



WESTFÄLISCHE
WILHELMS-UNIVERSITÄT
MÜNSTER



FACHBEREICH
PHYSIK

› Allgemeines Physikalisches Kolloquium

› Donnerstag, 04.02.2016 um 16 Uhr c.t.

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Re-thinking rare earth magnets for energy applications: Demand, sustainability and the reality of alternatives

Due to their ubiquity, magnetic materials play an important role in improving the efficiency and performance of devices in electric power generation, conversion and transportation. Permanent magnets are essential components in motors and generators of hybrid and electric cars, wind turbines, etc. Magneto caloric materials could be the basis for a new solid state energy efficient cooling technique alternative to compressor based refrigeration.

The talk focuses on rare earth, rare earth free permanent magnets and magneto caloric materials, with an emphasis on their optimization for energy and resource efficiency in terms critical element utilization. The concept of criticality of strategic metals is explained by looking at demand, sustainability and the reality of alternatives of rare earths. Modelling, synthesis, characterization, and property evaluation of the materials will be discussed considering their micro magnetic length scales and phase transition characteristics.