

---

**MM 12: HV Dehm**

Time: Tuesday 9:30–10:00

Location: IFW A

**Invited Talk**

MM 12.1 Tue 9:30 IFW A

**Small scale mechanical testing: Challenges and benefits** —

•GERHARD DEHM — Erich Schmid Institut für Materialwissenschaft der Österreichische Akademie der Wissenschaften — Department Materialphysik, Montanuniversität Leoben

The continuous trend in miniaturization of materials requires novel strategies to probe the mechanical properties at the micron- and sub-micron level. Thin film structures, micro- and nanowires, as well as nanostructured materials like in microelectronic devices, flexible electronics, cutting tools, energy systems and high temperature materials

are examples where small scale mechanical testing methods are most promising to determine strength and failure mechanisms. This information is needed for a fundamental understanding as well as to guide the development of robust products. Focussed ion beam microscopy and lithography routes are employed to shape quantitative deformation and fracture experiments at small length scales. In situ scanning electron microscopy and transmission electron microscopy as well as advanced X-ray diffraction experiments are combined to get insight in the underlying deformation mechanisms. Some of the challenges encountered in small scale mechanical testing are discussed.