Supporting Information

Double side passivation of PEAI for All Perovskite Tandem Solar Cell with

Efficiency of 26.8%

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Figure S1. XPS spectra of (a) I 3d, (b) O 1s, and (c) I 3d.



Figure S2. FTIR spectra, (a) ITO/PEAI, ITO/NiOx/PEAI and ITO/PEAI. (b)-(d) show partial enlargements of ITO/PEAI and ITO/NiOX/PEAI.



Figure S3. Initial model containing (a) I defects, (b) Br defects and (c) perfect surfaces. Optimized model with (d) I defect, (e) Br defect and (f) perfect surfaces.



Figure S4. (a). UV-vis result of the perovskite film with the structure of $ITO/NiOx/(PEAI)/PVK/(PEAI)/C_{60}/$ and the (b) thickness of the perovskite film deposited on bare NiOx film and with co-PEAI modification.



Figure S5. Urbach energy of the perovskite films with or without PEAI modification.



Figure S6. XRD of the perovskite with the structure of (a) ITO/NiOx/PVK, (b) ITO/NiOx/PEAI/PVK, and (c) ITO/NiOx/PEAI/PVK/PEI.



Figure S7. Water contact angle of the NiOx (a) without or (b) with PEAI modification.



Figure S8. AFM image of the NiOx film (a) without and (b) with PEAI modification.



Figure S9. PL curves of the perovskite film with or without PEAI modification.



Figure S10. Radiative limit V_{OC}^{rad} values of (a) control device, (b) device with bottom-PEAI modification, and (c) device with both-PEAI modification.



Figure S11. TRPL spectra of the perovskite films without and with PEAI modification.



Figure S12. Other photovoltaic parameters of devices with and without PEAI co-modification.



Figure S13. Stabilized power output of the all-perovskite tandem solar cells with PEAI comodification.



Figure S14. N2 stability evaluation of the device, where the initial efficiency of the device is 26.8%.