

Supporting Information

Up-Conversion Luminescence from Ln^{3+} (Ho^{3+} , Pr^{3+}) Ions Doped BaCl_2 Particles via NIR Light of Sun Excitation

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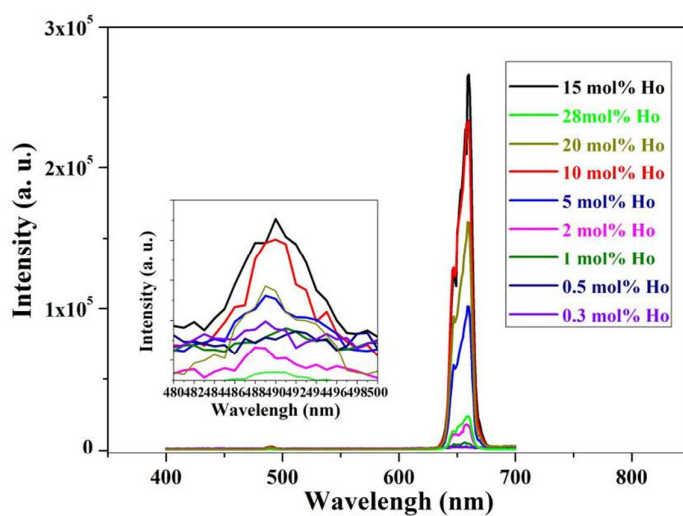


Figure S1: UC emission spectra of $\text{BaCl}_2: \text{Ho}^{3+}$ under excitation by NIR part ($990 \text{ nm} > \text{wavelength } \lambda > 800 \text{ nm}$) of sunlight.

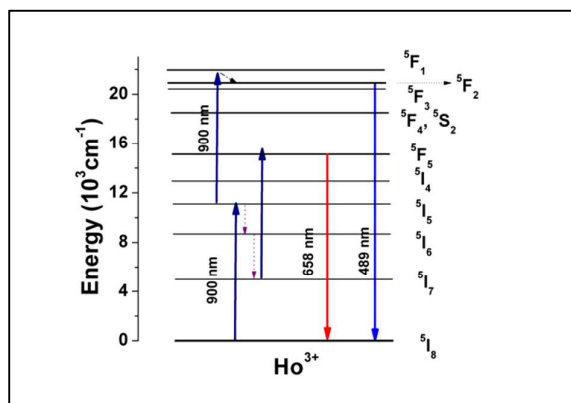


Figure S2: Energy level diagrams of Ho^{3+} ion involving possible UC process under excitation of incoherent NIR($990 \text{ nm} > \text{wavelength } \lambda > 800 \text{ nm}$) from sunlight.

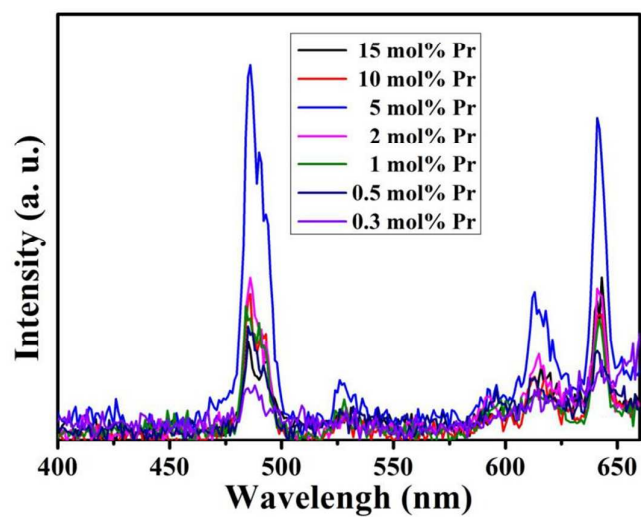


Figure S5: UC emission intensity of $\text{BaCl}_2: \text{Pr}^{3+}$ under excitation of incoherent NIR (wavelength $\lambda > 800 \text{ nm}$) from sunlight.

