

Structural, spectroscopic and magnetic properties of the Eu³⁺-doped GdVO₄ nanocrystals synthesized by hydrothermal method

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The structural, spectroscopic and magnetic studies on the Gd_{1-x}Eu_xVO₄ (x = 0, 0.05 and 0.2) nanophosphors, synthesized using hydrothermal route, are presented and discussed. New aspects of the luminescent and magnetic properties of products obtained as well as the method of their synthesis are performed. Detailed analysis of the emission properties, e.g. asymmetry ratio R and luminescence lifetimes depended on the excitation wavelength was done. Moreover, for the first time in this group of nanomaterials, the argumentation is based on the rejection of the giant spin model and the existence of thermally occupied low-lying excited states of Eu³⁺ ions.