Electronic Supplementary Information

Zinc-Methacrylate Passivation Enables Efficient and Stable Perovskite Nanocrystals-Polymer Composite for LED Application

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Characterization

1. TEM images of pristine and modified PNCs.

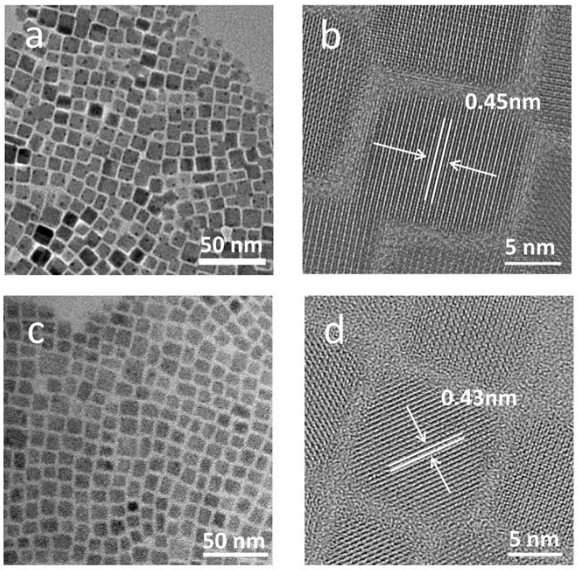

Fig. S1 TEM image (a) and HRTEM image (b) of ZnMA-TOPO modified PNCs. TEM image (c) and HRTEM image (d) of pristine PNCs.

2. Transmittance of the pristine and modified PNCs.

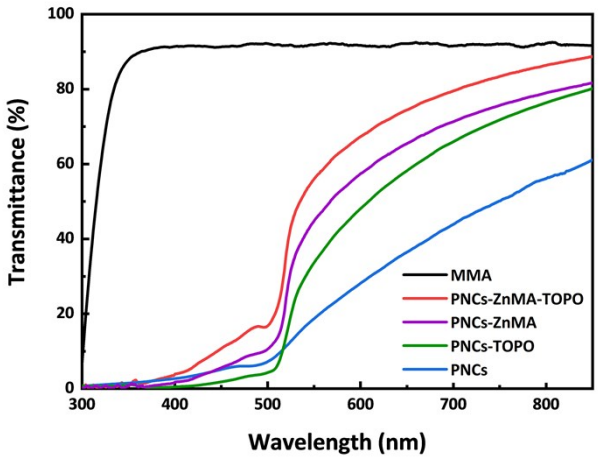

Fig. S2 Transmittances of the solution of MMA, PNCs-ZnMA-TOPO, PNCs-ZnMA, PNCs-TOPO and PNCs.

3. **Photos of pristine PNCs, PNCs-ZnMA-TOPO, PNCs-ZnMA and PNCs-TOPO after injection of ethanol.**

Fig. S3 Photos of the PNCs, PNCs-ZnMA-TOPO, PNCs-ZnMA and IPNCs-TOPO at (a) initial state, (b) after injection of ethanol and (c) stirring for 60 mins under room light (left) and UV-lamp (right).

