

Supporting Information

Fabrication of planar heterojunction CsPbBr₂I perovskite solar cell using ZnO as electron transport layer & improved solar energy conversion efficiency

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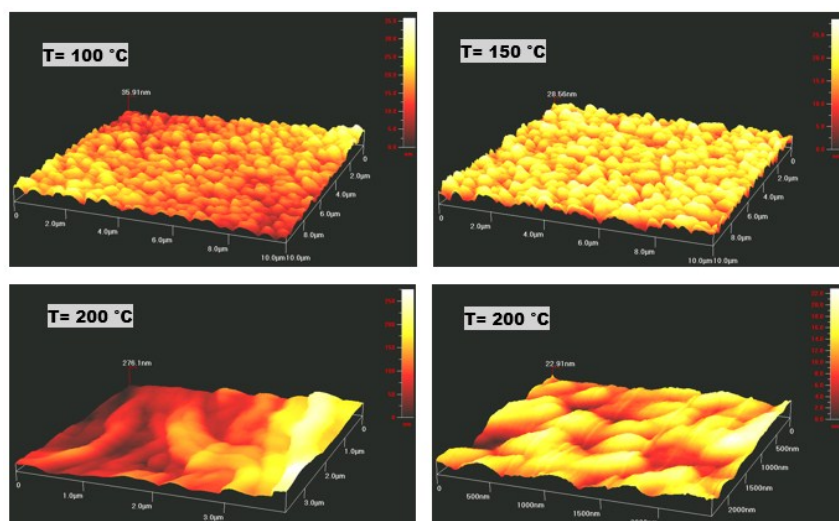


Figure S1 (a-d). AFM images of as-deposited ZnO layer on ITO glasses annealed at 100 °C, 150 °C and 200 °C for 30 minutes.

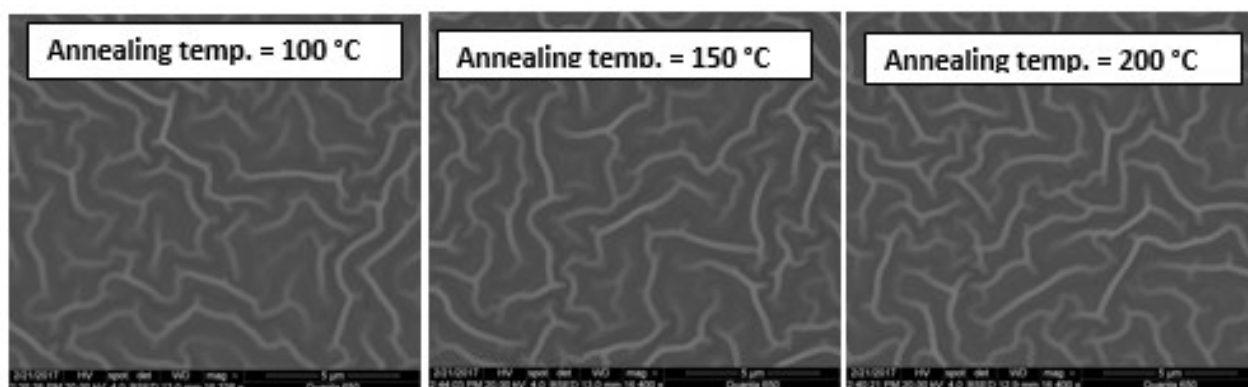


Figure S2. SEM image of ZnO deposited on ITO glass and annealed at 100 °C, 150 °C and 200 °C.

