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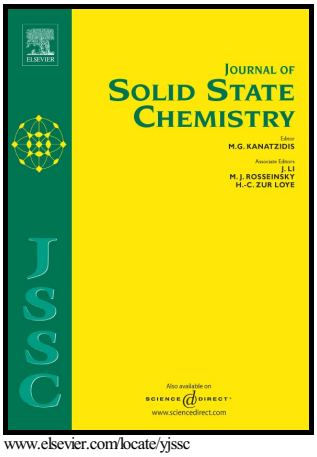

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Mo_2NiB_2-type Sm_2Co_2Al and Sm_2Co_2Ga compounds: magnetic properties and giant low-temperature coercivity

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Abstract

The magnetic ordering of Mo_2NiB_2-type Sm_2Co_2Al and Sm_2Co_2Ga (*Immm*, No. 71, *oI*10) compounds has been established using bulk magnetic measurements. Polycrystalline Sm_2Co_2Al and Sm_2Co_2Ga undergo ferromagnetic transitions (T_C) at 50 K and 62 K, respectively, and low-temperature field induced transitions (T_m) around 14 K and 16 K (in a field of 10 kOe), respectively. Between T_C and T_m Sm_2Co_2Al and Sm_2Co_2Ga are soft ferromagnets. Below T_m Sm_2Co_2Al and Sm_2Co_2Ga exhibit permanent magnet properties with a residual magnetization per samarium of 0.38 μ_B and 0.36 μ_B, respectively, and a large coercive field of 69 kOe and 72 kOe, respectively, at 5 K.