



## Enhanced photoluminescence of $Tb^{3+}$ co-doped $La_2O_3:Bi^{3+}$ nanophosphors material using ethylene glycol route

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**Abstract:** Mixed color photoluminescence (PL) was observed from  $Bi^{3+}$  and rare earth  $Tb^{3+}$  co-doped  $La_2O_3$  ( $La_2O_3:Bi^{3+}, Tb^{3+}$ ) prepared nanophosphor powder. The phosphor powders were prepared by polyol method using ethylene glycol as capping agent. The phase formation, functional groups identification of as prepared samples and morphological studies were confirmed by XRD, FTIR, scanning electron microscopy (SEM) and transmission electron microscopy (TEM). Colours of PL emissions widely changed from green-orange region to blue on heating  $La_2O_3:Bi^{3+}, Tb^{3+}$  phosphor powders from 700 to 900 °C. The observed emission peaks in PL from phosphor powder materials were assigned to either the broad emission originating from the transition in  $Bi^{3+}$  or the visible emission peaks originating transition from the  $Tb^{3+}$  ions. All emission peaks of PL are plotted using CIE coordinates.

**Keywords:** Polyol method, Lanthanum oxide, Bismuth, Rare earth co-doping, Phosphorous, Photoluminescence.

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