

Electronic Supplementary Information (ESI)[†]

Highly Luminescent Biocompatible CsPbBr₃@SiO₂ Core–Shell Nanoprobes for Bioimaging and Drug Delivery

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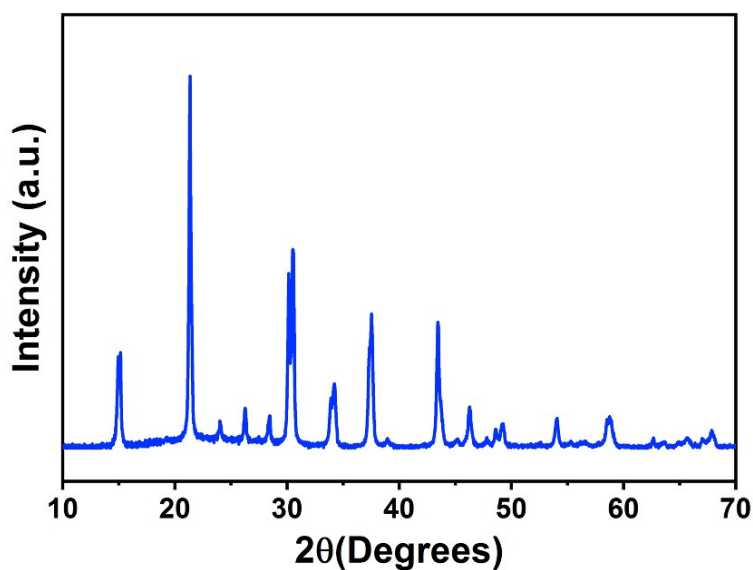


Fig. S1 XRD Pattern of CsPbBr₃@SiO₂ core–shell PNCs.

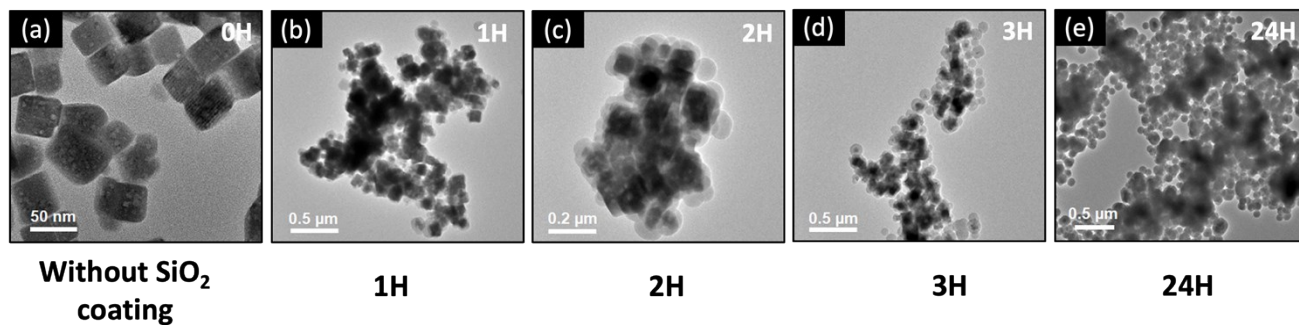


Fig. S2 TEM images of CsPbBr₃ PNCs (a) and CsPbBr₃@SiO₂ core-shell PNCs (b-e) at various reaction times 1, 2, 3, and 24 h, respectively

