Supplementary Materials

$BiPO_4$: A better host for doping lanthanide ions

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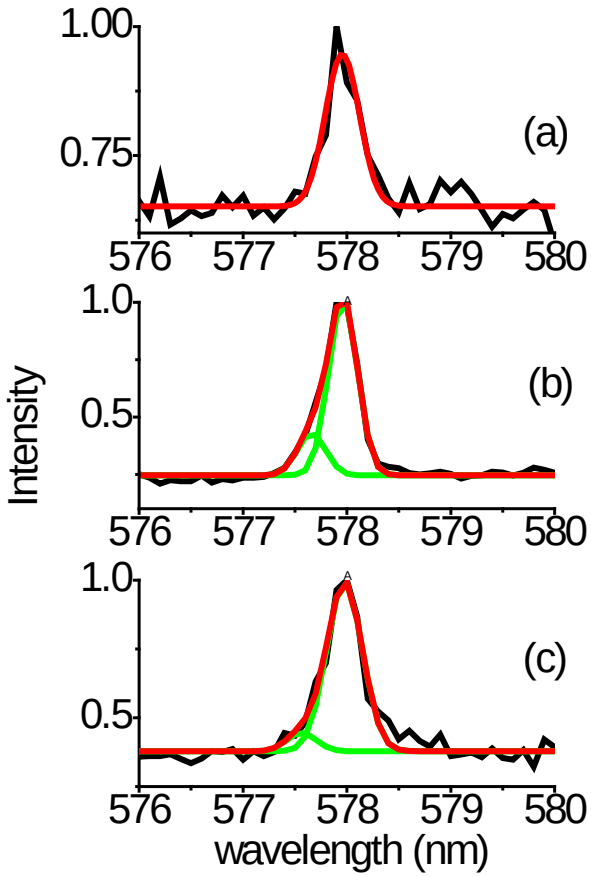

Figure 1. Emission spectrum from $BiPO_4$ samples containing (a) 1 atom % (b) 2.5 atom % and (c) 5 atom % Eu^{3+} ions. Green line represents individual peak, red line represents overall fit and black line represents experimentally observed pattern. The excitation wavelength was 270 nm.

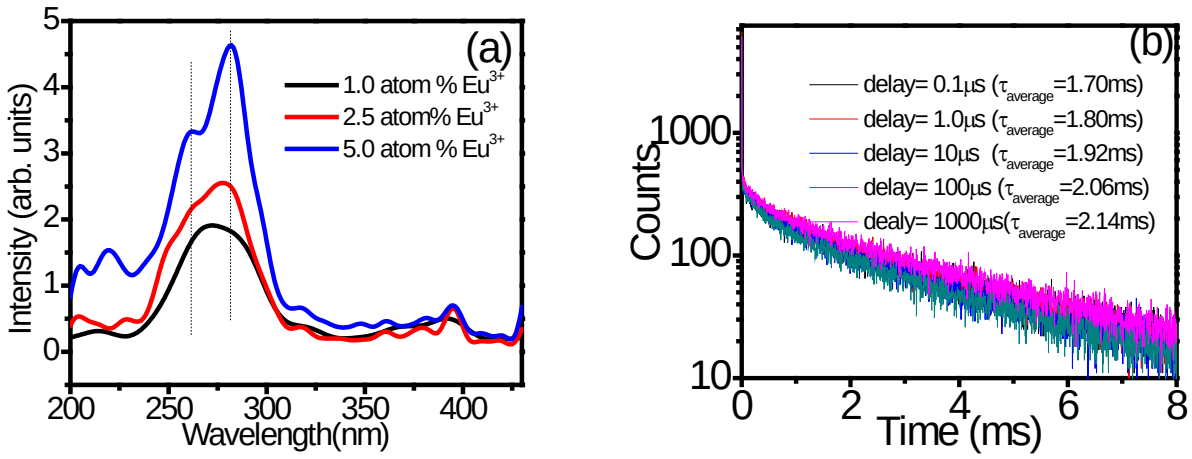

Figure 2. Excitation spectra (a) corresponding to 615 nm emission from $BiPO_4$ samples containing 1, 2.5 and 5 atom % Eu^{3+} ions. The decay curves corresponding to the $^5D_0$ level of Eu^{3+} obtained with different trigger delays for representative 2.5 atom % Eu^{3+} doped $BiPO_4$ sample are shown in Fig. 2(b). The excitation and emission wavelengths are 394 and 615 nm respectively.

