules in controlled environments has been studied for decades. We have in recent years explored the possibilities to perform experiments at conditions closer to those of a technical catalyst, at elevated

pressures and in an electrolyte. In this contribution, recent results using in situ/operando techniques [1-5] will be presented. Armed with structural knowledge from ultra-high vacuum experiments, the dynamics of the gas or electrolyte induced structures and phases can be observed in real time. The strength and weaknesses of the experimental techniques will be discussed.

- [1] S. Blomberg et al; Phys. Rev. Lett. 110 (2013) 117601.
- [2] J. Gustafson et al; Science 343 (2014) 758.
- [3] J. Zetterberg et al; Nat. Comm. 6 (2015) 7076.
- [4] S. Pfaff et al; ACS Appl. Mater. Interfaces 13 (2021) 19530.
- [5] L. Rämisch et al, Appl. Surf. Sci. 578 (2022) 152048.