Supporting Information

Hybrid perovskites depth profiling with variable-size argon clusters and monatomic ions beams

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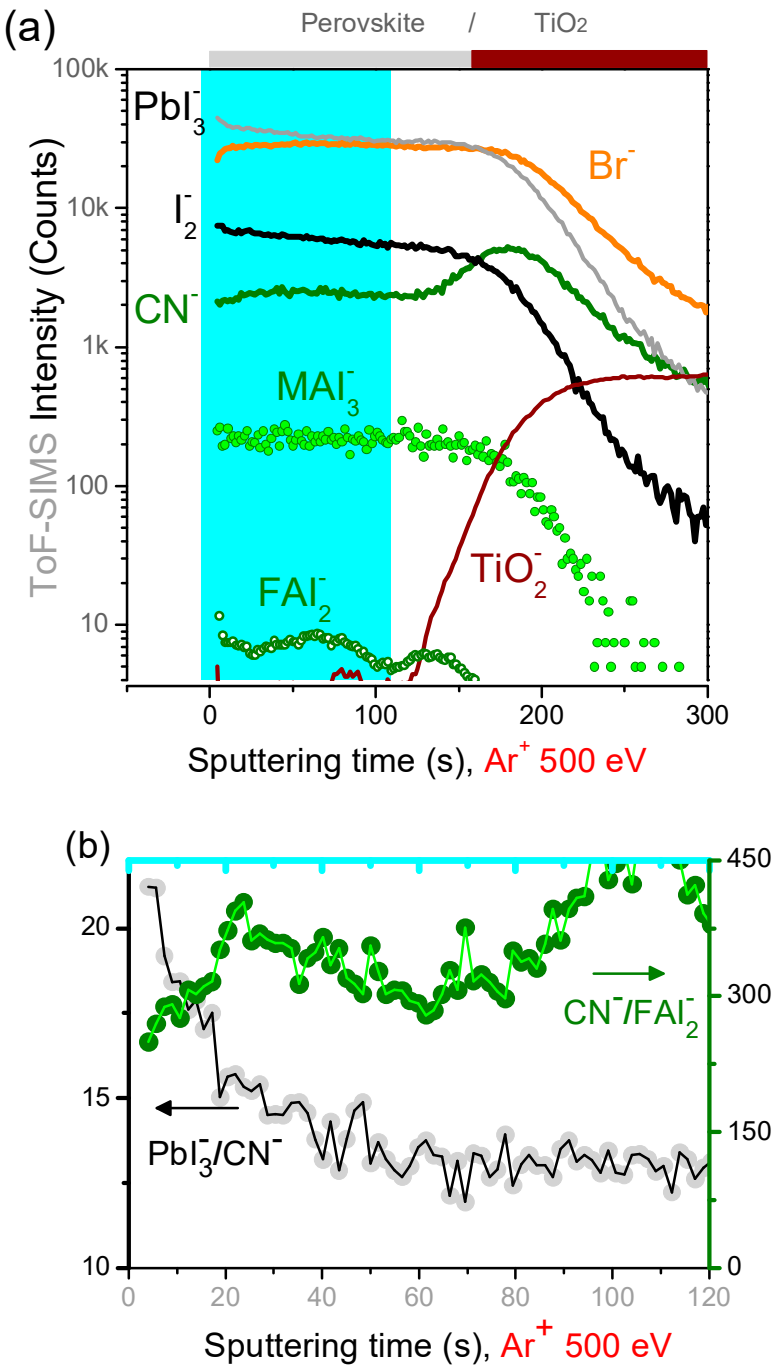

Figure S1. ToF-SIMS depth profiles acquired on Perovskite/cTiO$_2$ model samples obtained with 500 eV Ar$^+$ beam. The bottom panel (**b**) refers to the perovskite region and indicate (i) a preferential sputtering of inorganic species (PbI_3^-/CN^- ratio) and (ii) a slowly increasing fragmentation of organic molecules (CN^-/FAI_2^- curve).

