

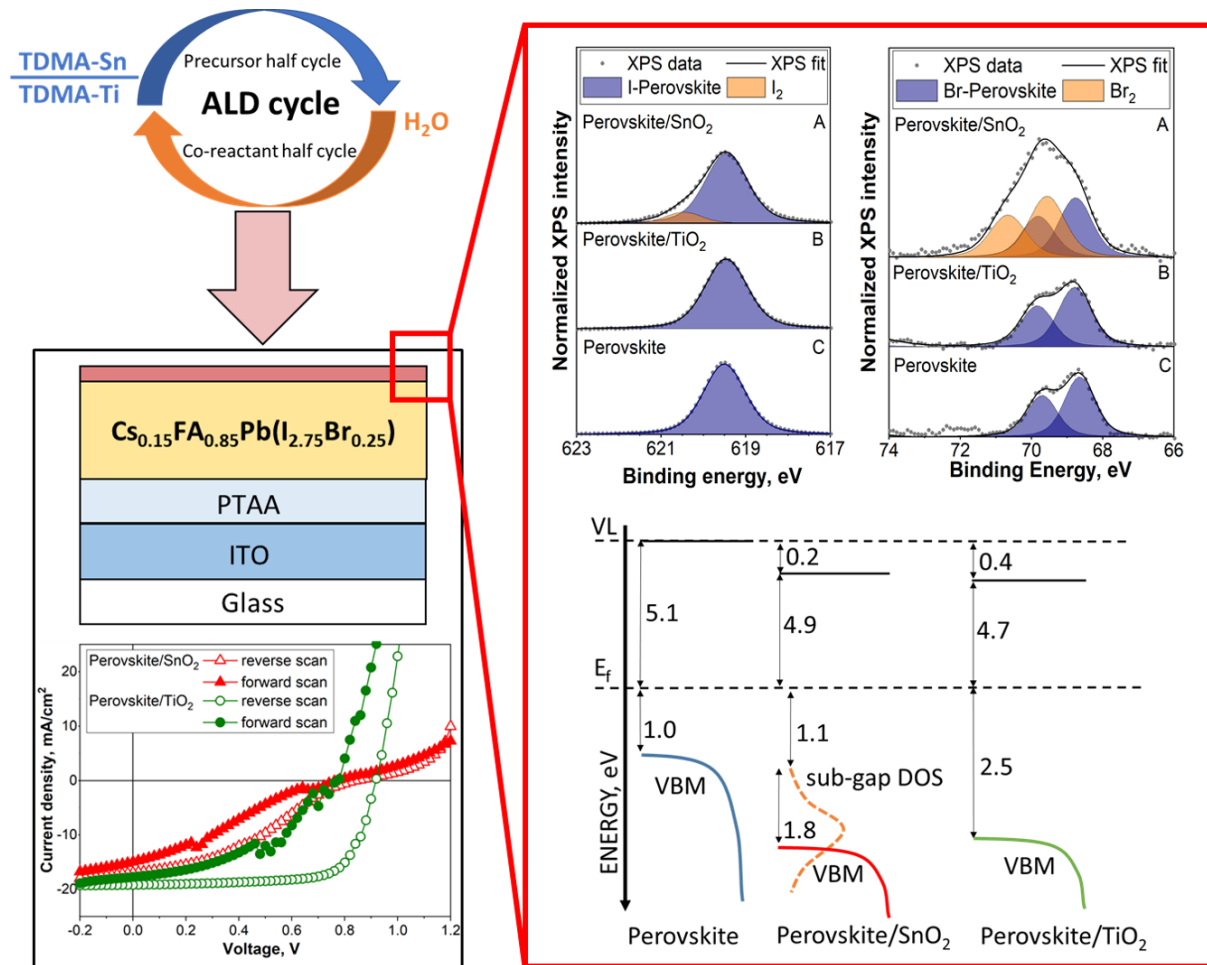
Interface chemistry in metal halide perovskite/ALD metal oxide systems

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Supplementary Information:



Overview of results: (left) ALD processing of SnO₂ and TiO₂ directly on top of a CsFAPb(I,Br)₃ perovskite absorber. The corresponding PSC devices (shown here the JV curves) are characterized by non-working devices for ALD SnO₂ and an 11% non-optimized PCE, for ALD TiO₂. The poor performance of devices employing ALD SnO₂ can be related (right) to the chemical modifications induced at the perovskite surface by the ALD process. Specifically, ALD growth of SnO₂ directly on top of the perovskite leads to the formation of molecular halides states and to a sub-stoichiometric SnO₂ layer which exhibits sub-gap defects above its valence band maximum. The presence of these defects states is expected to reduce the charge selectivity of SnO₂ by inducing non-radiative electron-hole recombination at the perovskite/SnO₂ interface.