

## ELECTRONIC SUPPLEMENTARY INFORMATION

# Hybrid Organic-inorganic Lead Bromide Perovskite Supercrystals Self-Assembled with L-cysteine and Their Highly Luminescent Properties

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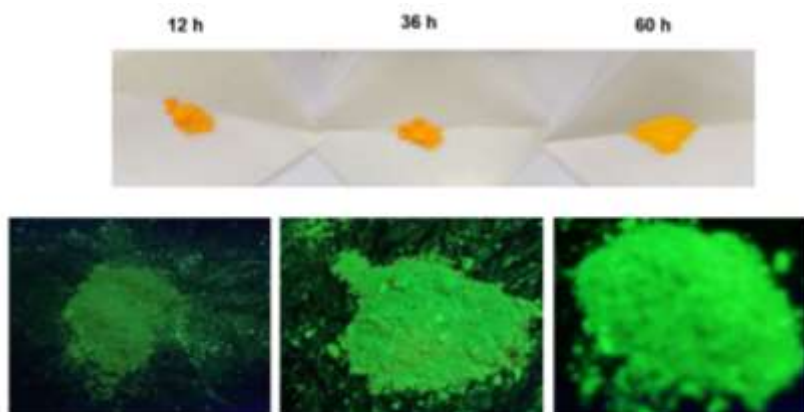
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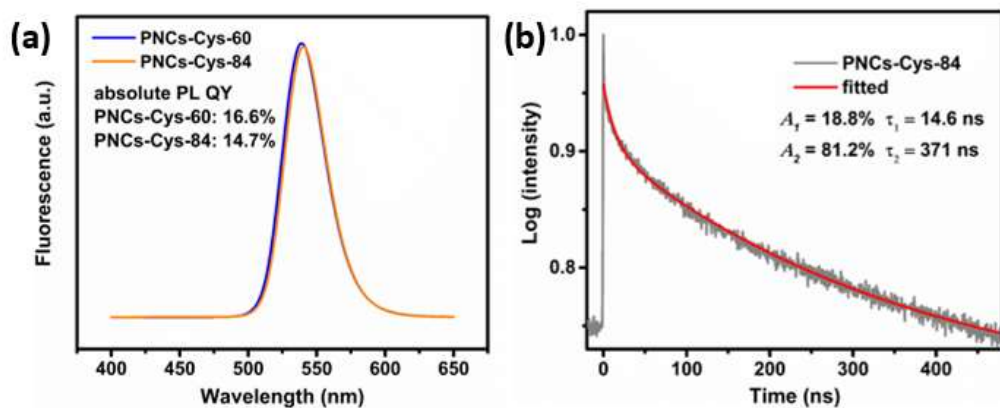
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**Table S1.** Surface elemental stoichiometry for PNCs-Cys and bulk materials.

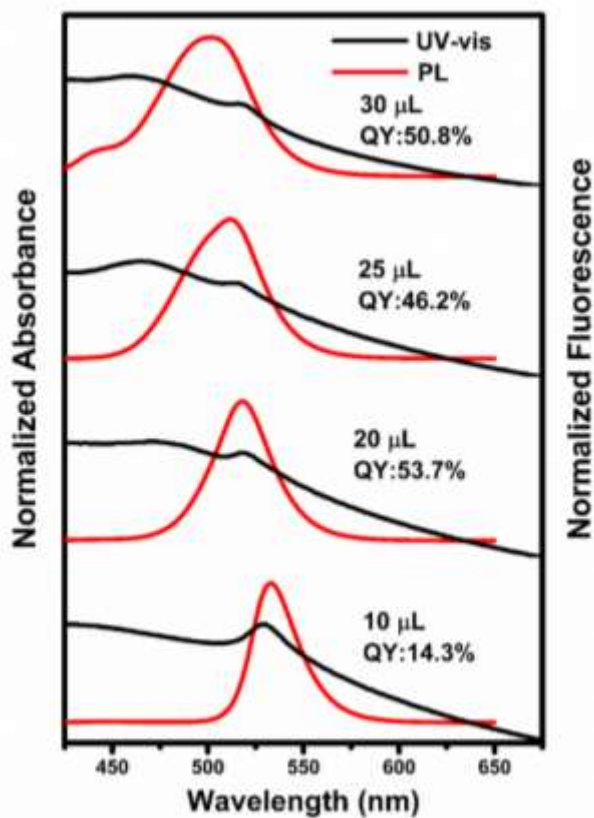
sample	Br:Pb ratio
Bulk	2.9
PNCs-Cys	3.2



