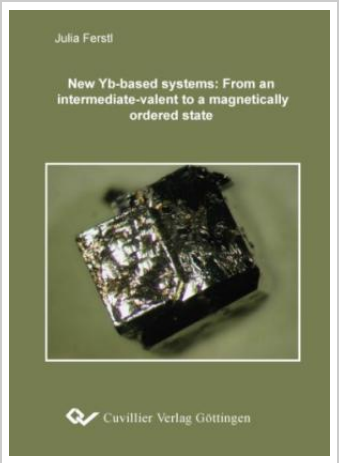

New Yb-based systems: From an intermediate-valent to a magnetically ordered state

By Julia Ferstl

Cuvillier Verlag Sep 2007, 2007. Taschenbuch. Condition: Neu. Neuware - Heavy-fermion systems belong to the group of strongly correlated electron systems and have attracted considerable attention because of their unusual physical behaviour at low temperatures. Only a few Yb-based heavy-fermion compounds were discovered and investigated in the past twenty years in comparison to Ce-based ones, because of the difficulty in synthesising Yb-compounds due to the high vapour pressure of Yb. In this thesis, we present the first thorough investigation of the compound YbFe2Ge2, and a study of the physical properties upon crossing the quantum critical point in the heavy-fermion system Yb1-xLaxRh2Si2. We grew polycrystals and single crystals of YbFe2Ge2 and of its reference compound LuFe2Ge2 and investigated their physical properties. Surprisingly, our results evidence in both compounds the presence of a paramagnetic Fe moment with eff 3 B/Fe at high temperatures, in contrast to the old belief of a non-magnetic transition metal state for all RT2X2-compounds with T = Fe, Co, Ni and X = Si, Ge. Anomalies in the susceptibility and in the specific heat suggest AF-ordering of these Fe moments at TN = 9 K in LuFe2Ge2. No evidence for magnetic order was found in YbFe2Ge2 , instead...

Reviews

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