

NEW MAGNETIC MATERIALS BASED ON DEFECTS, ANION SUBSTITUTION, INTERFACES AND DOPING

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Ideas based on theory and some experiments will be presented regarding possible new magnetic materials based on extended and point defects, interface engineering, anion substitution in oxides and hole and electron doping of oxides. The concentration will be on rather ionic oxides mostly not involving conventional magnetic elements. Special attention will also be placed on surface and interface effects involving polar surfaces as well as on the role of doped holes in O 2p in charge transfer gap oxides. O 2p holes play an extremely important role in the magnetism and superconductivity of oxides and new results will be presented regarding the ferromagnetic exchange coupling they introduce in transition metal oxides and the interplay between transport properties, magnetic order and the general phase diagrams of materials involving O 2p holes either in the so called self doped case of stoichiometric oxides or in chemically substituted systems.