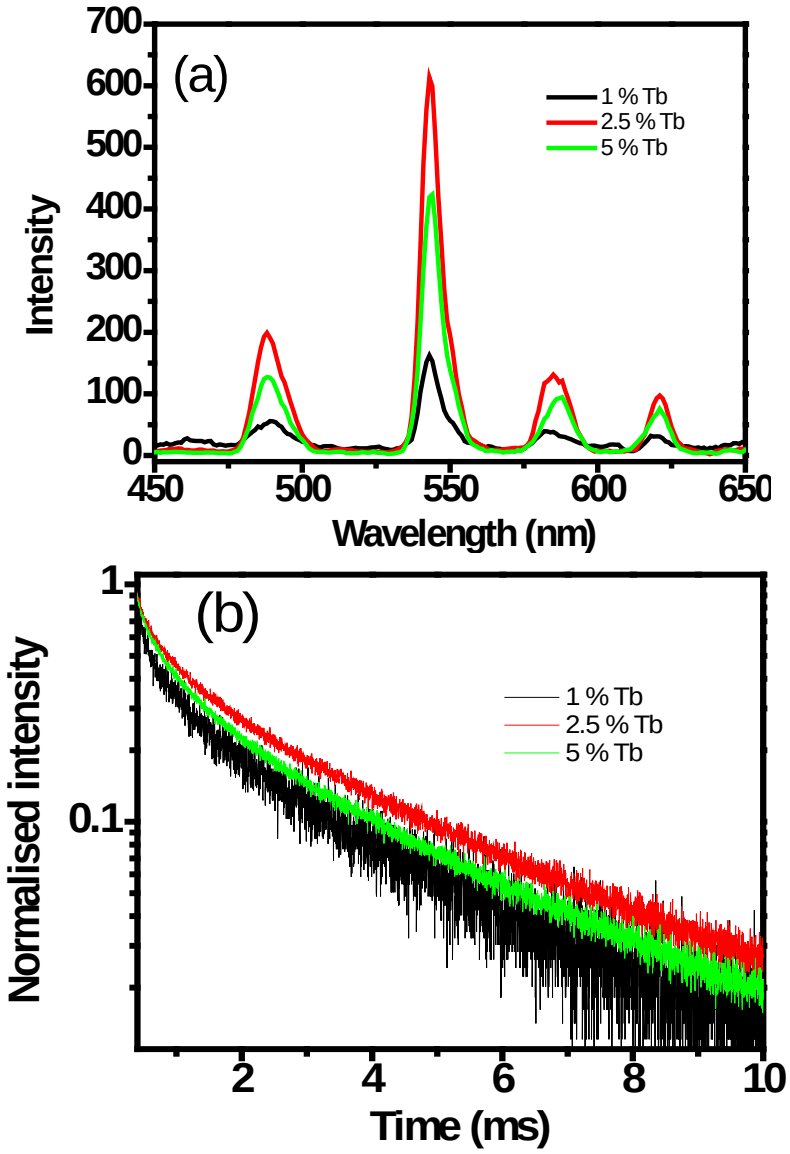

Figure 3. Emission spectra (a) and decay curves corresponding to $^5D_4$ level of Tb^{3+}(b) from monoclinic $BiPO_4$ nano-rods containing 1, 2.5 and 5 atom % Tb^{3+}. The excitation and emission wavelengths are 255 and 545 nm respectively.