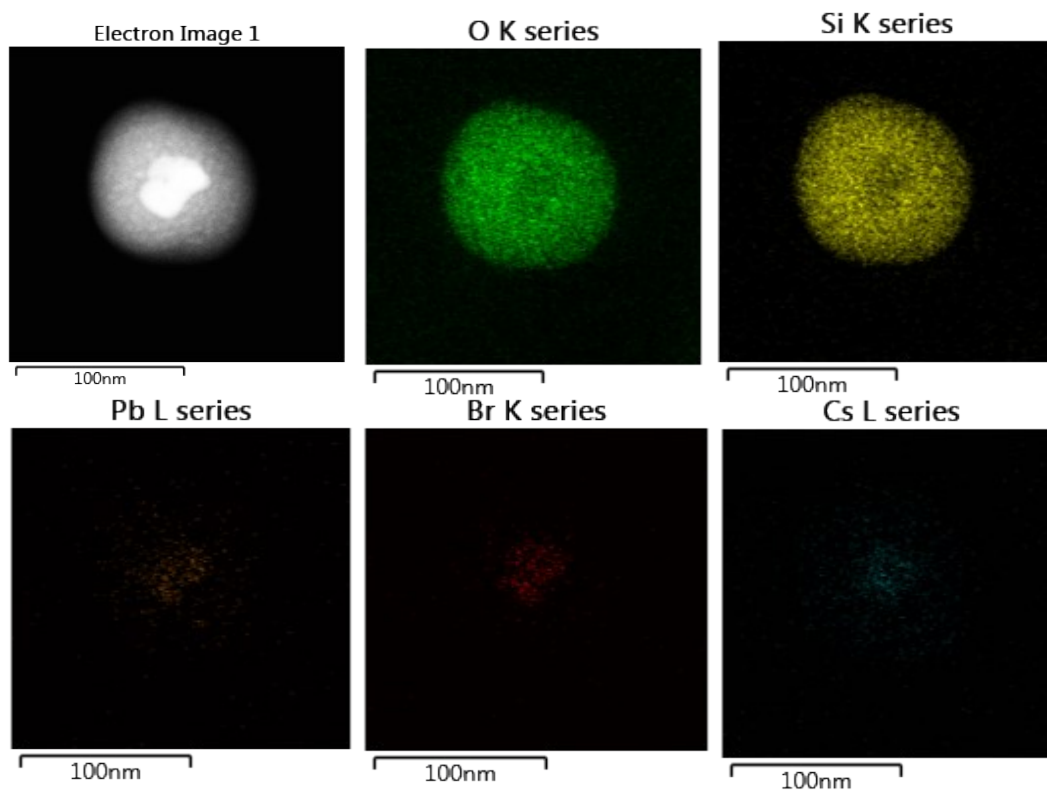


Fig. S3 The EDS mapping of CsPbBr₃@SiO₂ core-shell PNCs.

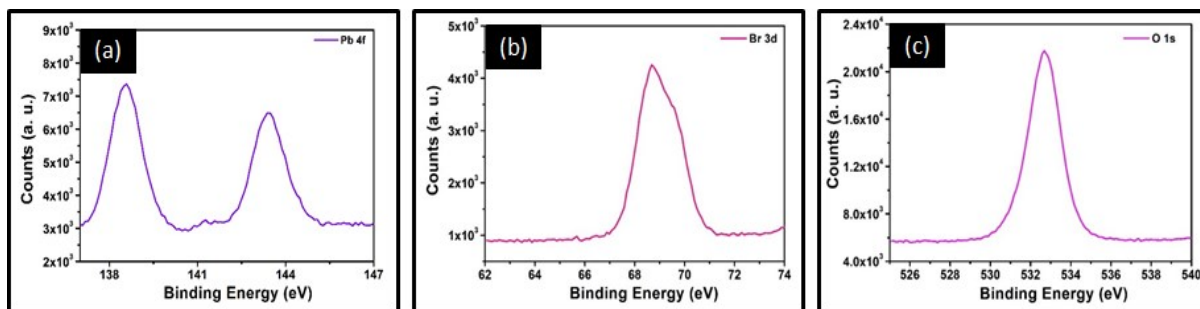


Fig. S4 X-ray photoelectron spectra of (a) Pb4f, (b) Br3d, and (c) O1s.

