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## Proton NMR of water colloidal solutions of nanosized crystalline LaF<sub>3</sub> and LaF<sub>3</sub>:Gd<sup>3+</sup> particles

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### Abstract

© 2015 AIP Publishing LLC. A study of the nuclear magnetic relaxation of water protons in a series of colloidal solutions of nanosized lanthanum trifluoride and lanthanum fluoride particles, doped with gadolinium (0.5%). The proton NMR signal was recorded by a "Proton-20 M (Chromatech)" spectrometer. It is established that the rate of longitudinal relaxation depends on the nanoparticle concentration in the water solution, and on their dimension. It is demonstrated that the proton relaxation rate in the LaF<sub>3</sub>:Gd<sup>3+</sup> solution increases with paramagnet concentration in the nanoparticles, and decreases with increasing particle size.

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