4. PL spectra of pristine PNCs, PNCs-ZnMA-TOPO, PNCs-ZnMA and PNCs-TOPO after injection of ethanol.

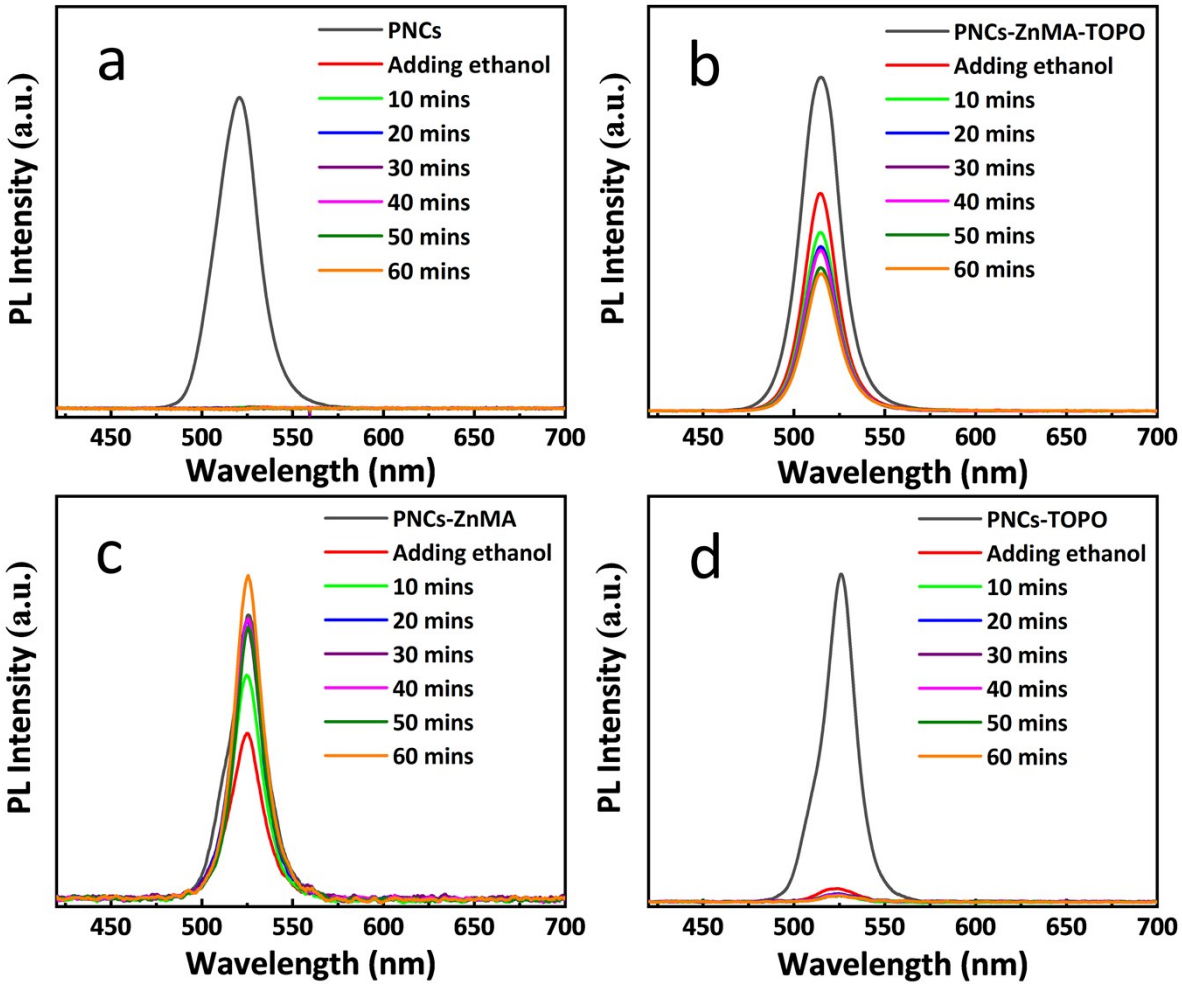

Fig. S4 PL spectra of the (a) PNCs, (b) PNCs-ZnMA-TOPO, (c) PNCs-ZnMA, (d) IPNCs-TOPO at initial state, after injection of ethanol and stirring for 60 mins. The initial PL spectra of the samples have been normalized.

5. FIIR spectra of PNCs and PNCs-ZnMA-TOPO after exposure to ethanol.

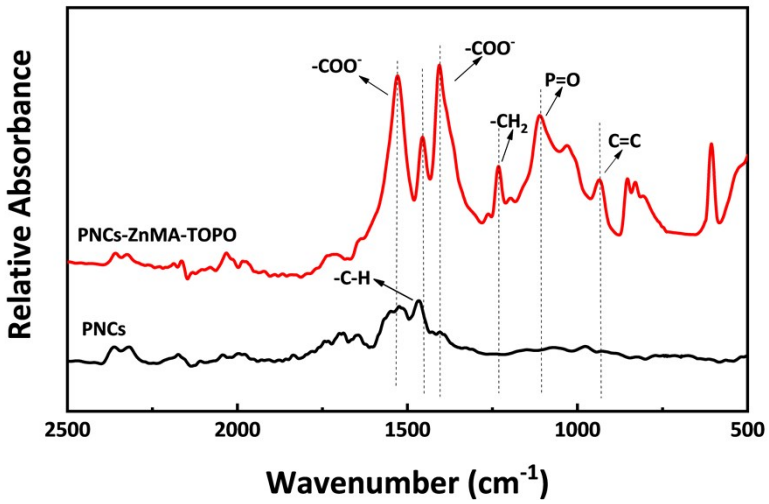

Fig. S5 FIIR spectra of PNCs and PNCs-ZnMA-TOPO after exposure to ethanol.