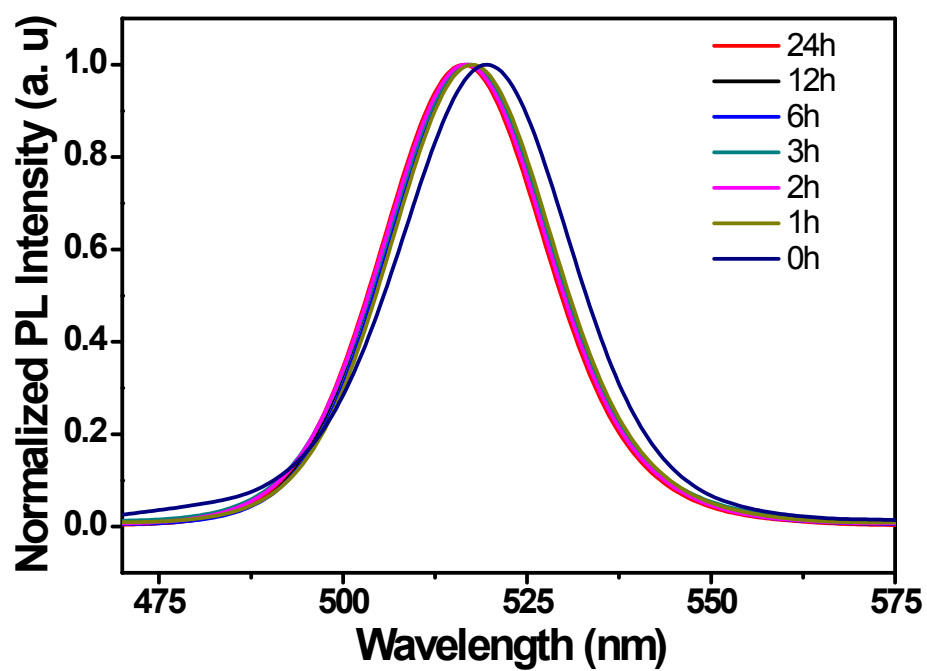


Fig. S5 Normalized photoluminescence emission spectra of CsPbBr₃@SiO₂ core-shell PNCs synthesized at different reaction such as 1, 2, 3, 6, 12, 24 hours.

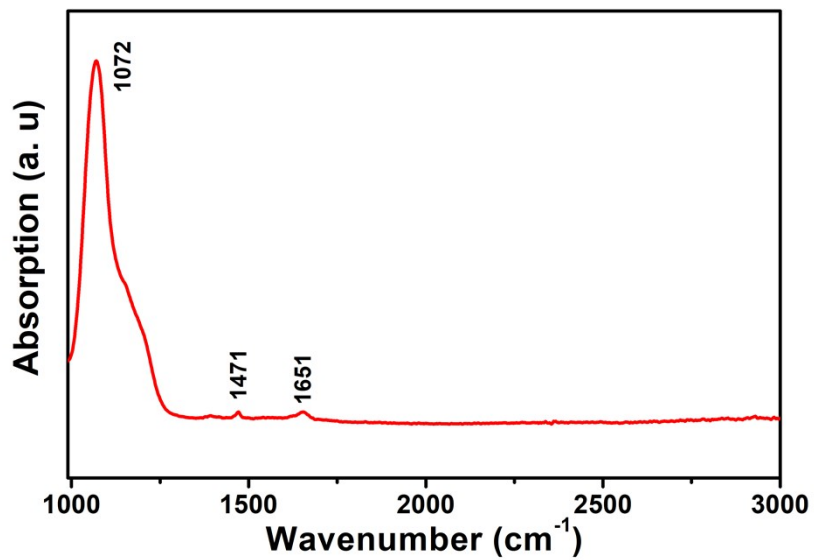


Fig. S6 The FTIR spectrum of CsPbBr₃@SiO₂-24H core-shell PNCs.

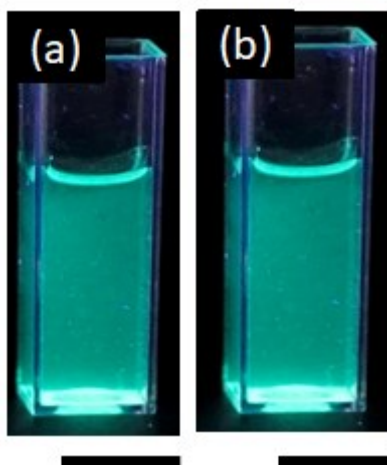


Fig. S7 (a & b) The photograph of CsPbBr₃@SiO₂-24H core-shell PNCs dispersed in water in UV light after 2 and 24 hours, respectively. The scale bars (a) and (b) are 1 cm.

