

Ionic liquids: promising solvents for the electrodeposition of nanoscale metals and semiconductors - F. Endres (Technical University of Clausthal)

Ionic liquids are molten salts that have, by definition, a melting point below 100 °C. They are composed of organic cations and organic or inorganic anions. Many of these systems are liquid at room temperature and they have extraordinary physical properties which makes them pretty interesting for electrochemical studies. Ionic liquids have, depending on the individual liquid, high chemical stability, low vapor pressures even at elevated temperatures, they can easily be dried under vacuum to water contents below 1 ppm and they have electrochemical windows of up to 6 Volts. For the electrodeposition of metals and semiconductors the liquid 1-Butyl-1-methylpyrrolidinium

bis(trifluoromethylsulfonyl)imid is an important candidate as it has on Au(111) an electrochemical window of 5 Volts. This electrochemical window is wide enough to deposit silicon, even on the nanoscale, as one can show with the scanning tunneling microscope. In this talk an overview on the electrodeposition of nanoscale metals and semiconductors from such new ionic liquids shall be given.