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Photoluminescence and thermoluminescence studies of Dy^{3+}-activated $LaCePO_4$ phosphor

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Results

FTIR spectrum of Dy^{3+} ion (2.5 mol%) doped $LaCePO_4$ sample is presented in Figure S1. This transmittance spectrum can express very strongest peaks at 920 cm^{-1} and 1000 cm^{-1}. The characteristic modes are due to ligand ion stretching or bending vibrations (La – O). The various peaks at 1240 cm^{-1} arise because of the host (Ce-O) and its vibrations with oxygen ions. Also, peak at ~ 1620 cm^{-1} is allotted to the Dy-O doping ion vibration. Altogether, the peaks from the FTIR also confirm the $LaCePO_4:Dy^{3+}$ phosphor formation are presented in Table S1.

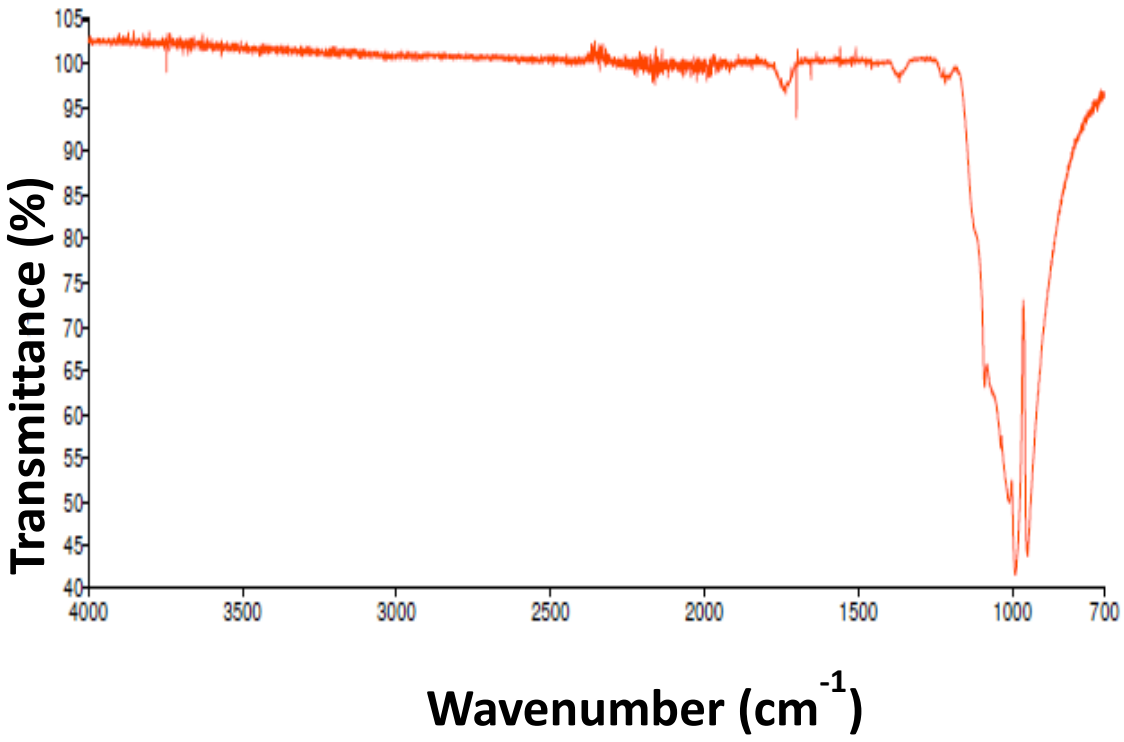

Figure S1. FTIR spectrum of $LaCePO_4:Dy^{3+}$ ion (2.5 mol %) doped phosphor

Table S1. Assigned IR modes for $LaCePO_4:Dy^{3+}$

Experimentally obtained IR mode [cm^{-1}]	Assignation
920	La – O vibration
1000	La – O vibration
1240	Ce – O vibration
1620	Dy - O vibration

Figure S2 shows the UV exposure time versus TL intensity plot. This linear response shows the phosphate based Dy^{3+} doped phosphor may be applicable for TL dosimetry.

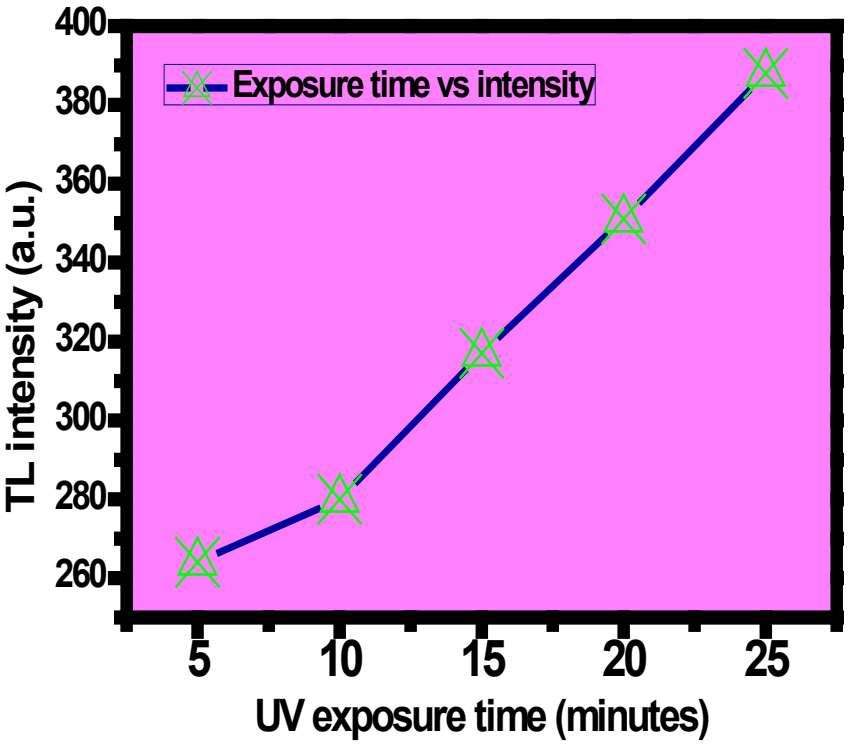

Figure S2. UV exposure time versus TL intensity plot