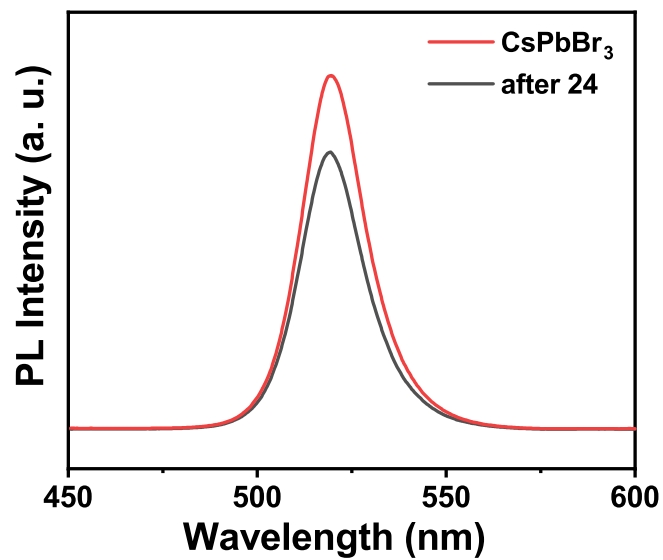


Fig. S8 The PL emission spectra of CsPbBr₃@SiO₂_24H core-shell PNCs dispersed in water after dispersion and 24 hours, respectively.

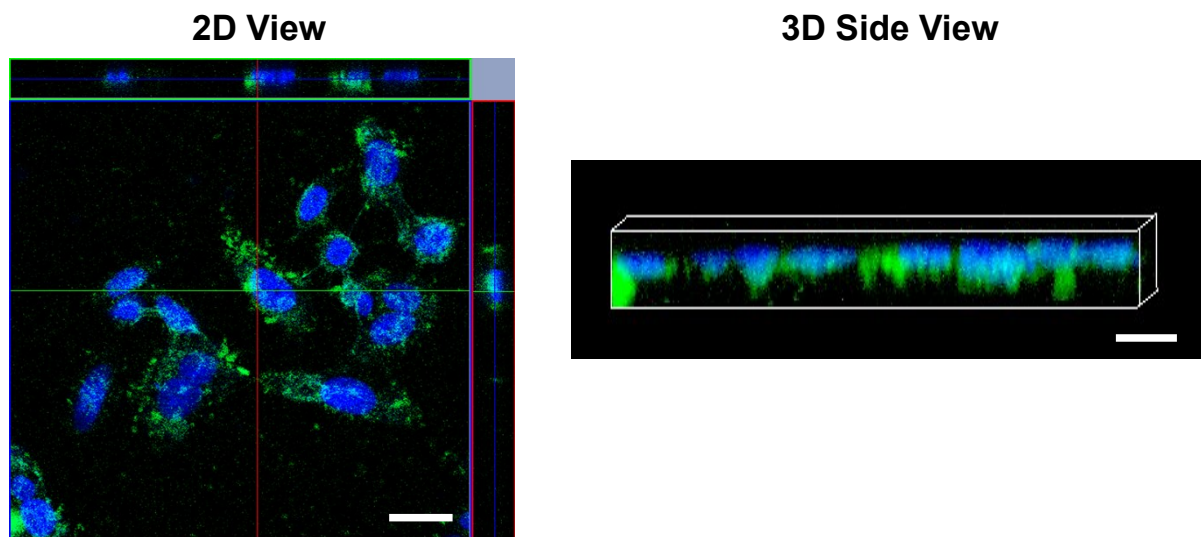


Fig. S9 Z-stack image acquired by confocal microscopy, of HeLa cells. Cell nuclei (DAPI) are shown in blue and nanocrystals in green. Scale bar: 10 μ m.