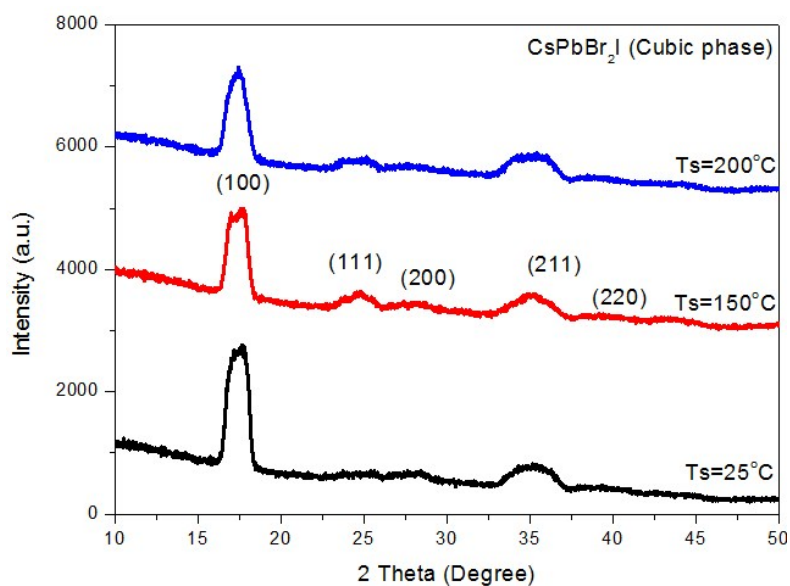


Figure S3. P-XRD spectra of as-deposited CsPbBr₂I perovskite at substrate temperature (Ts) at 25 °C, 150 °C and 200 °C.

