O 100: Closing Talk Steinrück

Time: Friday 13:15–14:00 Location: TRE/PHYS

Topical Talk O 100.1 Fri 13:15 TRE/PHYS

Ionic Liquid Surface Science — •Hans-Peter Steinrück — Friedrich-Alexander-Universität Erlangen-Nürnberg

Traditional surface science is often limited to solids, due to the high vapor pressure of conventional liquids or solvents. Quite recently, low-vapor-pressure liquids such as ionic liquids (ILs) or liquid metal alloys have received significant attention as they offer new concepts in catalysis. This contribution focuses on ILs, which are liquid salts with melting points below 100 °C, often even below room temperature. Since their physical and chemical properties can be tailored over a wide range, they represent a fascinating class of liquid materials with interesting applications. Two important concepts in catalysis are the Supported Ionic Liquid Phase (SILP) and Solid Catalyst with Ionic Liquid Layer (SCILL) concepts. In both, a high surface area solid substrate is covered with a thin IL film. In SILP, the film contains a homogeneously dissolved transition metal complex; in SCILL, the film modifies catalytically active surface sites at the catalyst. The interfaces of the IL are thus of critical importance. Due to their extremely low vapor pressure, ILs can be investigated in great detail under well-defined ultrahigh vacuum conditions using surface science methods like angle-resolved XPS, STM, AFM and molecular beam techniques. In this presentation, both the IL/vacuum and the IL/support interfaces are addressed. In the first example, the buoy concept will be introduced, that is, the tailored enrichment of metal complexes at the liquid/vacuum interface. The second example addresses the modification of the properties of single crystal surfaces by an ultrathin IL film.