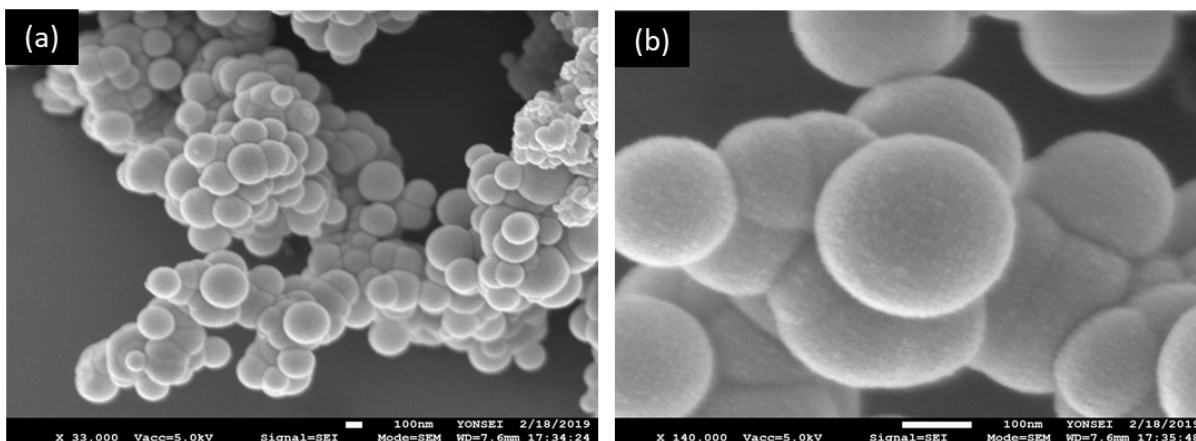


Fig. S10 (a) and (b) the SEM and high resolution images of CsPbBr₃@SiO₂_24H nanocrystals.

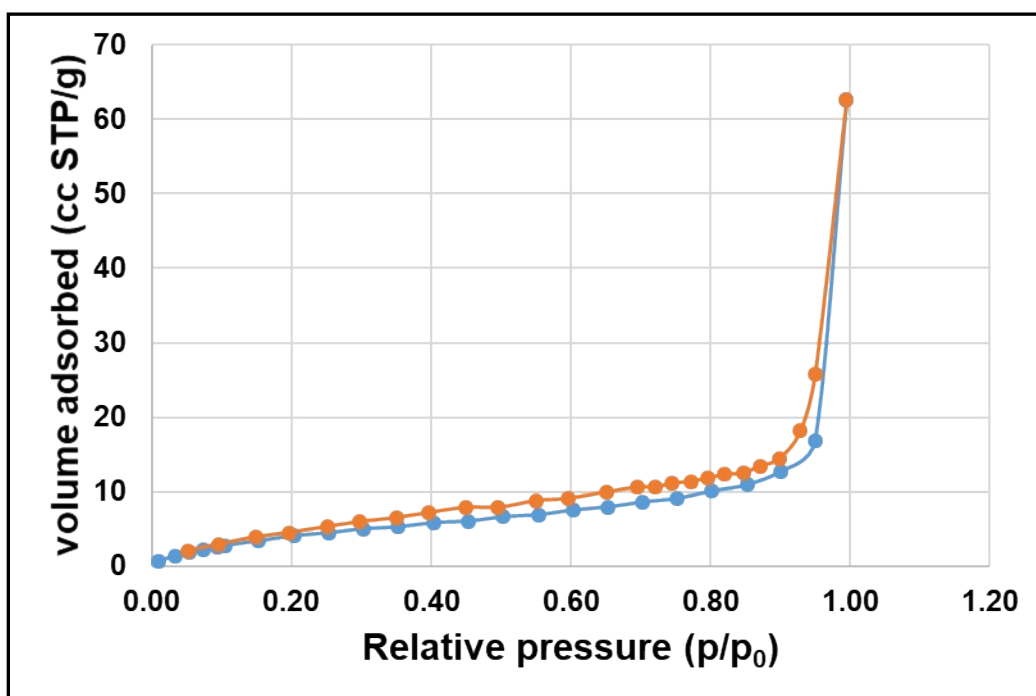


Fig. S11 Adsorption-desorption isotherm of CsPbBr₃@SiO₂_24H core shell PNCs.

