Magnetic Behavior of ZnO Nanoparticles Doped with Co and Mn Ions

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The II-IV valence nanoparticles with semiconducting, luminescent and magnetic properties are under ongoing research in modern spintronic. Magnetic properties of ZnO:Co and ZnO:Mn nanoparticles were investigated in this work. The influence of the concentration of the doping Mn/Co ions on the magnetization of Zn₁₋ₓMnxO and Zn₁₋ₓCoxO nanoparticles was experimentally obtained and analyzed. Superconducting quantum interface device (SQUID) with the applied magnetic field up to 7 T was used for determining the magnetization of ZnO:Co and ZnO:Mn nanopowders and compared with the pure ZnO nanopowder. Zink oxide nanopowders doped with 1%,15% Co and 1%,15% Mn were produced by the microwave solvothermal synthesis. The nanostructures of the particles were investigated by skeleton density, specific surface area (SSA), phase purity (XRD), lattice parameters, average particle size, crystal size distribution, scanning electron microscopy (SEM).