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Shape memory materials

An introduction is given into shape memory behaviour of metallic, and in particular ferromagnetic, materials such as Ni_2MnGa and related alloys. The lecture focuses on the structural aspects of shape memory behaviour and presents a detailed discussion of structural investigations, in particular neutron scattering experiments. The lecture discusses various alloy series based on a variation of the basic Ni_2MnGa compound. Some characteristic notions, which are currently used in the literature for the explanation of systematic behaviour in these alloy series, are addressed. In particular the notion of valence electron concentration is investigated experimentally and its relevance for the description of systematic changes in an alloy series is examined.