Supplementary Information (SI) for EES Solar.

Probing Surfaces and Interfaces of Halide Perovskites: from Atomic Mapping to Optoelectronic Properties

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SPM	scanning probe microscopy
AFM	atomic force microscopy
STM	scanning tunneling microscopy
KPFM	Kelvin probe force microscopy
SNOM	scanning near-field optical microscopy
PL-AFM	photoluminescence-AFM
AFM-IR	AFM-infrared spectroscopy
tr-KPFM	time-resolved KPFM
pp-KPFM	pump-probe KPFM
c-AFM	conductive AFM
OBD-AFM	optical beam deflection AFM
ncAFM	noncontact mode AFM
pc-AFM	photoconductive AFM
s-SNOM	scattering-SNOM
fast-KPFM	fast-Kelvin probe force microscopy
PSCs	perovskite solar cells
PCE	power conversion efficiency
GBs	grain boundaries
ETL	electron transport layer
HTL	hole transport layer
SEM	scanning electron microscopy
TEM	transmission electron microscopy
XRD	X-ray diffraction
XPS	X-ray photoelectron spectroscopy
PL	photoluminescence
SPV	surface photovoltage
LDOS	local electronic density of states
UHV	ultrahigh vacuum
RPPs	Ruddlesden-Popper perovskites
CVD	chemical vapor deposition
STS	scanning tunneling spectroscopy
DOS	density of states
CBM	conduction band minimum
VBM	valence band maximum
CPD	contact potential difference
PTIR	photothermal-induced resonance
FTIR	Fourier-transform infrared spectroscopy
SPVM	surface photovoltage microscopy

List of symbols and abbreviations