

Highly sensitive optical temperature sensing based on pump-power-dependent upconversion luminescence in LiZnPO_4 : Yb^{3+} - $\text{Er}^{3+}/\text{Ho}^{3+}$ phosphors.

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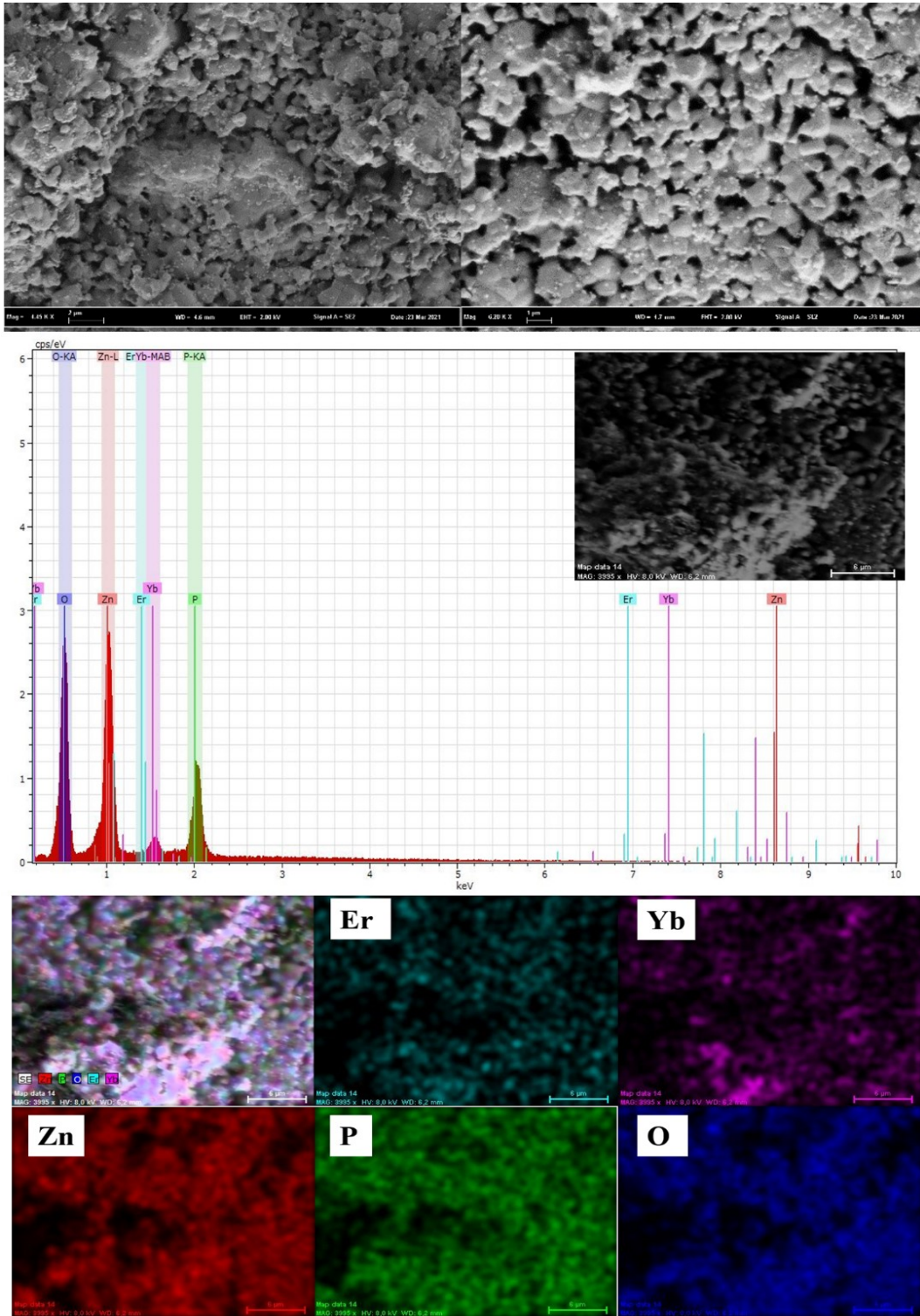


Fig. S1 (a) SEM microscopic morphology image, (b) EDS spectrum, and (c) elemental mapping graphs of LiZnPO_4 co doped $0.5\% \text{Er}^{3+}/5\% \text{Yb}^{3+}$.