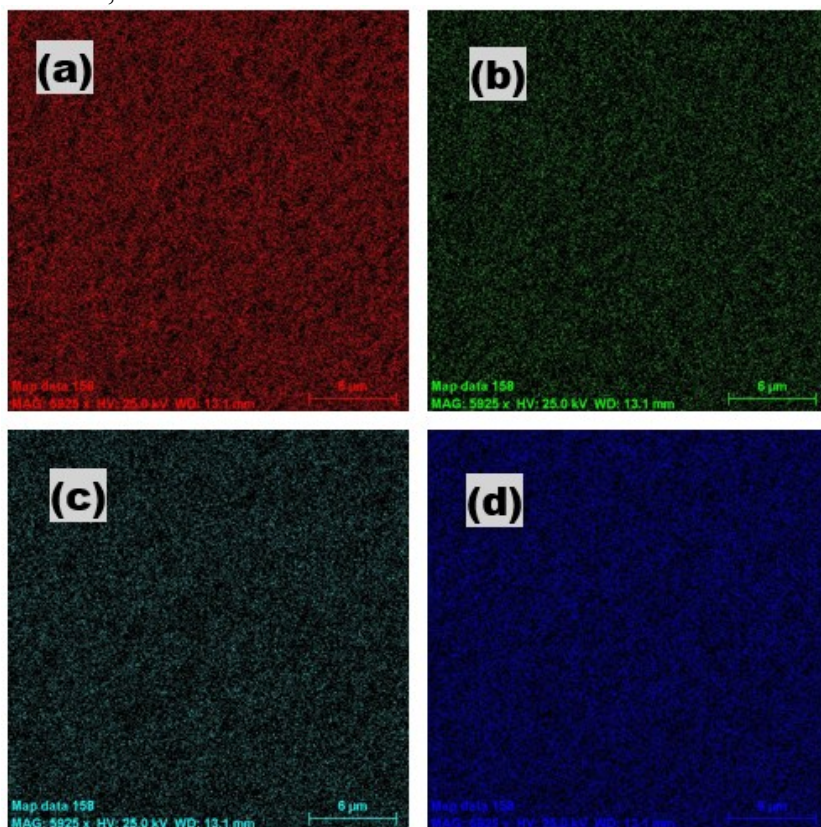
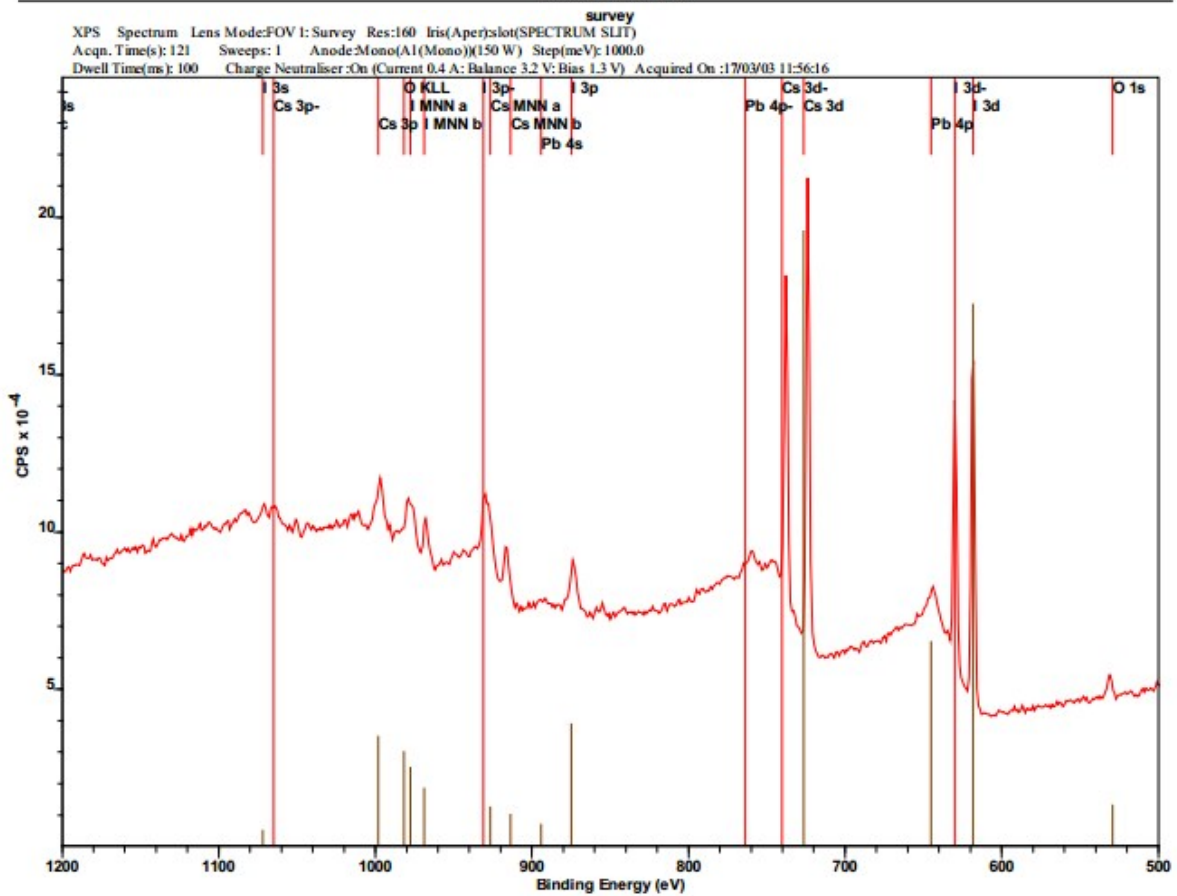
