

E. Lähderanta, R. Laiho, A.V. Lashkul, K.G. Lisunov, I. Ojala and V. Zakhvalinskii

Ni-rich nanoclusters in CdSb: influence on magnetic and transport properties and perspectives for spintronics

ABSTRACT. Magnetic and transport properties of the group II-V semiconductor CdSb single crystals doped with Ni (2 atom%) have been investigated. The magnetization data provide evidence for spheroidal magnetic Ni-rich $\text{Ni}_{1-x}\text{Sb}_x$ nanoparticles, responsible for magnetic irreversibility in low fields, rapid saturation of the magnetization with increasing field strength, and large anisotropy of the saturation magnetization and coercivity. Conductivity below $T \sim 2.5$ K is found to be of variable-range hopping (VRH) character in zero magnetic field, changing its type in nonzero fields. Analysis of the resistivity and magnetoresistance yields values of the microscopic parameters of the charge carriers and details of their critical behaviour near the metal-insulator transition.

Nanotechnology Perceptions 4 (2008) 249–255

Nonsubscribers: [purchase individual article](#)