## **Supporting Information**

## Stabilization of Hybrid Perovskite CH<sub>3</sub>NH<sub>3</sub>PbI<sub>3</sub> Thin Films by Graphene Passivation

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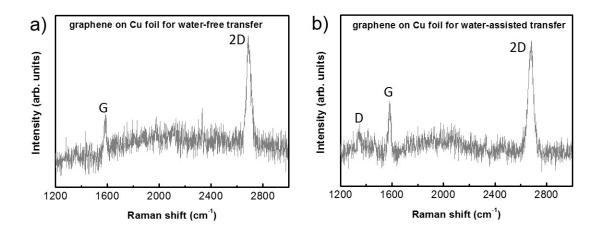
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## **Supporting figures:**



**Figure S1.** Raman spectra of the same graphene samples as shown in Figure 1 before the removal of their Cu substrate: (a) As-grown graphene on Cu before the water-free transfer; and (b) as-grown graphene on Cu before the water-assisted polymer-free transferring.

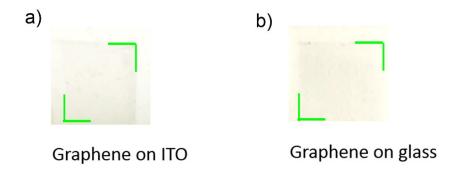
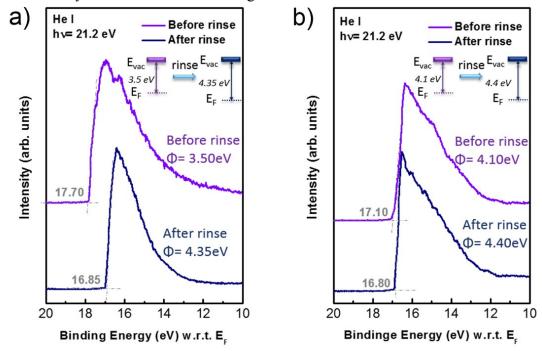
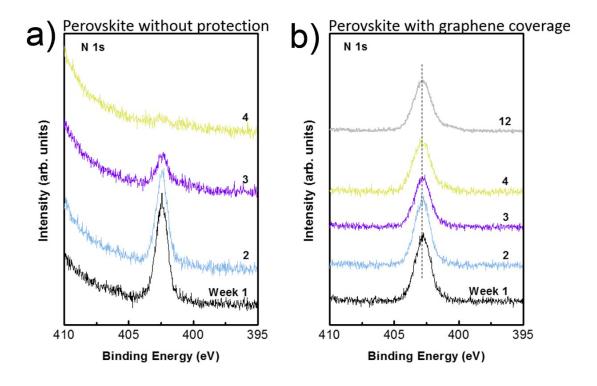


Figure S2. Optical micrographs of graphene sheets on (a) ITO and (b) glass surfaces

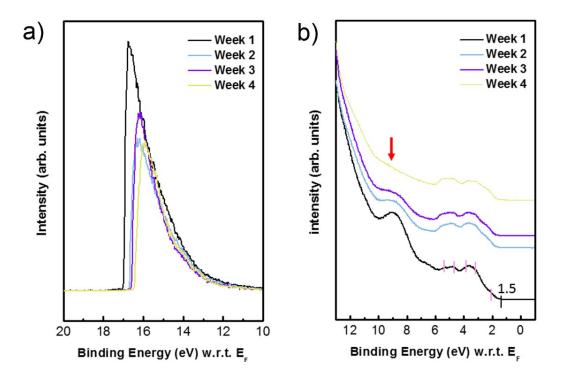
transferred by the water-free transferring method.



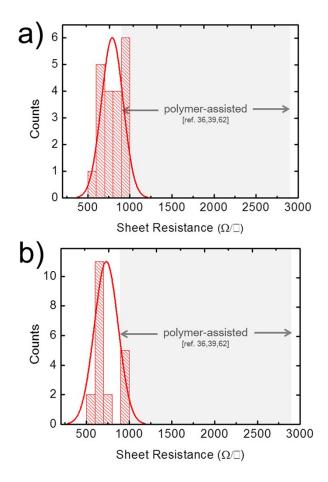
**Figure S3.** The work functions of as-transferred graphene measured via UPS. (a) UPS data of graphene transferred with the water-free method before and after rinse. (b) UPS data of graphene transferred with the water-assisted method before and after rinse.



**Figure S4.** Evolution of XPS N-1s peaks as a function of ambient storage time. (a) Perovskite surface without any protection. (b) Perovskite with graphene covered.



**Figure S5.** Evolution of perovskite degradation monitored via high-resolution UPS without graphene protection. (a) The evolution of secondary electron cutoff as a function of aging time. (b) The evolution of high-resolution valence band UPS spectra.



**Figure S6.** Statistics of the sheet resistance of graphene transferred onto a-SiO<sub>2</sub> by both (a) water-free and (b) water-assisted methods, showing values very close to the typical sheet resistance of graphene that was transferred by other polymer-free methods but much lower than those of the PMMA-transferred graphene samples indicated in the shaded band. Here the sheet resistance measurements were carried out on 20 different areas of each sample.