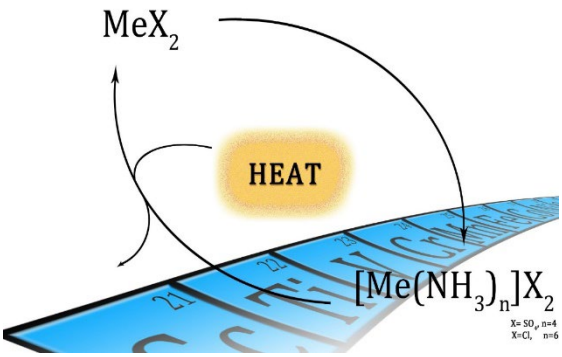
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12 April 2023, 11.30-12.30
Science Park 904, Room: D1.111

The class of transition metal salt ammoniates as new promising thermochemical energy storage materials



After an introduction into the concept of thermochemical energy storage (TCES) via reversible solid – gas reactions special emphasis is given to the class of transition metal salts as promising thermochemical energy storage materials (TCMs).
A comparison of gravimetric and volumetric energy storage capacities as well as intrinsic problems of compound volatility at elevated temperatures is used to choose transition metal salts with realistic potential for heat storage and release applications. Furthermore, problems and pitfalls of cyclic applications of the chosen materials in different test rig setups is discussed and the origin of the problems is described. So far, several methods to circumvent these problems, which have been extensively reviewed in general about the performance of TCES under realistic application conditions are under investigation. The lecture will be closed by a strategic outlook and further possible developments for future applications.

Peter Weinberger is Associate Professor at the Institute of Applied Synthetic Chemistry (TU Wien) where he leads the Magneto- and Thermochemistry research group which focuses on molecular magnetic compounds based on Fe(II) spin crossover systems as well as lanthanide and actinide coordination chemistry and on applied research on materials for thermochemical energy storage. He published ca. 80 international peer-reviewed publications and has 8 patents granted as well as 3 patents filed. He is involved in international research projects, among which the Solar heating and Cooling Programme of the International Energy Agency which aims to push forward the compact thermal energy storage technology developments to accelerate the market introduction of these technologies.