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# Luminescence and Scintillation properties of Ce-doped GdBO3 nanophosphor synthesized by aqueous sol-gel method

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GdBO3:Ce3+ emitting phosphors as nanopowders were prepared using aqueous sol-gel method. The photoluminescence (PL) and scintillation properties were analyzed as function of the pH value of precursor suspension (pH=2, 5 and 8) and the nominal Ce3+ concentration (0.5%mol) at different annealing temperatures (600, 700, 800, 900, 1000, 1100 and 1200) ℃. The crystal structures of the prepared materials were cheeked using several techniques such as: XRD, IR. All the samples of GdBO3:Ce3+ present pure phases which crystallize in the vaterite form. The higher PL, corresponding to the 5d-4f transition of Ce3+, as well as the scintillation light yield is obtained for the sample containing Ce3+ 0.5 mol.% prepared at pH=8 annealed at 800℃ during 4 h. The scintillation yield has been deduced under X-ray excitation by comparison with the standard x-ray phosphor Gd2O2S:Tb3+ or Eu3+ (Gadox). These results, including scintillation decay and afterglow will be discussed as a function of the synthesis parameters.

## Has accepted

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