6. PL spectra of the PNCs-ZnMA-TOPO after injection of different alcohols.

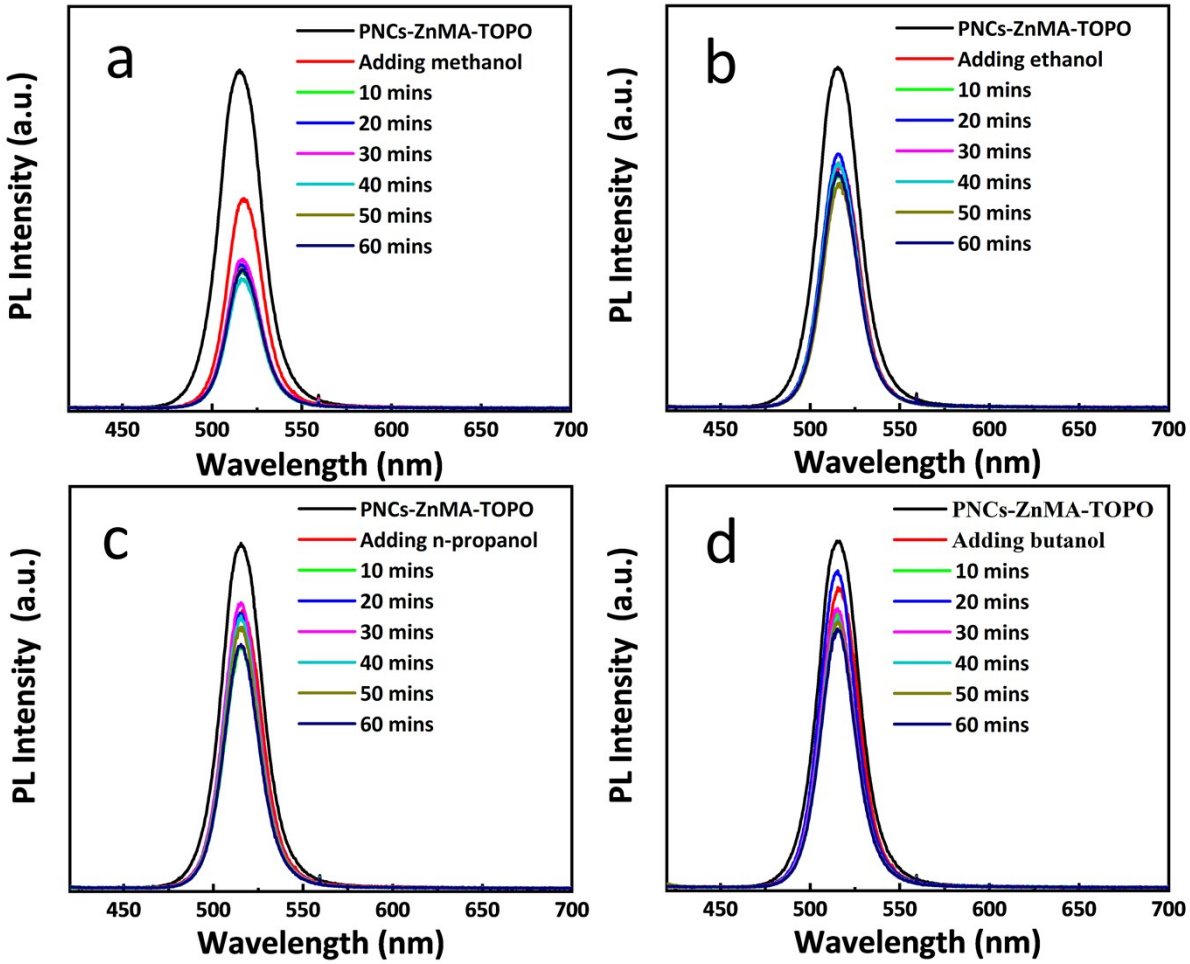

Fig. S6 The PL spectra of the PNCs-ZnMA-TOPO at initial state, after injection of (a) methanol, (b) ethanol, (c) n-propanol, (d) butanol and stirring for 1 hour. The initial PL spectra of the samples have been normalized.

