Electronic Supplementary Materials

Photo/electro-luminescence Enhancement of $CsPbX_3$ (X = Cl, Br, or I) Perovskite Quantum Dots via Thiocyanate Surface Modification

Zhen Bao^{a+}, Weigao Wang^{b+}, Hsin-Yu Tsai^{a+}, Hung-Chia Wang^a, Shuming Chen*^b, and Ru-Shi Liu*^{acd}

^aDepartment of Chemistry, National Taiwan University, Taipei 106, Taiwan

^bDepartment of Electrical and Electronic Engineering, Southern University of Science and Technology, Shenzhen 518055, China

- ^cAdvanced Research Center of Green Materials Science and Technology, National Taiwan University, Taipei 106, Taiwan
- ^dDepartment of Mechanical Engineering and Graduate Institute of Manufacturing Technology, National Taipei University of Technology, Taipei 106, Taiwan

Figures and tables



Fig. S1. Elemental composition and atomic ratios of $CsPbBr_3$ and $CsPbBr_3$ -SCN green PQDs as determined by EDS.

Nominal formula	Wavelength (nm)	FWHM (nm)	FWHM (cm ⁻¹)	Absolute QY (%)
CsPb(Br _{0.4} I _{0.6}) ₃	633	33	708	32
$CsPb(Br_{0.4}I_{0.6})_3$ -SCN	633	33	713	46
CsPbBr ₃	514	20	723	45
CsPbBr₃–SCN	514	19	717	56
$CsPb(Br_{0.5}Cl_{0.5})_3$	455	18	858	8
CsPb(Br _{0.5} Cl _{0.5}) ₃ –SCN	456	18	857	10

Table S1 Summary of the optical performance of the as-synthesized and SCN⁻-modified CsPbX₃ (X = Cl, Br, I, or their mixture) PQDs.



Fig. S2. Summary of the PLQY of the as-synthesized and SCN⁻-modified CsPbX₃ (X = Cl, Br, I, or their mixture) perovskite quantum dots.



Fig. S3. TEM images of the as-synthesized (a) CsPbBr₃ and (b) CsPbBr₃-SCN green PQDs and acetone-washed CsPbBr₃ and CsPbBr₃-SCN green PQDs.



Fig. S4. (a) Structure and (b) energy level alignment of the QLEDs fabricated in this research.



Fig. S5. Current density–voltage curves of the QLEDs fabricated from $CsPbBr_3$ and $CsPbBr_3$ -SCN green PQDs.