

# SYNTHESIS OF CONTROLLED SIZE GdPO<sub>4</sub>·H<sub>2</sub>O NANORODS

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Due to the wide nanoparticles application, the synthesis of nanoparticles and the study of their properties are of great interest to scientists. Special attention is paid not only to particle size but also to their morphology. Physical properties depend on the morphology of the nanoparticles. The Eu doped GdPO<sub>4</sub> exhibits luminescent properties. These particles can be applicable in biomedicine, for example, in biological labels, biological images and drug delivery [1,2].

In this study Eu doped GdPO<sub>4</sub>·H<sub>2</sub>O were prepared by hydrothermal synthesis. Our goal is to investigate the dependence of morphology and size of nanoparticles on the synthesis conditions, and synthesizing GdPO<sub>4</sub>·H<sub>2</sub>O nanoparticles. One parameter was changed during each synthesis. The synthesis of Gd<sub>0.85</sub>Eu<sub>0.15</sub>PO<sub>4</sub>·H<sub>2</sub>O had been performed by changing the solvent amount (H<sub>2</sub>O) in reactor of hydrothermal autoclave, the amount of reagents was kept the same. The pH of the solution adjusted with adding nitric acid. Samples were analysed by X-ray diffraction and scanning electron microscopy. The luminescence properties also had been measured.

## References

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2. H. Song, L. Zhou, L. Li, F. Hong, X. Luo. Hydrothermal synthesis, characterization and luminescent properties of GdPO<sub>4</sub>·H<sub>2</sub>O:Tb<sup>3+</sup> nanorods and nanobundles. *Materials Research Bulletin* Vol. 48, 2013, pp 5013–5018.