

magnetic transition

A transition between disordered and ordered arrays of atomic magnetic moments. Where the ordered phase has a net spontaneous magnetization, M_S , the magnetic-ordering temperature is called a Curie temperature, T_C ; where the net spontaneous magnetization of the ordered phase remains zero, the ordering temperature is called a Néel temperature, T_N . The temperature at which the two ferromagnetic subarrays of a ferrimagnet just cancel each other is called the compensation point.

Materials exhibit *ferromagnetic* behaviour when unpaired electron spins are aligned in parallel, *antiferromagnetic* behaviour when the alignment is antiparallel, and *ferrimagnetic* behaviour if the alignment of the spins is antiparallel with unequal numbers in the two orientations or if the spins are canted. Therefore, ferromagnetic, ferrimagnetic and weak ferromagnetic transitions involve a net magnetic moment change, whereas antiferromagnetic transitions have zero net magnetic moment change.

Note:

Antiferromagnetic order below T_N may be complex; for example, canting of spins as in GdFeO_3 , spiral-spin configuration as may occur in MnO_2 , and amplitude modulation, as in some rare-earth metals.

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