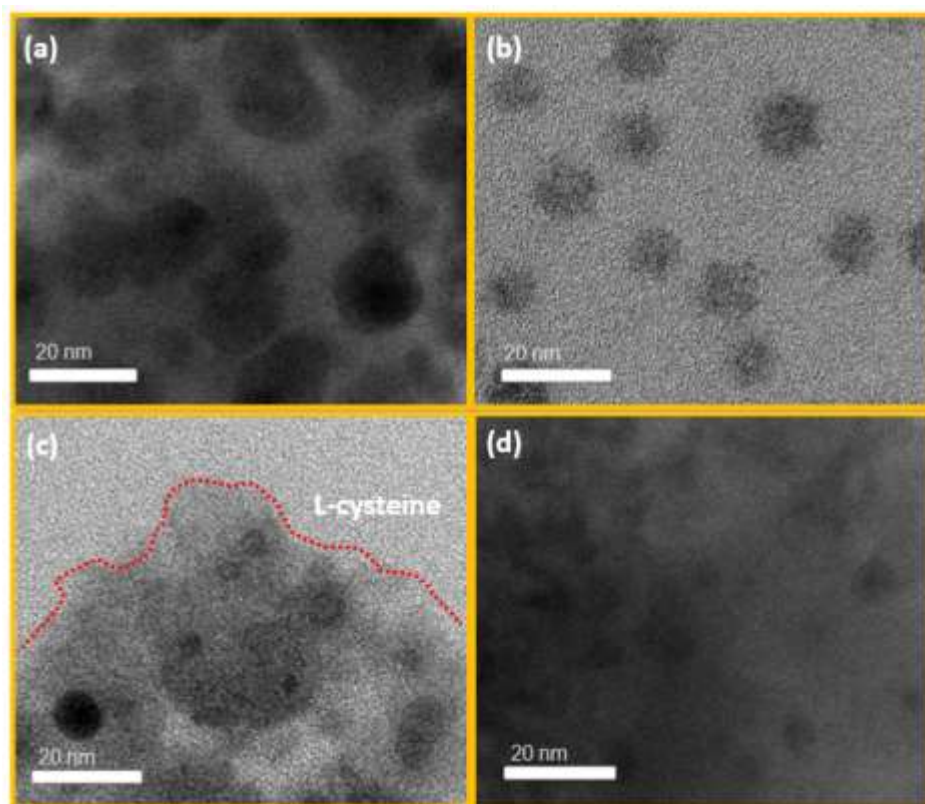
**Figure S1.** Photographs of PNCs-Cys prepared with different aging times under room light and UV light (365 nm) irradiation.



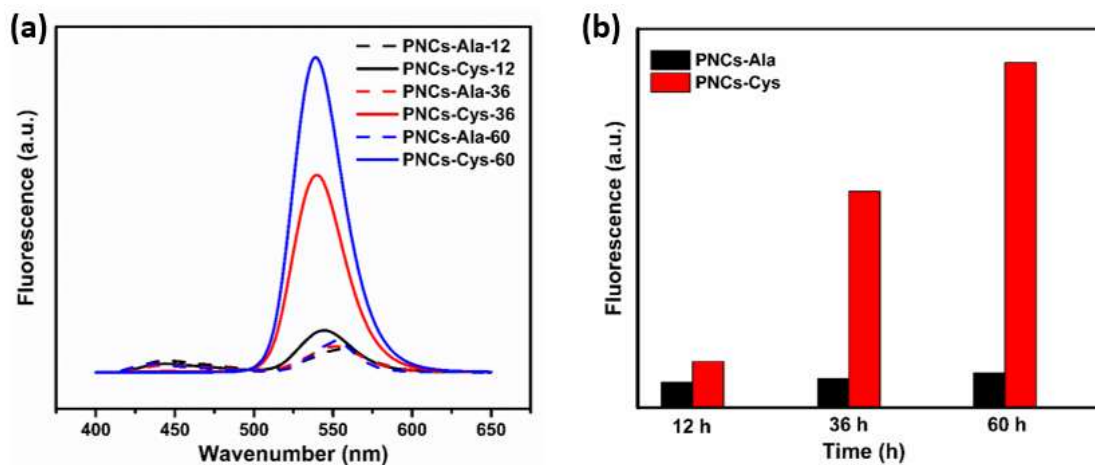
**Figure S2.** (a) PL spectra ( $\lambda_{\text{ex}} = 395$  nm) of PNCs-Cys-60 and PNCs-Cys-84, (b) the TRPL spectra of PNCs-Cys-84 displayed on a logarithmic intensity scale ( $\lambda_{\text{ex}} = 395$  nm).



