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Structural and Optical Properties of Ce3+ Doped YPO4: Nanophosphors Synthesis by Sol Gel Method

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Abstract : Recently, nanomaterials are developed in the form of nano-films, nano-crystals and nano-pores. Lanthanide phosphates as a material find extensive application as laser, ceramic, sensor, phosphor, and also in optoelectronics, medical and biological labels, solar cells and light sources. Among the different kinds of rare-earth orthophosphates, yttrium orthophosphate has been shown to be an efficient host lattice for rare earth activator ions, which have become a research focus because of their important role in the field of light display systems, lasers, and optoelectronic devices. It is in this context that the 4fn- « 4fn-1 5d transitions of rare earth in insulating materials, lying in the UV and VUV, are the aim of large number of studies .Though there has been a few reports on Eu3+, Nd3+, Pr3+,Er3+, Ce3+, Tm3+ doped YPO4. The 4fn- « 4fn-1 5d transitions of the rare earth dependent to the host-matrix, several matrices ions were used to study these transitions, in this work we are suggesting to study on a very specific class of inorganic material that are orthophosphate doped with rare earth ions. This study focused on the effect of Ce3+ concentration on the structural and optical properties of Ce3+ doped YPO4 yttrium orthophosphate with powder form prepared by the Sol Gel method.

Keywords : YPO4, Ce3+, 4fn- <->4fn-1 5d transitions, scintillator
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