

## Controllable synthesis of nanoscale $\text{YPO}_4:\text{Eu}^{3+}$ in ionic liquid.

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The studies presented in this paper were devoted to optimizing the synthesis conditions of nanoscale  $\text{YPO}_4$  doped with optically active lanthanide ions ( $\text{Eu}^{3+}$ ). In frame of this work the structural, morphological and spectroscopic investigation of the fabricated powders were performed. The materials were synthesized in phosphate ionic liquid as precipitating and morphology controlling agent of the resulting powders. Influence of the synthesis conditions such as: pH of the solution and its quantitative composition, temperature and time of the synthesis, and the post-fabrication heat-treatment temperature – on the phosphors optical properties and morphology of the particles was investigated. The achieved results showed the significant role of the IL (ionic liquid) in the synthesis procedure, in consequence leading to obtained pure luminescent materials with very good optical properties as long decay time and high quantum efficiency.

### Słowa kluczowe

nanoparticles, orthophosphates, ionic liquids

### Adres publiczny

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