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NMR and spin relaxation in systems with iron oxide nanoparticles NATALIA NOGINOVA, TRACEE WEAVER, NSU, Norfolk, VA, ALEXANDR ANDREYEV, MARK FELICIANO, OLHS, Virginia Beach, VA — Effect of the superparamagnetic nanoparticles to ^1H NMR spectra and spin dynamics of the host systems have been studied in liquid (water and toluene), solid (polymer) and gelatin suspensions of $\gamma\text{-Fe}_2\text{O}_3$ nanoparticles. Significant broadening of ^1H NMR spectra and growing relaxation rates were observed with increased concentration of nanoparticles in the liquid systems while the polymer systems demonstrate inhomogeneous broadening of the spectra and practically no dependence of T_1 upon the nanoparticle concentration. In gelatin solution, both effects were observed depending on the line position. We explain the experimental results taking into account predomination of self-diffusion as a source of the relaxation, with allowance made for the formation of magnetic aggregates.

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