- Nanocomposites and nanomaterials

MAGNETIC PROPERTIES of SYNTETIC BULK AND NANOSTRUCTURED DIAMOND

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Modern microelectronics requires the development of new functional materials. Among the variety of the most promising materials for high-tech areas of microelectronics are synthetic diamonds (single crystals) and nanodiamonds (powder containing nano-sized crystallites of diamond). These materials are able to work in extreme conditions. Currently study of carbon nanostructures are one of the fundamental directions in physics of nanomaterials.The main impurity in diamond is usually nitrogen atoms which occupy a certain position in the lattice . Different position of the impurity in the lattice causes different types of defect-impurity structure of diamond, for example : Ia, Ib, IIa, IIb, IaA, IaB et al . [1] Existing in the form of single impurity centers nitrogen atoms are in the neutral charge state N^0 (C- defect) substituted carbon atoms and create effective paramagnetic centers of different types. Also, they may form exchange-coupled pair (N^0-N^0) + [2 , 3]. Defect-impurity structure of diamond depends on the growth rate and the exposure time of the sample

The temperature end magnetic field dependencies was studied in temperature range 1.8 -300 K in magnetic field up to 14 T