

Smart Materials: Magnetic Shape Memory and the Giant Magneto Caloric Effect

Pnina Ari-Gur

Western Michigan University

Currently on sabbatical at the University of Auckland

Smart materials respond to an external stimulus by changing their properties. They have applications in medicine, aerospace, alternative energy and everyday life. They will be described with emphasis on Heusler ferromagnetic shape memory alloys (Ni-Mn-X, when X is In, Sn, Sb). These alloys hold great potential for magnetic refrigeration, alternative energy, and shape-memory applications. We work on developing alloys with high sensitivity of the phase transition to applied magnetic fields, and good mechanical and thermal properties for wide application in micro-and nano-mechanic and alternative energy