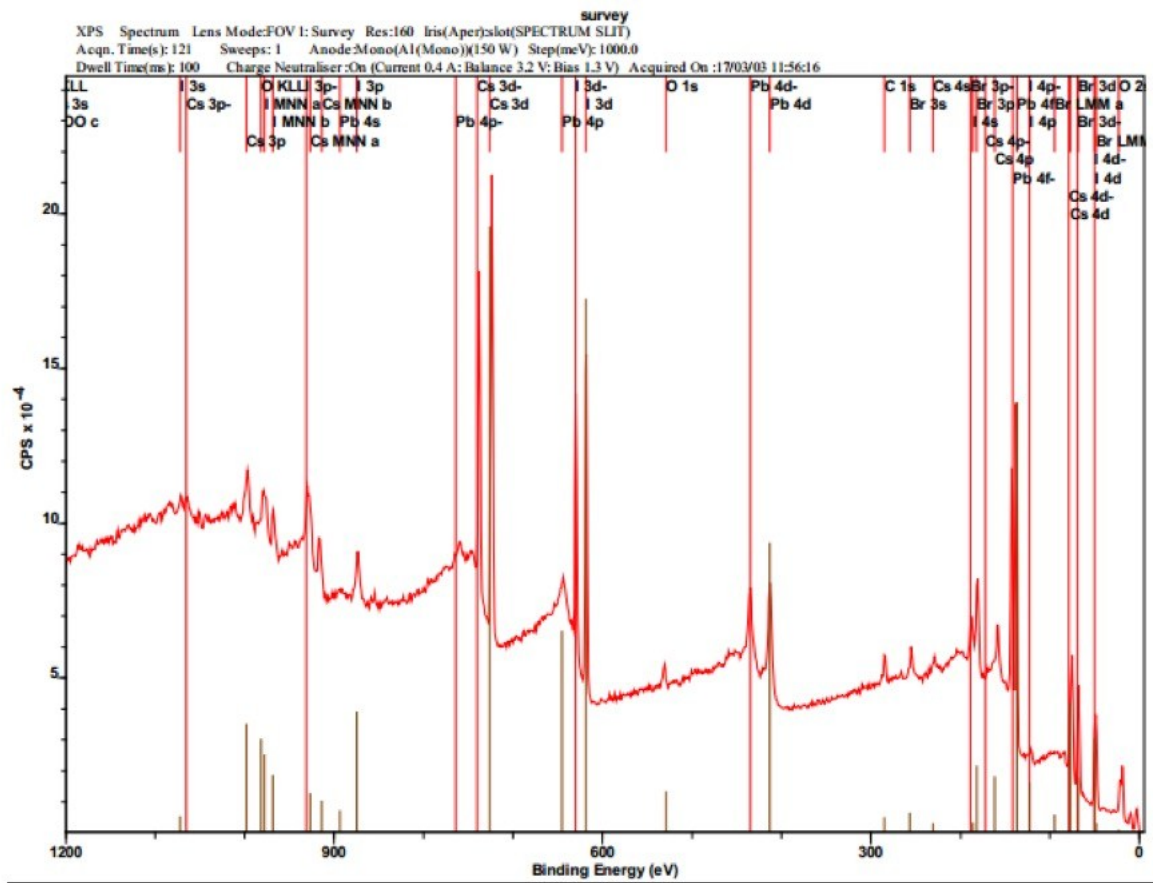