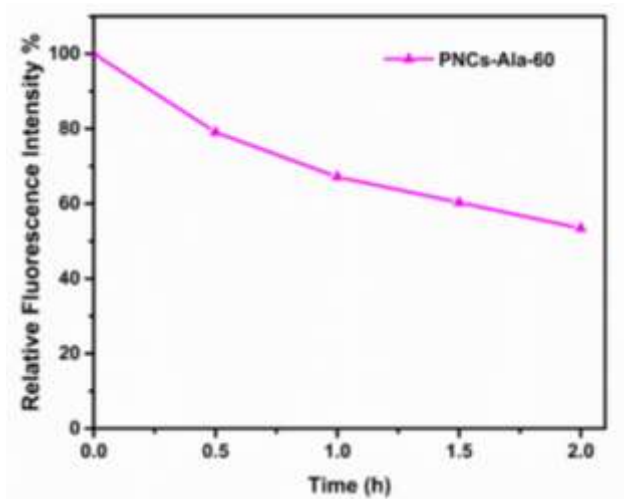
**Figure S3.** UV-Vis (black line) and PL (red line) spectra ( $\lambda_{\text{ex}} = 395$  nm) of PNCs-Cys-60 prepared with different contents of L-Cys capping ligands in toluene.



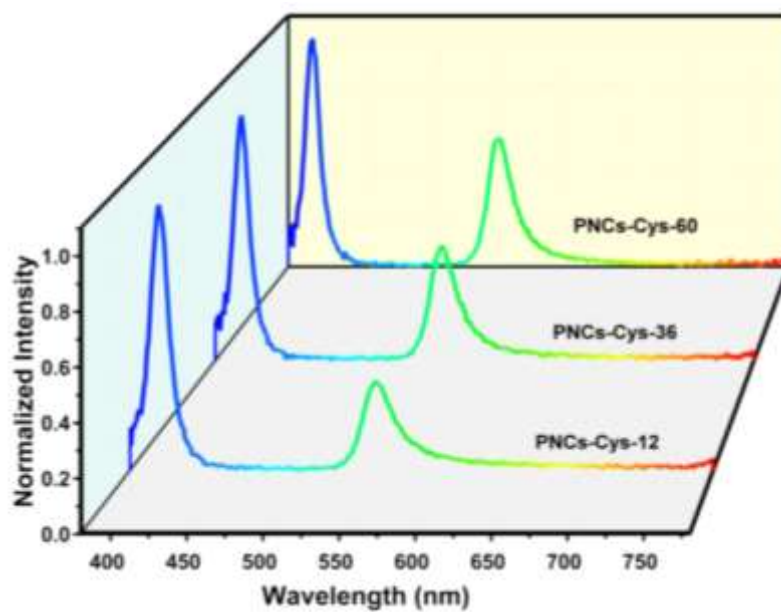
**Figure S4.** TEM image of PNCs-Cys-60 prepared with (a) 10  $\mu\text{L}$  L-cys, (b) 20  $\mu\text{L}$  L-cys, (c) 25  $\mu\text{L}$  L-cys and (d) 30  $\mu\text{L}$  L-cys. Inset: HRTEM image.



**Figure S5.** (a) PL spectra ( $\lambda_{\text{ex}} = 395 \text{ nm}$ ) of PNCs-Ala and PNCs-Cys, (b) Histogram of PL intensity for PNCs-Ala and PNCs-Cys.



**Figure S6.** The relative fluorescence intensity of 0.50 mg/mL PNCs-Ala-60 concentration on time in ethanol.



**Figure S7.** Emission spectra of PeLEDs based on aging time dependent PNCs-Cys.