7. XPS spectra of the pristine PNCs and modified PNCs.

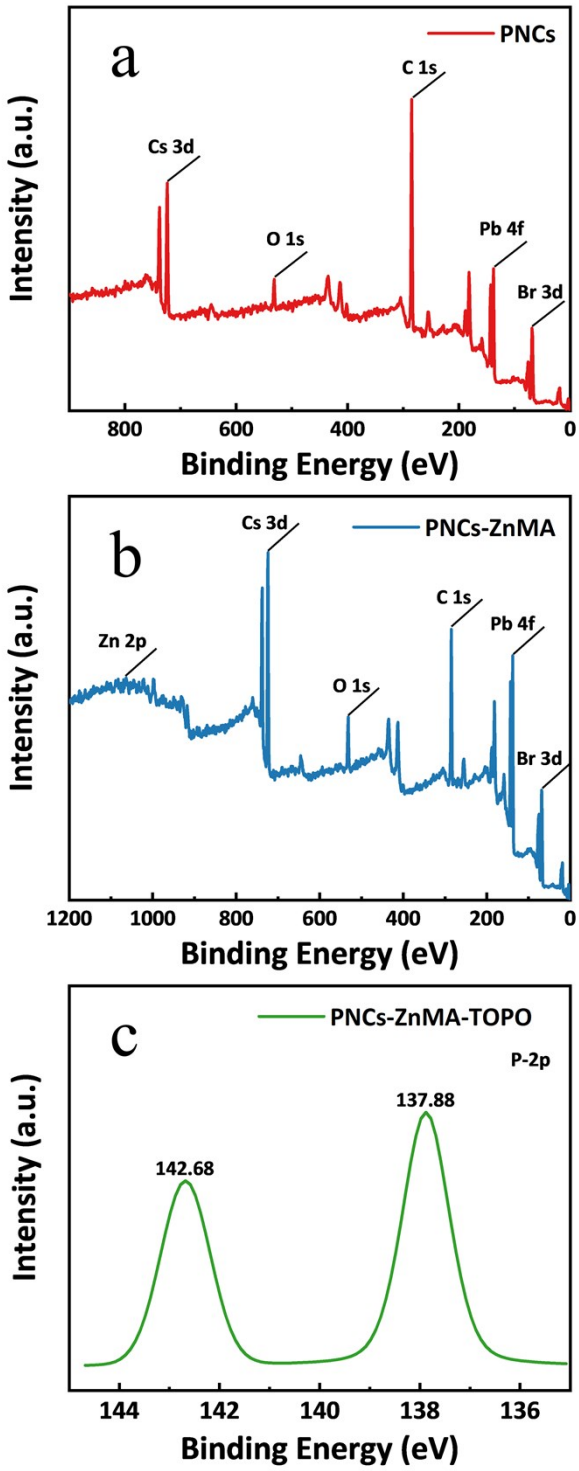

Fig. S7 XPS survey spectrum of (a) pristine PNCs and (b) PNCs-ZnMA. (c) High-resolution XPS of P-2p chemical state of PNCs-ZnMA-TOPO.

8. FIIR spectra of PNCs-ZnMA-TOPO /PMMA and PNCs-ZnMA-TOPO.

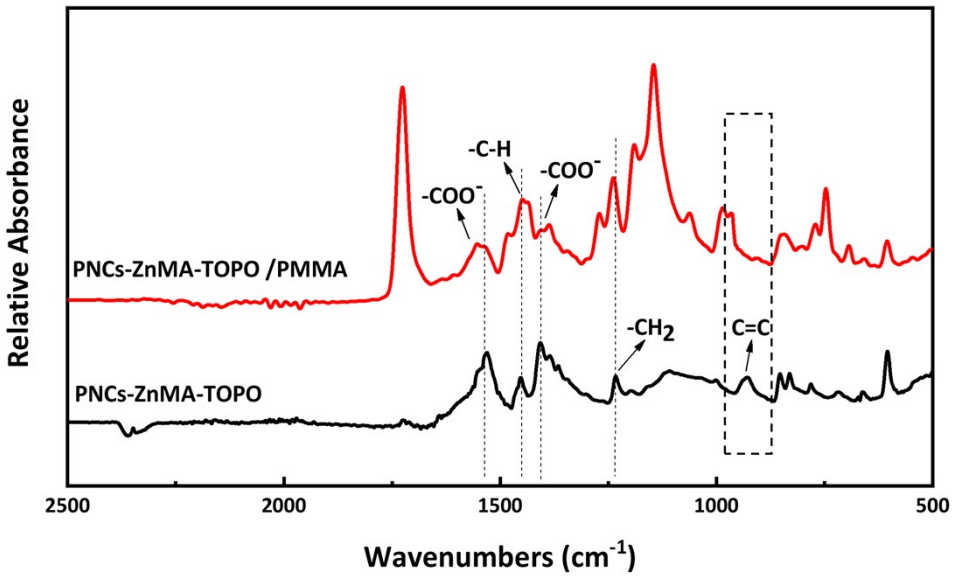

Fig. S8 FIIR spectra of PNCs-ZnMA-TOPO /PMMA and PNCs-ZnMA-TOPO.

