

**Temperature dependence of EPR/FMR spectra of carbon coated nickel nanoparticles and tempo spin probe dispersed in paraffin**

Marcin Soboń, Ignacy-Eryk Lipiński, Urszula Narkiewicz, Mariusz Podsiadły

Electron Paramagnetic Resonance and Ferromagnetic Resonance (EPR/FMR) measurements of the agglomerated nickel magnetic nanoparticles coated with carbon and TEMPO spin probe dispersed in low concentration in paraffin matrix were carried out. Temperature dependence of the EPR/FMR spectra has been recorded in the temperature range from 5K - 325K. Very intense EPR spectra of TEMPO spin probe and a broad FMR line of nickel have been recorded in the whole temperatures range. A strong temperature dependence of the EPR lines position was observed in both cases. EPR resonance lines of spin probe are shifted essentially towards the direction of low magnetic fields with the temperature increase. After thermal annealing the “soft” matrix field with low concentration of magnetic nanoparticles could provide new arrangement of dipole-dipole interaction which influence on the internal magnetic field.