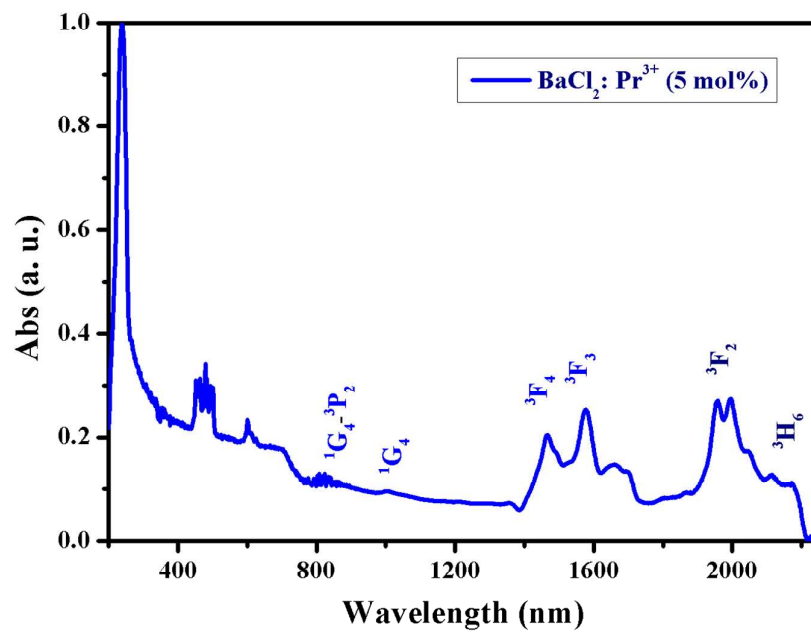


Figure S6: Absorption spectrum of $\text{BaCl}_2: \text{Pr}^{3+}$ phosphor.

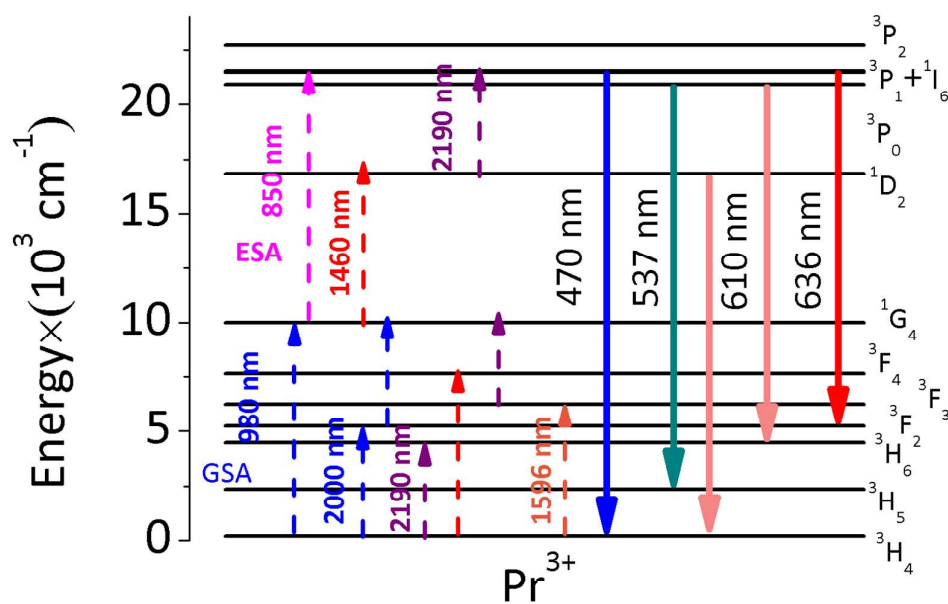


Figure S7: Energy level diagrams of Pr^{3+} ion involving possible UC processes excitation of incoherent

NIR(wavelength $\lambda > 800 \text{ nm}$) from sunlight.

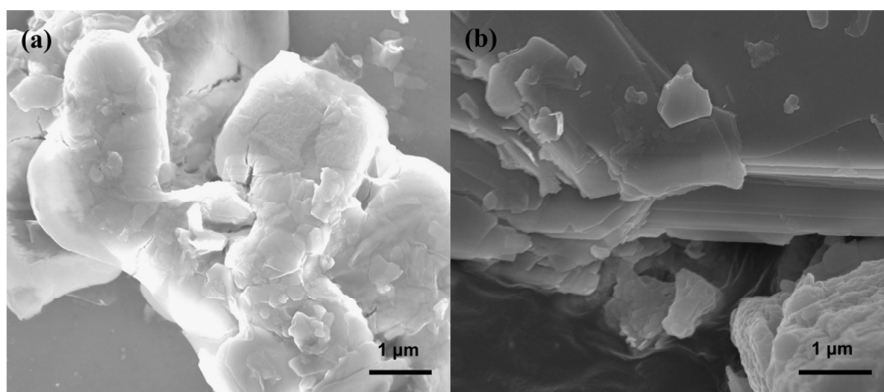


Figure S8: (a) SEM image of $\text{BaCl}_2: 15\%\text{Ho}^{3+}$, (b) SEM image of $\text{BaCl}_2: 5\%\text{Pr}^{3+}$.