dielectric properties, magnetic properties

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155Gd Moessbauer Effect and Magnetic Properties of Novel RT2B2C Compounds with T≡Ni, Co. — GdNi2B2C and GdCo2B2C are prepared by arc melting and annealing at 1050 °C. The structure of the compounds (tetragonal, space group I4/mmm) is related to the Cr2Si2 type. According to the temp. dependence of the hyperfine field, evidence for magnetic ordering at temp. below 5.5 K and 23 K in GdCo2B2C and GdNi2B2C, resp., is given. The Moessbauer line width indicate a large number of lattice imperfections which is larger in the Co compound than in the Ni compound. An explanation for the large values of crystalline electric field gradient, Vzz, obtained from the Moessbauer spectra, is given by ab initio band structure calculations. The second-order crystal field parameter A0 2 for both compounds is estimated from the experimental Vzz values. — (MULDER, F. M.; BRABERS, J. H. V. J.; COEHOORN, R.; THIEL, R. C.; BUSCHOW, K. H. J.; DE BOER, F. R.; J. Alloys Compd. 217 (1995) 1, 118-122; Philips Res. Lab., NL-5600 JA Eindhoven, Neth.; EN)