

Temperature dependent morphology variation of red emitting microcrystalline $\text{YPO}_4:\text{Eu}^{3+}$ fabricated by hydrothermal method.

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Phosphor materials based on the orthophosphates have been widely investigated in the past as crystals, bulk, or nanomaterials. These non-hydroscopic matrices are able to accommodate high concentrations of lanthanide ions without suffering of concentration quenching of the luminescence. One of the most important issue, which is necessary to overcome to use these materials as a phosphors it is to find a synthesis route giving a control over the products morphology, what allows to manage their spectroscopic properties.

The investigated $\text{YPO}_4:\text{Eu}^{3+}$ samples doped with 5 mol % of optically active ions were prepared by the classic hydrothermal method. By changing the temperature of the synthesis it is possible to control the shape and the size of the particles. Based on the results obtained from the electron microscopy studies (TEM and SEM) the morphology of the obtained materials has been correlated with their optical properties such as decay times or emission quantum yields.

Słowa kluczowe

orthophosphates, Morphology control, Eu^{3+} ions, Red luminescence, Hydrothermal method

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