

**Keramische Werkstoffe und Bauteile  
Prof. Dr.-Ing. Kurosch Rezwan  
Fachbereich 4 - Produktionstechnik**

**Graduiertenkolleg MIMENIMA  
DFG GRK 1860**

## **Invitation**

**– Guest Seminar –**

**Prof. Dr. Georg Garnweitner**

Nanomaterials, Institute for Particle Technology, TU Braunschweig

**Title:**

**“Chemistry-based engineering of nanoparticles and their structuring into hierarchical aggregates”**

Metal oxide nanoparticles are highly desired for a variety of applications due to their diverse properties, high chemical and thermal stability, and low toxicity. In contrast to other materials, however the adjustment of size, shape and surface chemistry of metal oxides has proven to be more complex. In this presentation, engineering approaches for the tailored synthesis and processing of metal oxide nanoparticles are presented. In particular, the nonaqueous synthesis has been investigated and modeled with advanced tools of particle technology, allowing further insights into particle formation mechanisms and a prediction of particle properties. Various strategies for tuning the surface chemistry of the nanoparticles are shown to enhance their colloidal stability and achieve nanocomposites with optimized properties. Furthermore, their structuring into hierarchical aggregates via spray drying is presented. An understanding of the diffusion and drying mechanisms and the use of templating strategies allows their tailoring in terms of composition and porosity.

**Date: Monday, 21<sup>st</sup> January 2019, 14:00 a.m.**

**Location: IW 3, Am Biologischen Garten 2, Room 0330**