Defect chemistry of crystalline solids

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This tutorial gives an introduction into the equilibrium defect chemistry of crystalline solids with emphasis on metal oxides. Topics discussed include lattice and electronic defects, defect notations, defect structures, point defect concentrations in dependence of temperature, partial pressure and doping level, and the correlation between defect chemistry and transport properties of materials. Also covered are underlying concepts such as structure elements versus building blocks, size exclusion effect, chemical potentials of ionic and electronic defects, virtual versus true chemical potentials, etc. Attendees are invited to present and discuss problem cases encountered in their own research practice.

Biosketch. Prof. Henny J.M. BOUWMEESTER is a renowned scientist in the field of (solid state) electrochemistry, thermodynamics, ionic transport and interfacial/ electrode kinetics, closely related to applications such as oxygen transport membranes and solid oxide fuel cells. He heads the Electrochemistry Research group, part of the Membrane Science Technology cluster, at the University of Twente, Enschede, The Netherlands. In 2012, he was appointed as part-time Professor at the University of Science and Technology (USTC) in Hefei, China. He is co-editor of the CRC's *Handbook of Solid State Electrochemistry*, and has authored and co-authored several book chapters and more than 150 research papers (h-index 50 Web of Science). He serves and served as a member of the board or council of several societies and international conferences, and is topical editor of the Journal of Solid State Electrochemistry.