Classification of Magnetic Materials

	"Magnetic"		So-called "Non-magnetic"			
	Ferrimagnetic	ferromagnetic	paramagnetic	diamagnetic	antiferromagnetic	superparamagnetic
Due to	dipoles of cation A line up with the field while those of B oppose the field	unfilled energy levels in the 3d level	unpaired e- exists	all the orbital shells are filled (i.e. there are no unpaired electrons) (no net magnetic moments)	magnetic moments in neighbouring dipoles oppose one another	when the grain size of ferro- and ferromagnetic materials is smaller than a certain size, these materials behave like paramagnetics. Also, the magnetic dipole energy is comparable to the thermal energy, thus they can flip randomly.
e.g.	ferrite	iron, nickel, cobalt, Gd (gadolinium)	aluminum, titanium, and alloys of copper	Cu, Ag, Au, Si & alumina (AlO)	Manganese, chromium, MnO, NiO, CoO, MnCl2	(see ferromagnetics)
Curie-Weiss behavior?	√	√	-	×	×	×
magnetic susceptibility χ_m	++	--- ~ +++ (~1E6)	+ (∈ 10^-4 ~ 10^-5, weakens the field)	- (~ 10^-6) (Superconductors are perfect diamagnets (χm = -1))	+ (~ 0)	+++
Dipoles interact?/ Domain structure works?/M holds even w/o H?	√	√	×	×	×	×
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