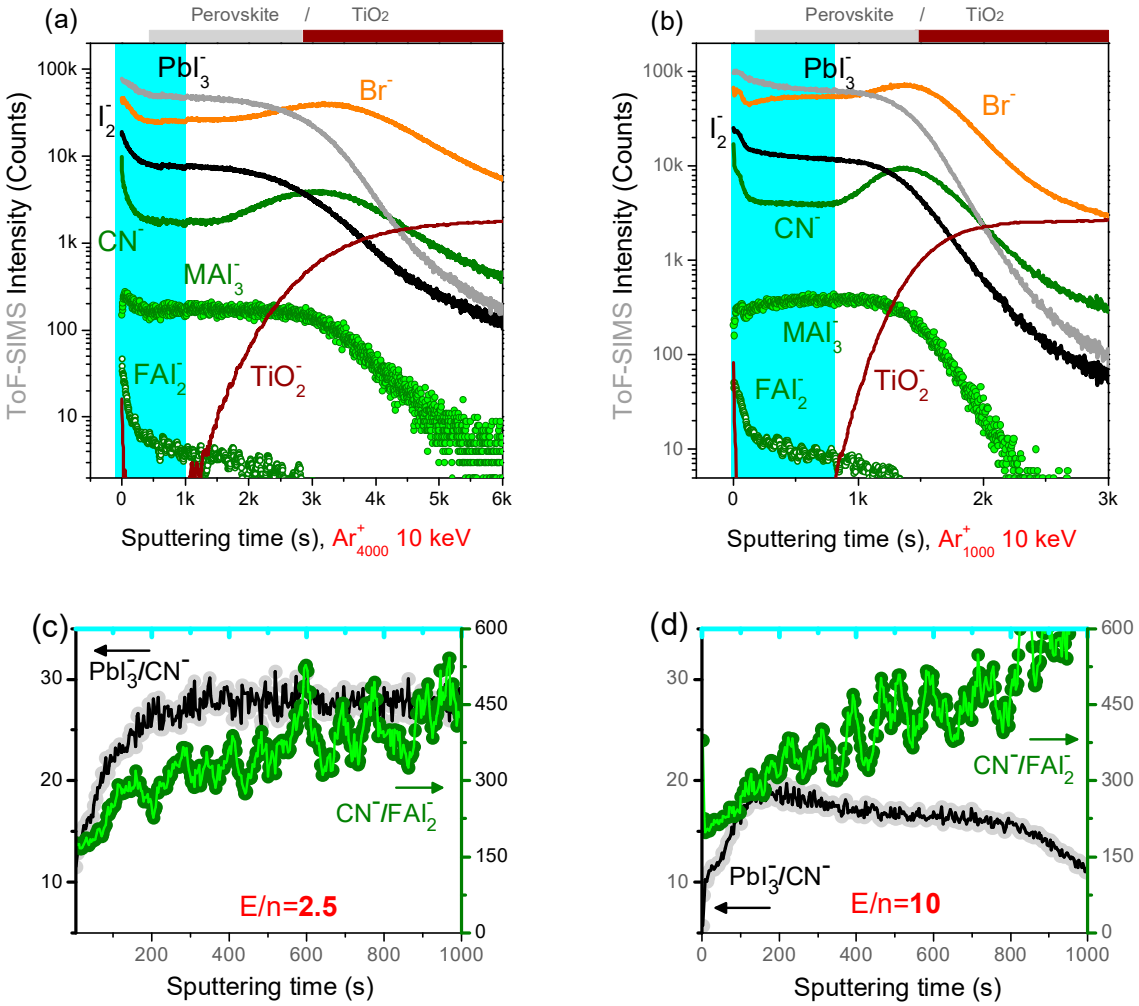

Figure S2. ToF-SIMS depth profiles acquired on Perovskite/cTiO2 model samples obtained with large cluster beams. Constant profiles indicate the non-accumulation of damages. (**a**, **c**) Ar4000+ at 10 keV (E/n=2.5 eV). (**b**, **d**) Ar1000+ at 10 keV (E/n=10 eV). Bottom panels refer to the perovskite region and indicate (i) a higher preferential sputtering of organic species with n=4000 clusters (PbI3-/CN- ratios) and (ii) a similar fragmentation of organic molecules (CN-/FAI2- curves).

