The annealing of PrF$_3$ nanoparticles by microwave irradiation


Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Over the last few years PrF$_3$ nanoparticles have been widely investigated by our group [1-5]. In present work the effect of microwave radiation on the restructuring of nanoscale crystalline PrF$_3$ powders were researched using nuclear magnetic resonance (NMR), nuclear pseudo quadrupole resonance (NPQR) and high-resolution transmission electron microscopy (HRTEM) methods. It was found that the relaxation times $T_1$ of the $^{141}$Pr and the $^{19}$F nuclei increase along with a duration time of microwave irradiation (Fig. 1), and the line width of the $^{141}$Pr spectrum become narrower (Fig. 2). The HRTEM results testify the influence of microwave irradiation time on the size and shape of the PrF$_3$ nanoparticles.

As a result the influence of microwave irradiation on PrF$_3$ nanoparticles structure was investigated