
MA 0: Tutorial: Magnetic Shape Memory Alloys

Time: Sunday 14:00–17:00

Location: EW 202

Tutorial MA 0.1 Sun 14:00 EW 202
Magnetic Shape Memory Alloys – From Fundamentals to Applications — •SEBASTIAN FÄHLER¹ and ANNIKA RAATZ² — ¹IFW Dresden, 01069 Dresden — ²Inst. F. Werkzeugmaschinen TU Braunschweig, 38106 Braunschweig

Magnetic Shape Memory (MSM) Alloys occupy a unique position within the class of smart materials due to their outstanding strain of up to 10% in moderate magnetic fields. This tutorial introduces the phe-

nomenology of two actuation mechanisms and their experimental and theoretical verification. Both mechanisms, magnetically introduced reorientation (MIR) of variants and magnetically induced martensite (MIM) formation, are analyzed with respect to their material requirements. The specific actuation and sensing properties of MSM materials are compared with other smart materials. Their specific advantages, such as relatively high working frequency, will be discussed. The challenges for system integration are analysed by means of existing system designs.