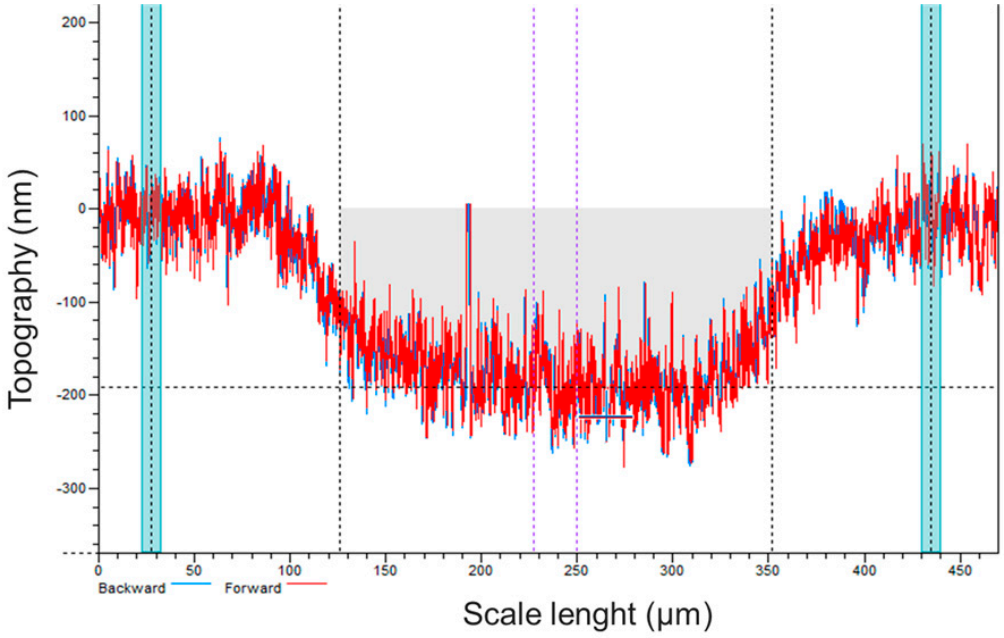

Figure S3. AFM profile of the crater region (grey region) after 40 s of sputtering with Ar_{500}^{+} beam at 20 keV. The crater depth is ~200 nm which corresponds to the sputtering yield of ~5 nm/s.

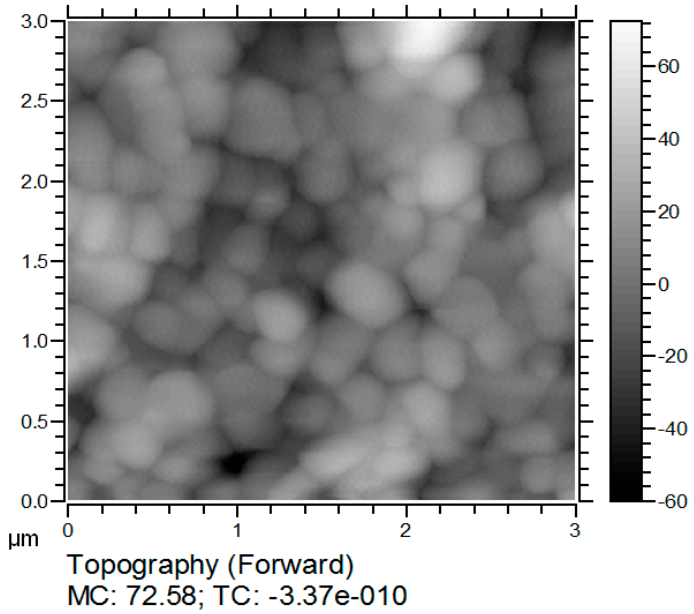

Figure S4. AFM image of the pristine perovskite layer before the sputtering.