Curie Point Encyclopedia Article

Curie Point

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Substances with positive magnetic susceptibilites are said to be paramagnetic, which implies that they will have induced magnetic moments in the direction of an applied magnetic field. A ferromagnet, on the other hand, has a spontaneous **magnetic moment**, i.e., a magnetic moment even in the absence of an applied magnetic field.

In ferromagnetic materials, a transition occurs between the magnetized state (for example, of **iron** or nickel) at low temperatures and an unmagnetized state at high temperatures. The magnetization exhibits decreases gradually to zero rather than changing abruptly, but there does exist a **temperature** (called the Curie point after **Pierre Curie** who investigated it) at which the drop in magnetization becomes especially pronounced. The Curie point is thus considered to be the temperature where the spontaneous magnetization vanishes. It separates the disordered paramagnetic phase (at higher temperatures) from the ordered ferromagnetic phase (at lower temperatures).

The magnetic susceptibility of a paramagnetic material is inversely proportional to absolute temperature. The modified law proposed by Curie and French physicist Pierre Weiss (1865-1940) for ferromagnetic materials above their Curie points, which states the susceptibility is proportional to the reciprocal of the difference between the absolute temperature and the Curie temperature, is often obeyed.