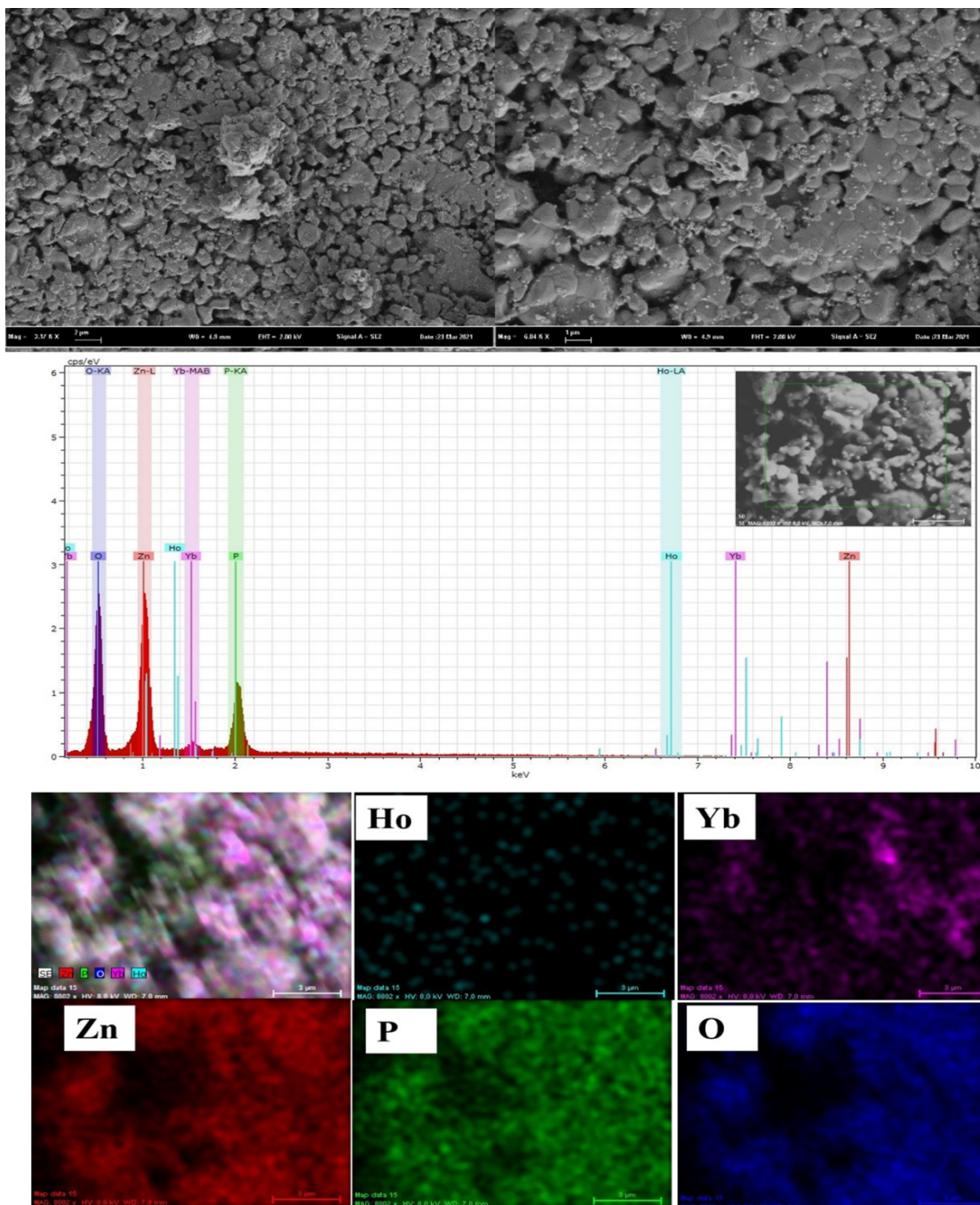


Fig. S2 (a) SEM microscopic morphology image, (b) EDS spectrum, and (c) elemental mapping graphs of LiZnPO_4 co doped $0.5\% \text{Ho}^{3+}/3\% \text{Yb}^{3+}$.

