Peter Wasserscheid

Address

Lehrstuhl für Chemische Reaktionstechnik,

Universität Erlangen-Nürnberg

Egerlandstraße 3
91058 Erlangen
E-mail: wasserscheid@crt.cbi.uni-erlangen.de

Education and Scientific Career

1970 born in Würzburg, Germany

1990 – 1995 Studies of Chemistry at the RWTH Aachen, Germany

1995 Diploma in Chemistry at the RWTH Aachen ('with distinction')

1998 PhD at the RWTH Aachen ('with distinction') with Prof. W. Keim

1998 Industrial post-doc, BP Chemicals, Sunbury on Thames, UK

1998 – 2003 Habilitand, RWTH Aachen, Technical Chemistry

Since 2003 Full professor, Chemical Reaction Engineering, Friedrich-Alexander-Universität Erlangen-Nürnberg

2009 Offer to join EPFL Lausanne as Full Professor for Chemical Engineering – rejected.

Together with Prof. Tom Welton (Imperial College, London), Peter Wasserscheid has edited and partly authored the monograph "Ionic Liquids in Synthesis", that is widely accepted as the standard introduction to ionic liquid chemistry (2500 copies sold since 2003). He has been an invited plenary and keynote speaker at international conferences (more than 100 invited presentations). Moreover, he acts as Board Member for the journals Green

Chemistry and ChemSusChem. He is serving as Chairman for the international conference series "Green Solvents" and was the Chairman of the 2010 "EUCHEM Conference on Ionic Liquids and Molten Salt (350 participants). Peter Wasserscheid acts as member of the referee-ing board ("Fachkollegiat") of the DFG and as referee for many funding institutions and top-ranked journals. Peter is vice-coordinator of the Erlangen Cluster of Excellence "Engineering of Advanced Materials" (www.eam.uni-erlangen.de)

Peter Wasserscheid's research efforts have earned him a number of awards including the Haltermann Innovation Award (2000), the Karl-Zerbe-Award of DGMK (2000), the Max-Buchner-award of DECHEMA (2001), the Innovation Award of the German Economy in 2003 (category "start-up", together with Solvent Innovation GmbH), the Leibniz Award of the Deutsche Forschungsgemeinschaft (DFG) in 2006 and an Advanced Investigator Grant of the European Research Council in 2010.

Research Interests

The key research interests of the Wasserscheid research group center on reaction engineering aspects of multiphase catalytic processes with a particular focus on homogeneous catalysis and heterogeneous catalysis involving ionic liquid reaction media. Worldwide, the team belongs to the top 5 research teams in the development and application of ionic liquids in general, and to the top 3 research teams in developing ionic liquid technologies for catalytic applications. For various reaction types the group has successfully demonstrated greatly enhanced performance of ionic liquid based catalyst systems vs. conventional systems. It has also pioneered the so-called "Supported Ionic Liquid Phase (SILP)"-technology for continuous gas phase reactions. In a SILP catalyst, a thin film of ionic liquid - containing a homogeneously dissolved molecular catalyst complex - is dispersed over the large internal surface of a porous support. The extremely low volatility of the ionic liquid film allows SILP catalysts to be applied in continuous gas phase processes thus combining the specificity, activity and selectivity of the molecular defined catalyst complex with the efficient process engineering of a classical heterogeneous catalyst. Two commercial pilot plants using SILP catalysts from the Wasserscheid group are currently in operation at industrial partners. The SILP technology and also the closely related SCILL technology (SCILL= Solid Catalyst with Ionic Liquid Layer) are very versatile technologies for hydrogenation and dehydrogenation catalysis and thus for chemical energy storage concepts. In its ERC Advanced Grant project "SMS-H2-cat", the Wasserscheid group focus on the engineering of supported molten salt catalysts for dehydrogenation reactions and hydrogen production technologies. The great scientific interest of the group in ionic liquid thin film catalysis has led since 2007 to an intense collaboration with the Steinrück team and later with the Libuda team in the field of Ionic Liquid Surface Science. Using surface science techniques and spectroscopy under UHV, many of the relevant questions regarding the nature of the IL/vacuum interface and the IL-solid interface in catalysis could be answered. New

concepts for optimizing catalytic materials could be derived from these surface science studies.

Statistical Information

Publications in refereed international journals (ISI, 13.3.2014): 226; h-index: 51 (PhD 1998); citations: >11.700; 62
patent applications

5 Most Important Publications

1. C. Kolbeck, I. Niedermaier, N. Taccardi, P. S. Schulz, F. Maier, P. Wasserscheid, H.-P. Steinrück, „Monitoring of Liquid-Phase Organic Reactions by Photoelectron Spectroscopy“, Angew. Chem. Int. Ed. 124(11) (2012) 2664-2667 (VIP article).
2. M. Sobota, M. Happel, M. Amende, N. Paape, P. Wasserscheid, M. Laurin, J. Libuda, Ligand Effects in SCILL Model Systems: Site-Specific Interactions with Pt and Pd Nanoparticles, Adv. Mater. 23 (2011) 2617-2621.
3. M. Jakuttis, A. Schönweiz, S. Werner, R. Franke, K.-D. Wiese, M. Haumann, P. Wasserscheid, Rhodium-Phosphite SILP Catalysis for the Highly Selective Hydroformylation of Mixed C4 Feedstock, Angew. Chem. Int. Ed. 50(19) (2011) 4492-4495.
4. F. Maier, J. M. Gottfried, J. Rossa, D. Gerhard, P. S. Schulz, W. Schwieger, P. Wasserscheid, H.-P. Steinrück, Surface Enrichment and Depletion Effects of Ions Dissolved in Ionic Liquids: An X-ray Photoelectron Spectroscopy Study, Angew. Chem. Int. Ed. 45(46) (2006) 7778-7780.
5. P. Wasserscheid, W. Keim, Ionic liquids – new “solutions” for transition metal catalysis, Angew. Chem, Int. Ed. 39 (2000) 3772-3789 (cited more than 3000 times).