Figure S4. EDX mapping of CsPbBr₂I showing the well distribution of (a) Cs, (b) Pb, (c) Br and (d) I in the interrogated area of film.



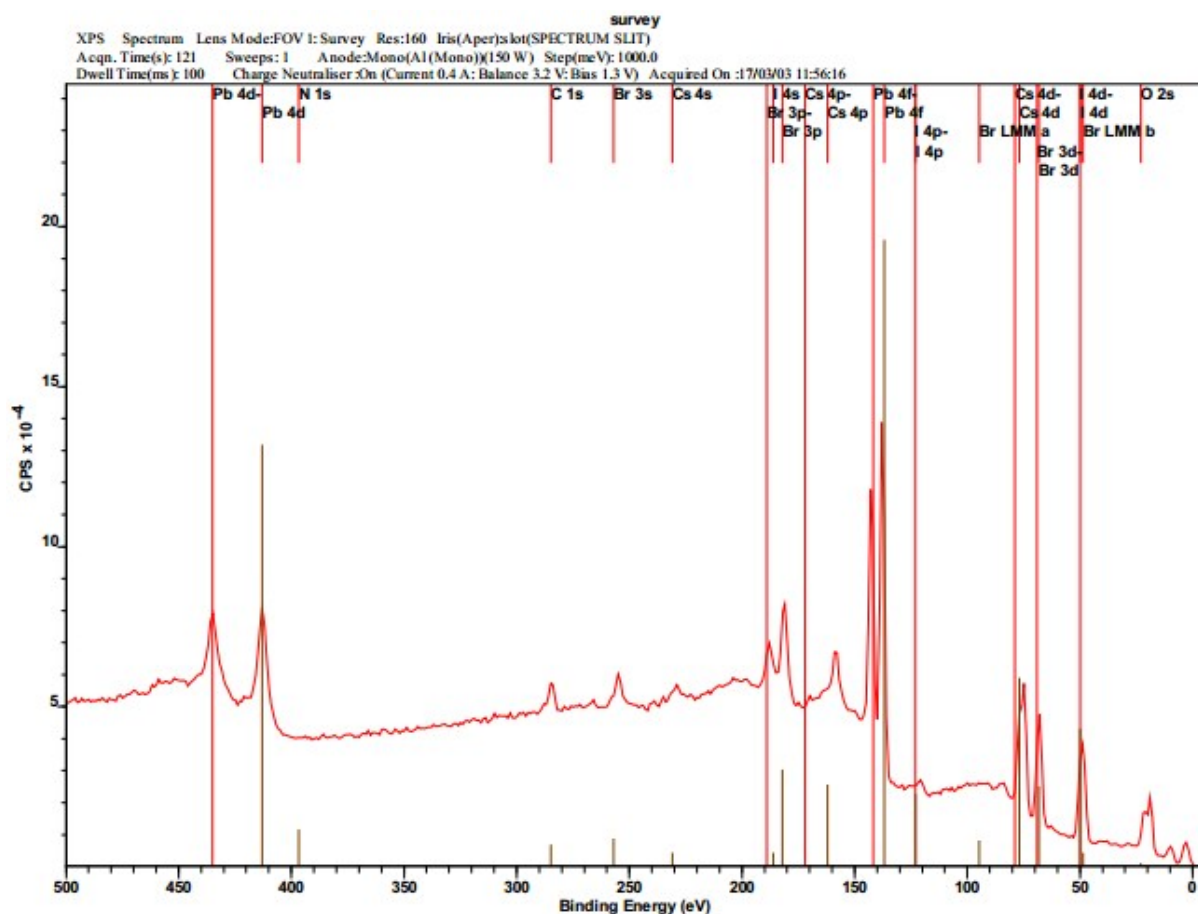


Figure S5 (a-d). High resolution XPS analyses of CsPbBr₂I corresponding to Cs, Pb, Br and I.

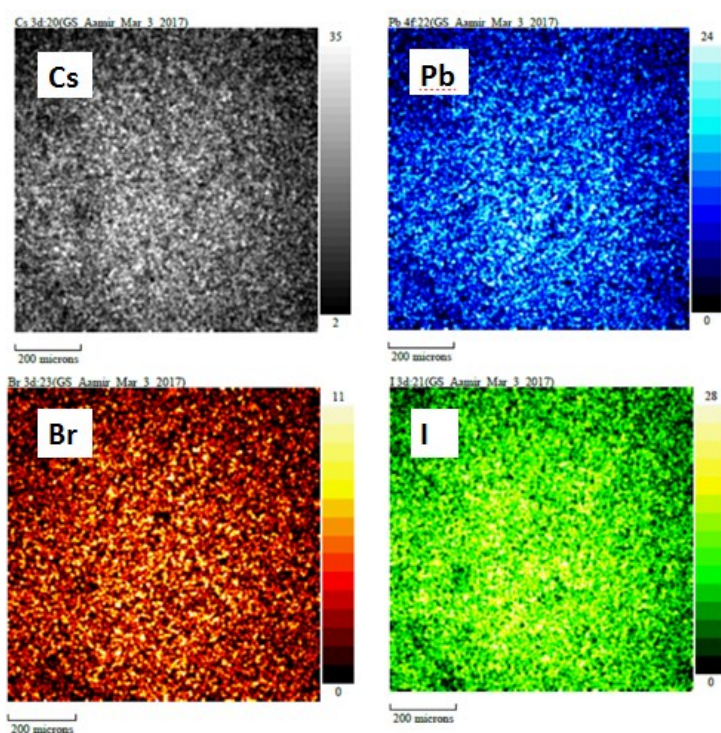


Figure S6. XPS Q-mapping of CsPbBr₂I perovskite thin film deposited at substrate temperature of 150 °C.

