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The effect of pH on the structural and magnetic properties of $\text{PbFe}_{12}\text{O}_{19}$ nanoparticles prepared by sol-gel method

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Abstract

In this research, lead hexaferrites nanoparticles ($\text{PbFe}_{12}\text{O}_{19}$) were prepared by sol-gel method. The effect of pH on the structural and magnetic properties of $\text{PbFe}_{12}\text{O}_{19}$ was studied. The attempt in this paper was to depict the effect of change in sol-gel pH on the size and morphology of the samples as well as their structural and magnetic properties. Therefore, samples with pH = 1.8, 3, 5, 6, 7, and 8 were prepared. Then, the dry gels of the samples were heated in the optimum annealing temperature and time of 800 °C and 3 h, respectively. In order to study the structural, morphological and magnetic properties of the samples prepared in various pHs X-ray Diffraction (XRD), Scanning Electron Microscopy (SEM), Vibration Sample Magnetometer (VSM), and LCR meter were applied, respectively.

Keywords: pH, nanoparticles, lead hexaferitte, XRD, VSM, SEM.

For full article, refer to the Persian section