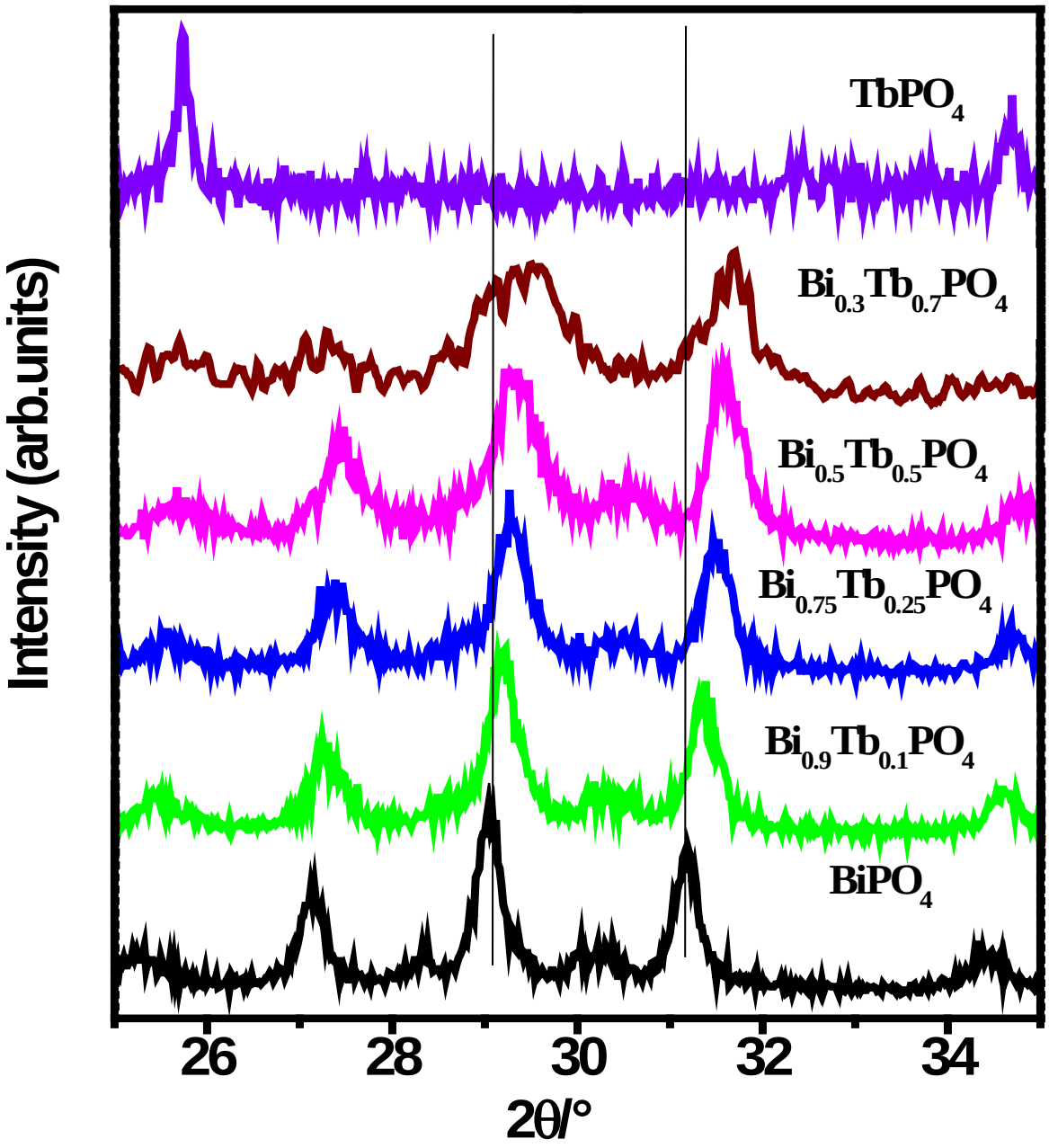

Figure 4. XRD patterns of $Bi_{1-x}Tb_xPO_4$ (x = 0, 0.1, 0.25, 0.5, 0.7 and 1) nanomaterials prepared at 185 °C.

Table 1. Average lifetime values of $^5D_4$ level of Tb^{3+} from monoclinic $BiPO_4$ nanorods doped with different amounts of Tb^{3+} ions.

% of Tb^{3+}	Lifetime values of $^5D_4$ level of Tb^{3+}
	$\tau_{average}$(ms)
1 atom %	1.97
2.5 atom %	2.38
5 atom %	2.13