



The ICAMS Seminar presents

Prof. Dr. Hermann Riedel

Fraunhofer-Institut für Werkstoffmechanik,
Wöhlerstr. 11, 79108 Freiburg

Tuesday, 22nd of June, 4:30 p.m.
ICAMS Seminar room UHW 11/1102

**From new concepts in materials modelling and
component simulation to projects with industry**

The Fraunhofer model demands that scientific progress is transferred expeditiously into industrial practice, with corresponding revenues for the institutes. Examples from materials based process and component simulation are discussed, in which the transfer efforts were more or less successful. The examples comprise models for crack formation and texture evolution during forming processes, lifetime models for thermo-mechanical fatigue and models for powder technological processes.

Ab initio and other atomistic methods allow for the calculation of various material properties. This may directly be useful for materials development, but it can also be applied via intermediate length and time scales, such as thermodynamic and kinetic models for the microstructural evolution during processing and under service conditions, which are eventually, implemented in macroscopic finite element models. Thermodynamic and kinetic models contain a great number of parameters, e.g. for the Gibbs energies, diffusion coefficients and interface energies, some of which are difficult and expensive to measure, but are accessible to atomistic methods, at least in principle.