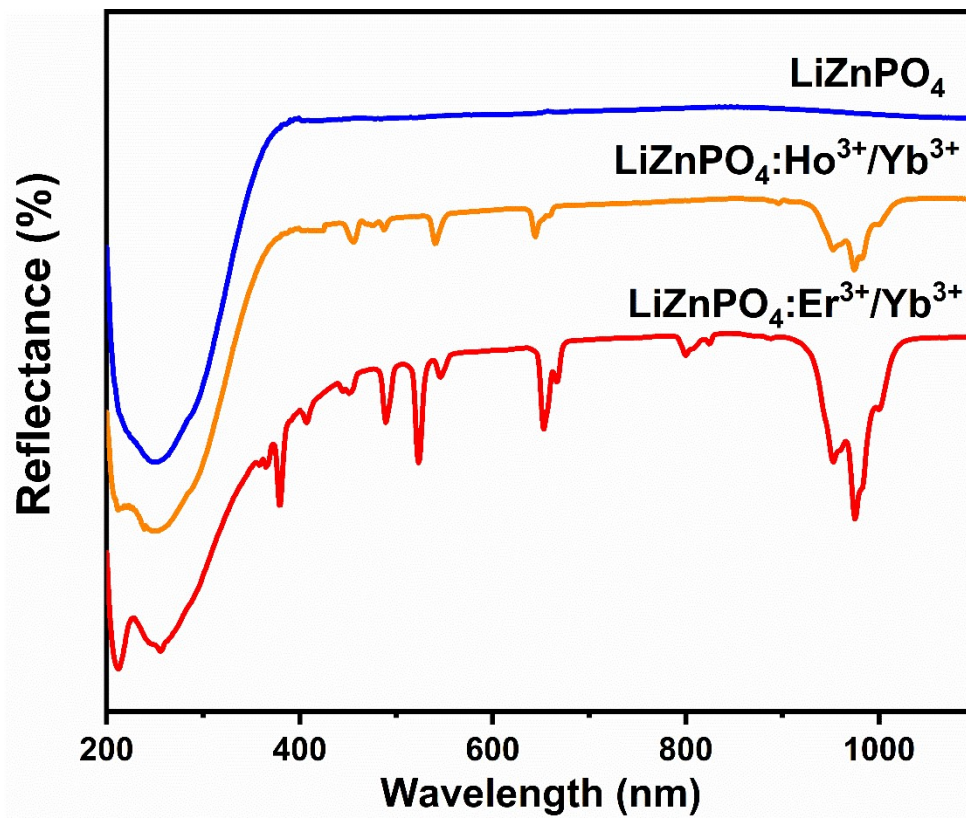


Fig. S3: Diffuse reflectance spectra (DRS) of LiZnPO_4 Er^{3+} , $\text{Ho}^{3+}/\text{Yb}^{3+}$.