9. Photostability test result of the PNCs-ZnMA-TOPO and pristine PNCs solution.

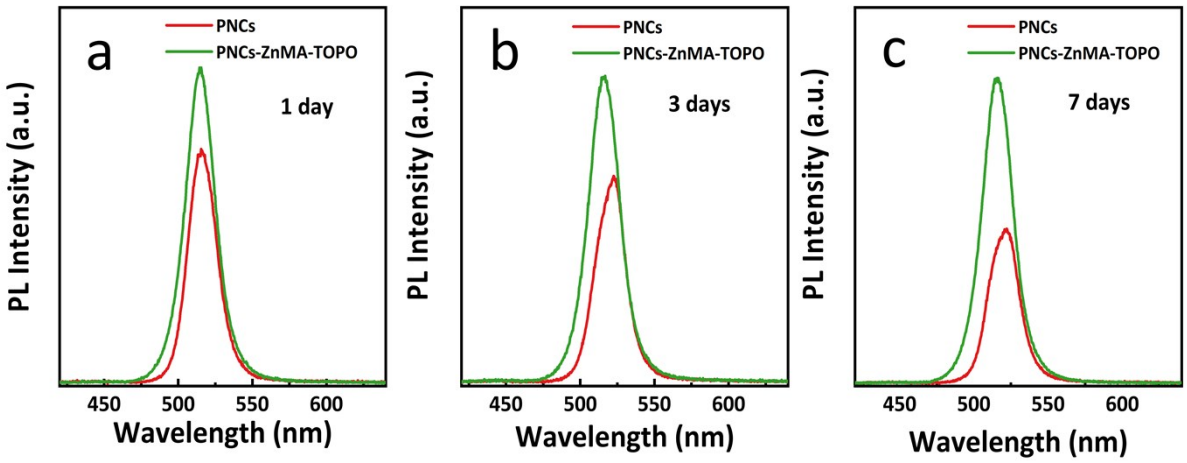

Fig. S9 The PL spectra of the PNCs and PNCs-ZnMA-TOPO solution in (a)1day, (b) 3 days, (c) 7days in daily light.

10. Thermal stability of the PNCs and PNCs-ZnMA-TOPO thin films after heating−cooling cycles between 100 °C and 25 °C.

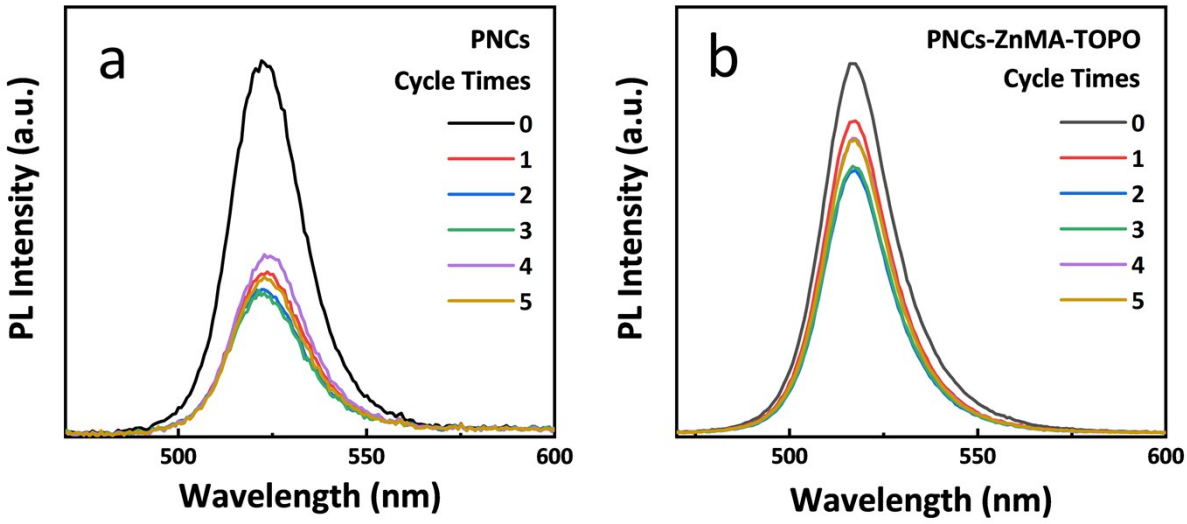

Fig. S10 PL spectra of the (a) pristien PNCs and (b) PNCs-ZnMA-TOPO thin films after heating−cooling cycles between 100 and 25 °C.