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Anisotropies in Quaternary Intermetallic Compounds W.C. LEE, Dept. of Physics, Sookmyung Women's Univ. Seoul 140-742, Korea — From the high-temperature series expansion of magnetic susceptibilities and the anisotropic Weiss temperatures, the first Steven's parameter, B_2^0 , and the magnetic exchange interaction constant J_{ex}^{ll} of each $R^{=3}$ ions magnetic sublattice in quaternary intermetallic compounds, RNi_2B_2C B(R= Tm, Er, Ho, Dy, and Tb) were obtained. The R =Dy system shows the biggest B_2^0 value and the R = Tb system does the smallest one. Also we have measured and analyzed the anisotropic M(H) isotherms as a function of applied magnetic fields for H perpendicular and parallel to the c-axis for each compounds to check out our crystalline electric field (CEF) results obtained from the previous mentioned method by using the anisotropic Weiss temperatures. It turned out that most of the temperature dependence of magnetization curve M (T) for H perpendicular the c-axis at low temperature comes from the temperature dependent population of the singlet ground state in group L among groups L(low-lying levels of ground states), H(high levels of ground states), and M(first excited states).

W. C. Lee
Dept. of Physics, Sookmyung Women's Univ. Seoul 140-742, Korea

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