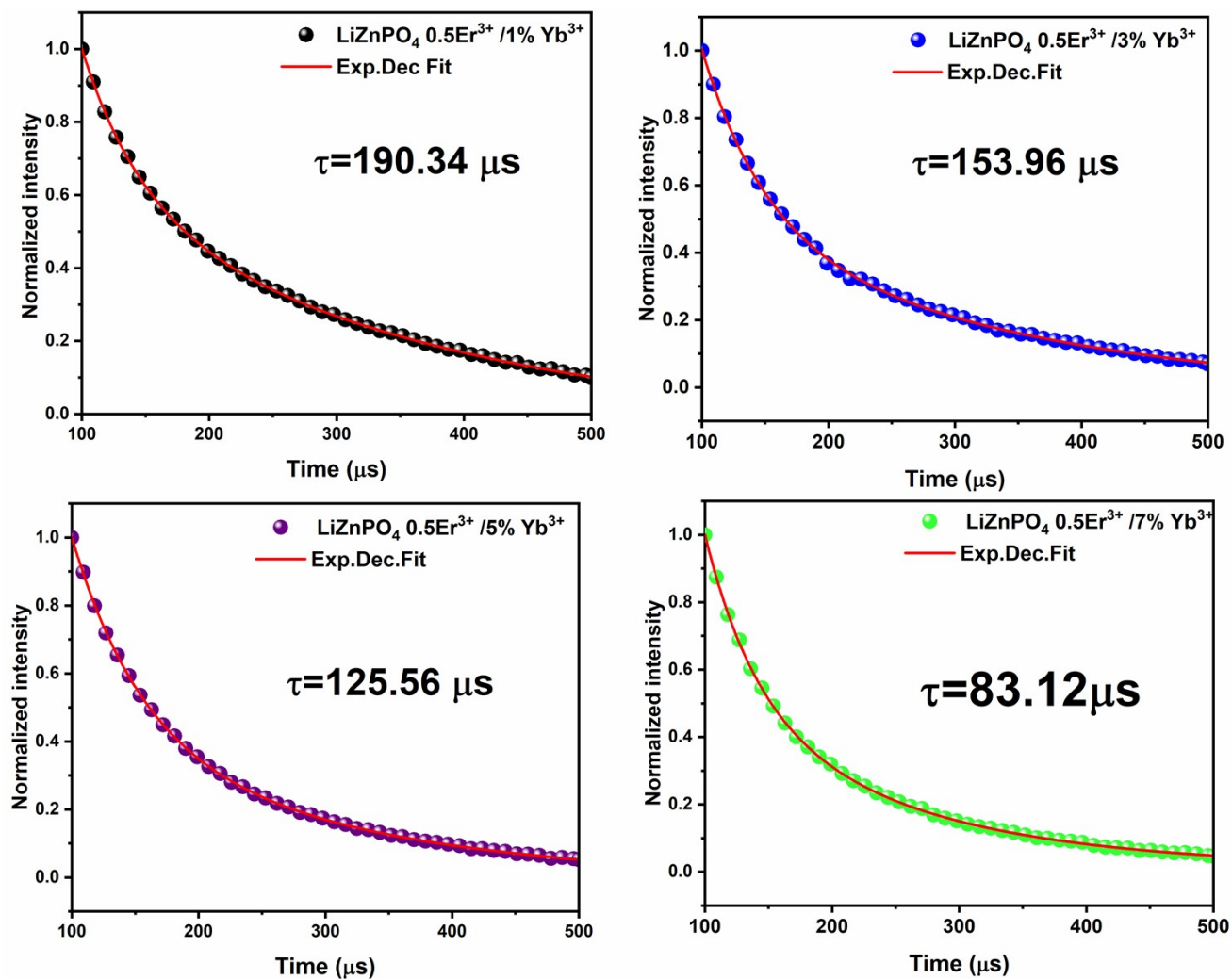


Fig. S4. Decay curves of 521 nm emissions of LiZnPO₄:0.5% Er³⁺/ x% Yb³⁺ (x = 1, 3, 5 and 7) samples ($\lambda_{\text{ex}} = 980$ nm).