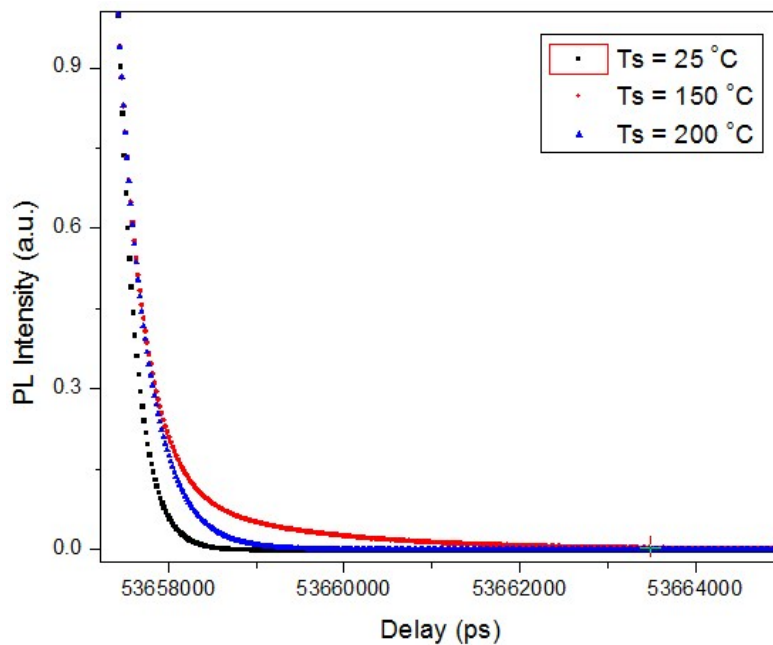


Figure S7. Life time photoluminescence of CsPbBr₂I perovskite layers deposited at Ts = 25 °C, 150 °C and 200 °C.

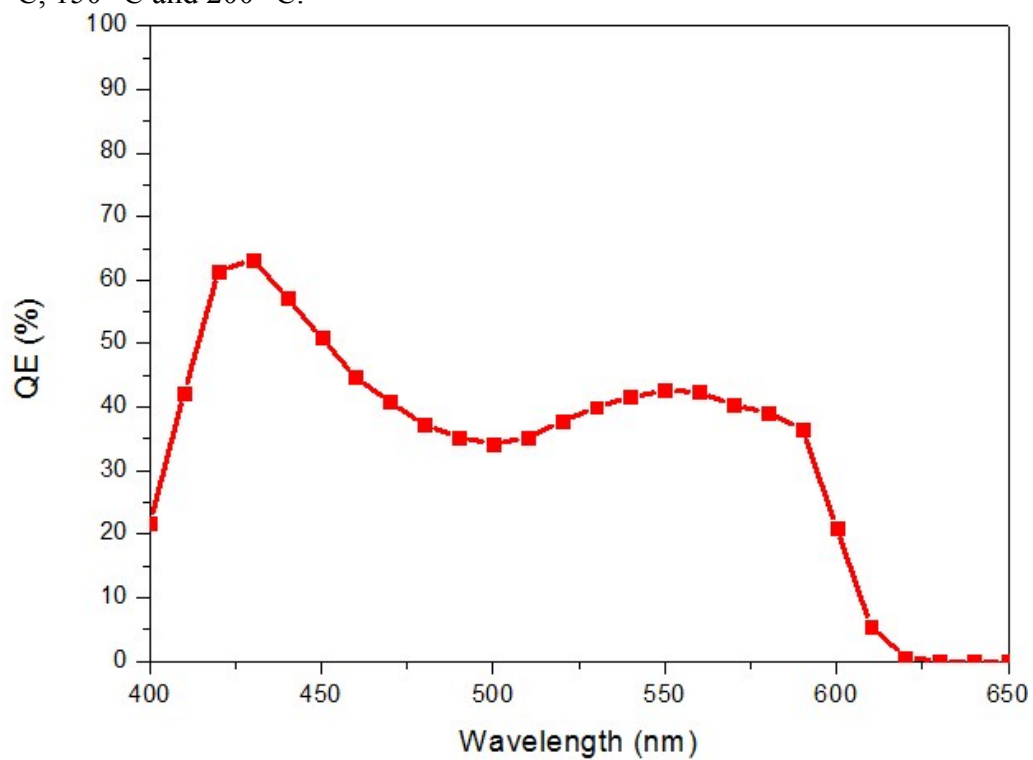


Figure S8. IPCE (QE) of the best device deposited at Ts = 150 °C.

