TECHNISCHE UNIVERSITÄT WIEN

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EINLADUNG zum IFP-SEMINAR

Oxides as Heterogeneous Catalysts

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Host:	Peter Schattschneider
Termin:	Donnerstag, 16. Mai 2019, 14:00 Uhr
Ort:	Institut für Festkörperphysik, TU Wien
	Wiedner Hauptstraße 8-10, 1040 Wien
	Seminarraum DB gelb 07 (gelber Bereich, 7. OG)

Abstract:

Metal oxides represent a class of functional materials with many applications in physics and chemistry. Here we focus on their role in heterogeneous catalysis. Surface properties dominate this application. Unfortunately, there is still a lack of conceptual understanding about termination of oxides. The presentation will show that even if we had such a conceptual understanding the existence of defects massively modify the termination. Synthesis details control the defects both in the bulk and at the surface. Restructuring and segregation dominate the surface layer. Bulk defects control the semiconducting properties. Metallic oxides exhibit a propensity to transform in semiconducting terminations. All these changes occur under operation conditions and can ex-situ at best detected as “disorder”.

In this situation a comprehensive analysis of samples of catalytic oxides is key. The standard practice to create structure-function relation with assumed to prevail bulk terminations is of little success when demanding reactions such as selective oxidation or the electrochemical splitting of water are considered. The presentation will justify that oxides in catalysis should be considered as dynamical entities(1, 2) in which both bulk and surface properties co-operate to bring about the desired catalytic function.

1. Schlögl R. Selective Oxidation: From a Still Immature Technology to the Roots of Catalysis Science. Top Catal. 2016;59(17):1461-76.
2. Schlögl R. Heterogeneous Catalysis. Angew Chem Int Ed. 2015;54(11):3465-520.