

Two examples of Mn-based antiferromagnetic semiconductors

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Combining magnetism with semiconductor physics offers unique opportunities for electronic devices and control of transport properties in arguably elementary solid state systems. Dilute magnetic semiconductors will briefly be mentioned and then we will focus on stoichiometric materials featuring antiferromagnetic order: NaMnAs and MnTe. Magnetocrystalline anisotropy will be discussed and (taking yet another Mn-based material as the third example) the idea of magnetic moment manipulation via spin flop will be explained. Transport and magneto-optical phenomena such as the anisotropic magnetoresistance, anomalous Hall effect and MOKE will be surveyed in the two materials.