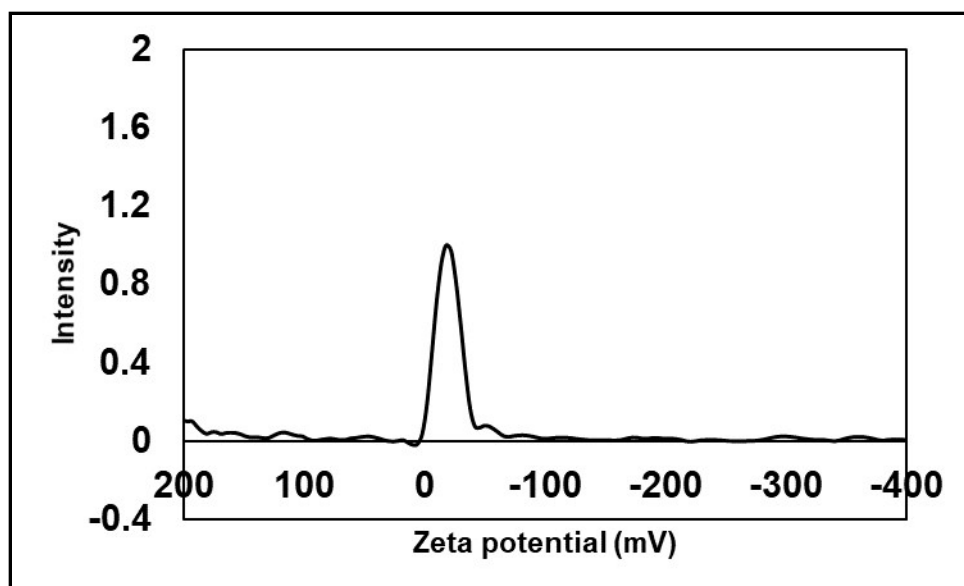


Fig. S12 Zeta (ζ)-potential of CsPbBr₃@SiO₂_24H core shell PNCs.

Sample	BET surface area (m ² g)	Pore diameter (nm)	Pore volume (cc/g)
CsPbBr ₃ @SiO ₂	14.259	3.043	0.094

Tab. S1 Parameters obtained for of CsPbBr₃@SiO₂_24H core shell PNCs from BET.

Matrix	Structure	Emission (nm)	Excitation (nm)	Bio-medical application	Ref.
CdS:Cu	Nanoparticle	565	405	bio-imaging	1
NaYF ₄ :Yb,Tm@SiO ₂ -PEG	Core-shell	365	980 nm	Drug delivery	2
Carbon dots	Quantum dots	410 to 504	280 to 460	bio-imaging	3
Gold Nanorods/Polypyrrole/m-SiO ₂ (GNRs/PPy/m-SiO ₂)	Core-shell	--	--	Drug delivery	4
Fe3O4@SiO ₂	Mesoporous Spheres	--	--	Drug delivery	5
CsPbBr ₃ /CsPb2Br ₅	Core-shell	520	365	bio-imaging	6
CsPbBr ₃ @PMMA	Nanospheres	510	365	bio-imaging	7
MoS ₂ /WS ₂	Quantum Dots	463	390	bio-imaging	8
MoS ₂	Quantum Dots	414	243	bio-imaging	9
CsPbX ₃ @MHSs	Micelles	514	365	bio-imaging	10
C-Dots	Quantum Dots	05 to 565	600 to 800	bio-imaging	11
(CsPbBr ₃ @SiO ₂) Our Case	Core-shell	514	374	bio-imaging & Drug delivery	

Tab. S2 Characteristics of PNCs used for bio-medical application.

References

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