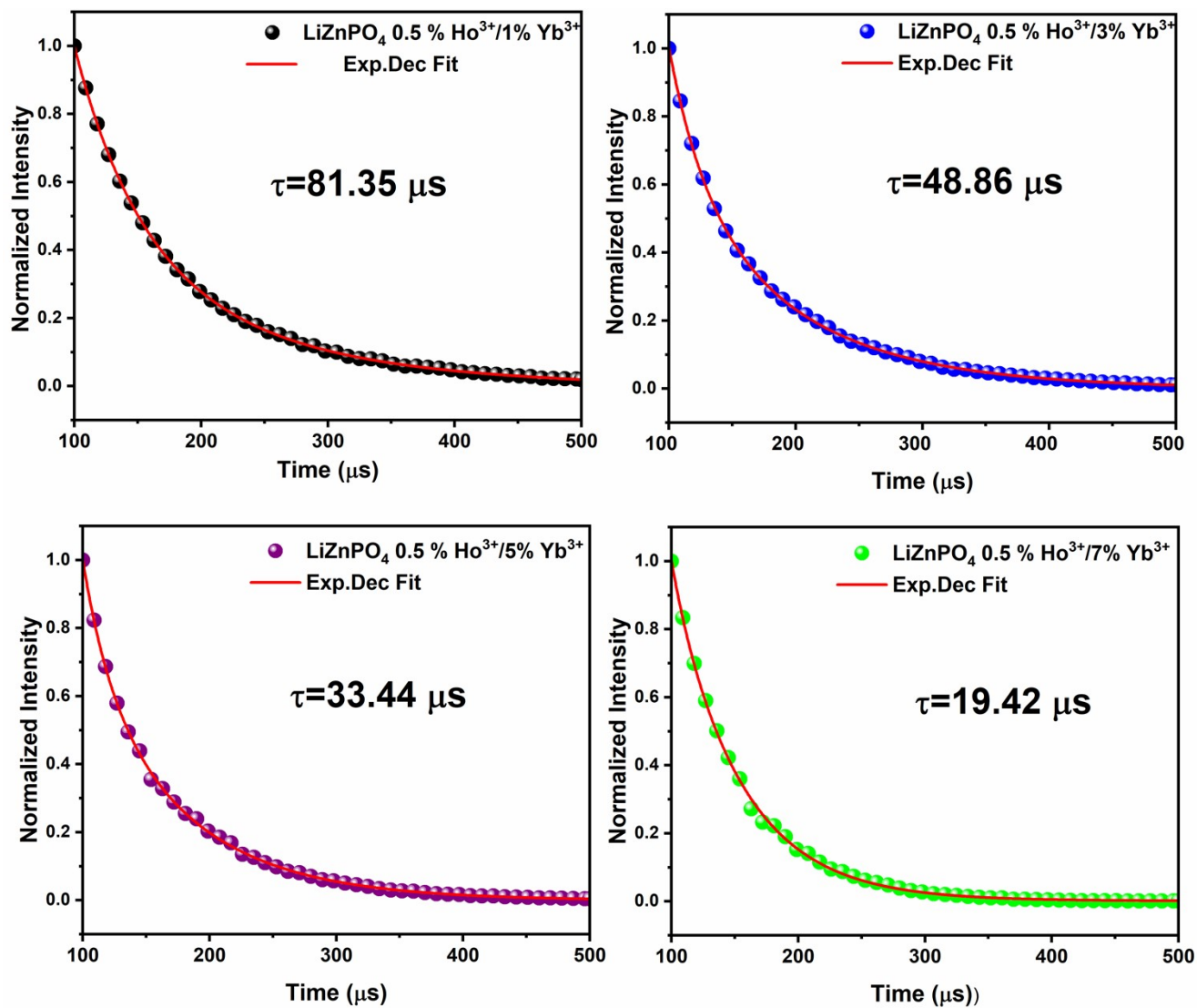


Fig. S5. Decay curves of 670 nm emissions of LiZnPO₄: 0.5% Ho³⁺/ y%Yb³⁺ (y = 1, 3, 5 and 7) samples ($\lambda_{\text{ex}} = 980$ nm).

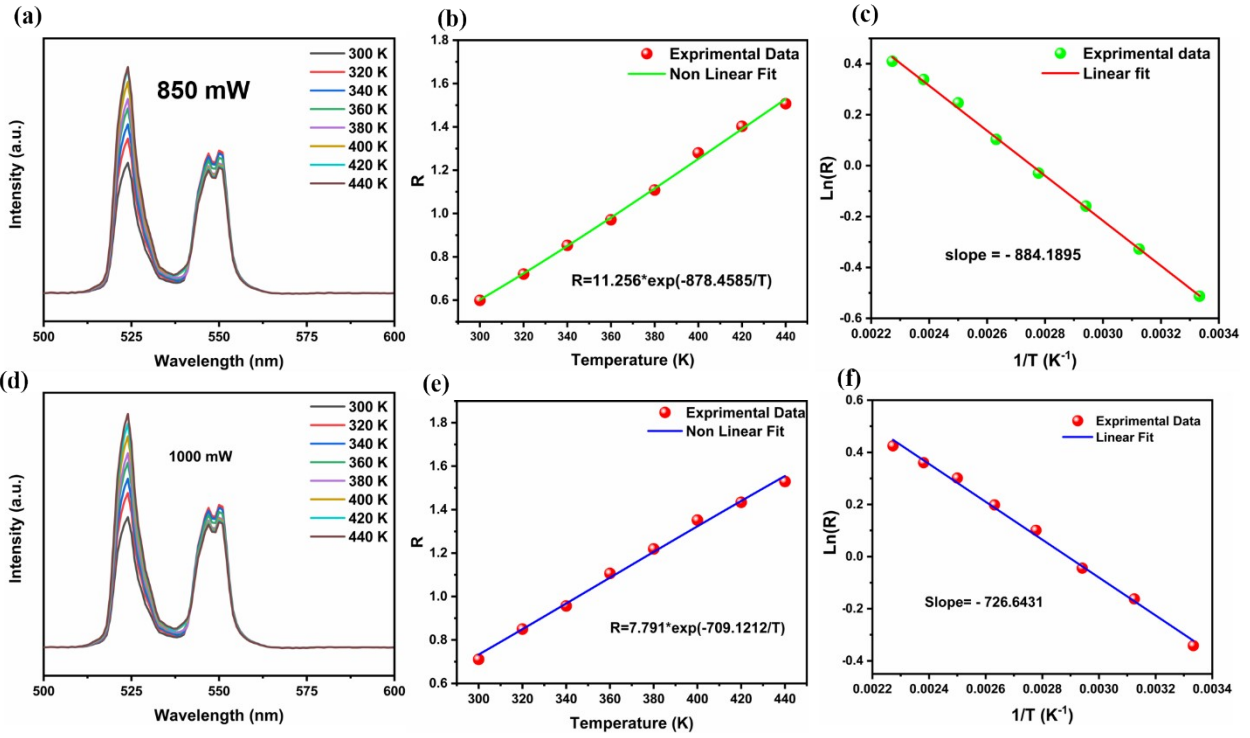


Fig. S6 (a) Uv emission spectra of LiZnPO₄: 5% Yb³⁺, 0.5% Er³⁺ excited under various temperatures, (b-e) dependence of R on absolute temperature. (c-f) dependence of Ln(R)

as a function of 1/T.