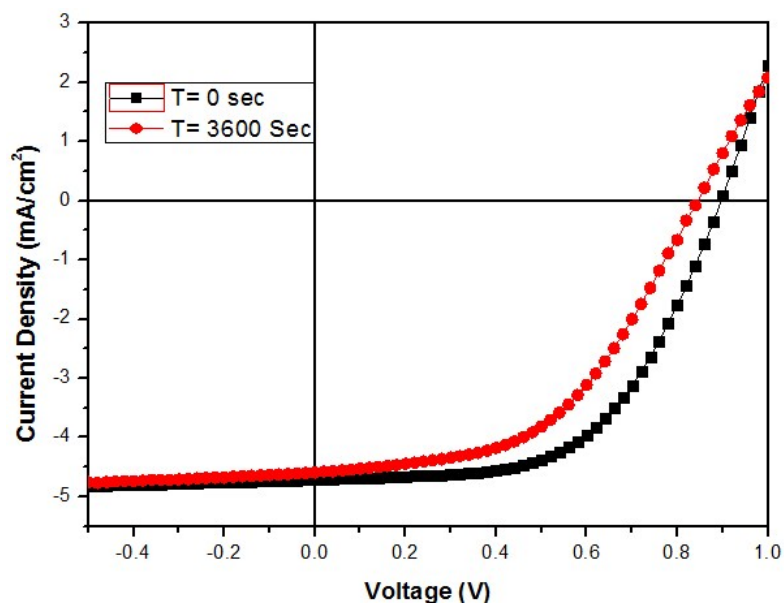


Figure S9. J-V curve of CsPbBr₂I device before and after exposure to continuous illumination of 3600 second to assess photostability.

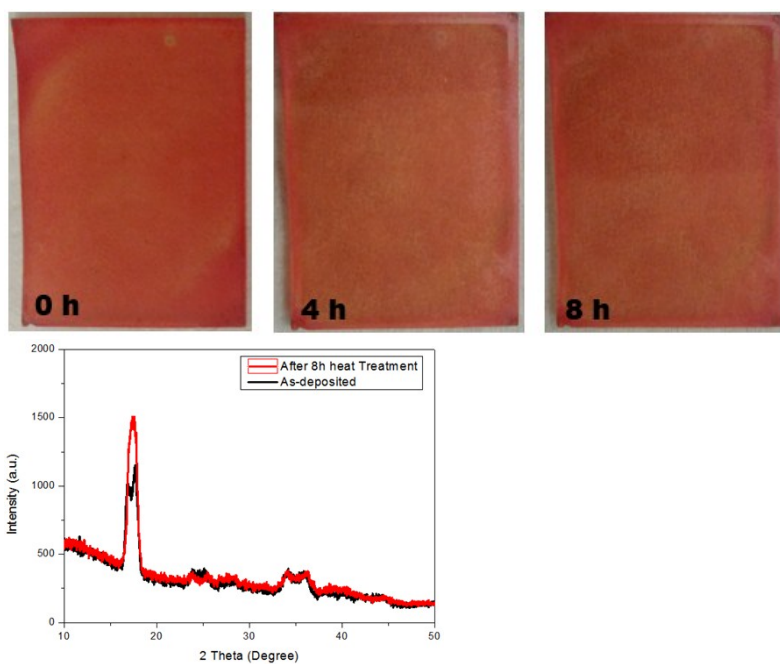


Figure S10. P-XRD spectra and pictures of thermally treated films of ZnO/CsPbBr₂I at 100 °C, to assess the thermal stability of CsPbBr₂I perovskite.