

Poster Presentation

MS02.P05

Ferromagnetic transition in Au- based Approximants

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The structure of Tsai-type magnetic quasicrystals and its related compounds (called approximants) are characterized by the space-filling of an icosahedral cluster which has a rare-earth icosahedron [1]. From an experimental point of view, such compounds have been known to show the spin glass like behavior without exception [2]. However, the discovery of the antiferromagnetic phase transition in the Cd-Tb approximant [3] gives a counterexample to this trend. Moreover, ferromagnetic transitions were observed in the Au-based approximant recently. In this paper, magnetic phase transitions in Au-Si-R (R= Gd ,Tb, Dy and Ho) approximants are discussed. In all the systems, the temperature dependence of magnetization show ferromagnetic transition at T_c. On the other hand, the magnetization curves below T_c are different between Gd-compound and non-Gd compounds. The difference in the magnetization may be attributed to the existence of the CEF effect in the non-Gd compounds which have non-zero orbital angular momentum.

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Keywords: Quasicrystal approximant, Ferromagnetism