

Supporting Information

Surface Modification of Al-Doped ZnO Transparent Conductive Thin Films with Polycrystalline Zinc Molybdenum Oxide

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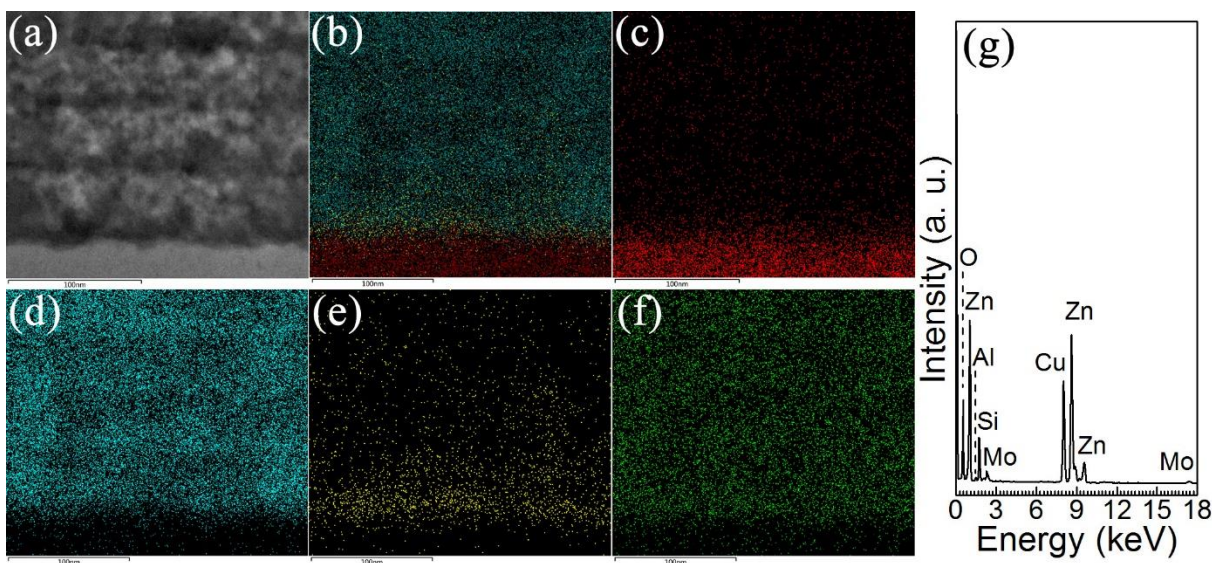


Figure S1. Cross-sectional TEM-EDX elemental mapping of the AZO/a-SiC:H interface in the a-Si:H solar cell deposited on the ZMO3-modified AZO substrate. a) Mapped area. b) Entire map. c) Si- $K\alpha$ map. d) Zn- $K\alpha$ map. e) Mo- $L\alpha$ map. f) O- $K\alpha$ map. g) EDX spectrum. The Cu is a residue from the sample preparation process (the sample was welded on a tiny finger-shaped Cu sample stand).

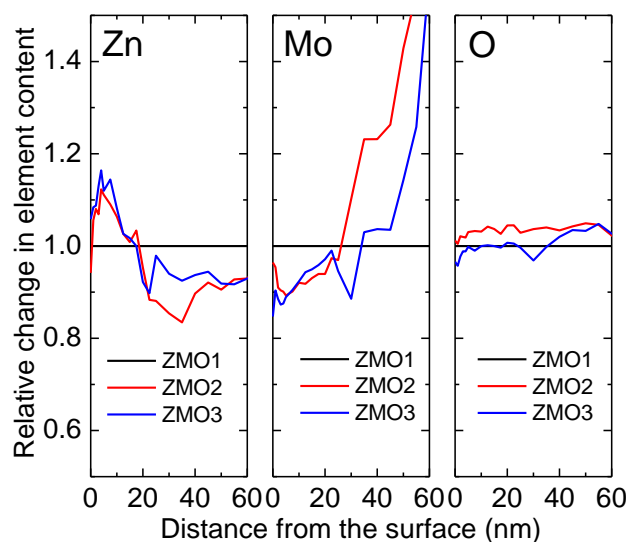


Figure S2. Relative elemental depth profile of ZMO-modified AZO substrates. The elemental depth profiles were normalized to the elemental depth profile of ZMO0-modified AZO substrate.

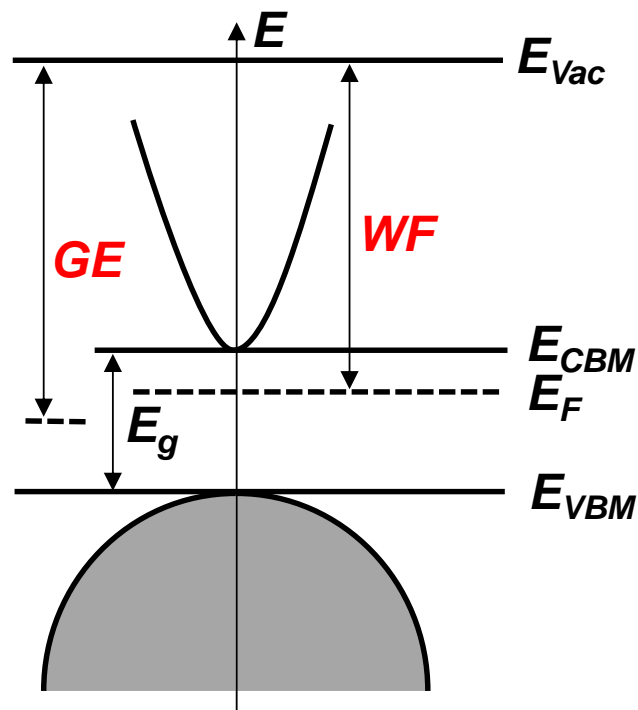


Figure S3. Schematic diagram of typical TCO band structure. WF , GE , E_g , E_{vac} , E_{CBM} and E_{VBM} denote work function, group electronegativity, band gap, vacuum level, conduction band minimum and valence band maximum, respectively.

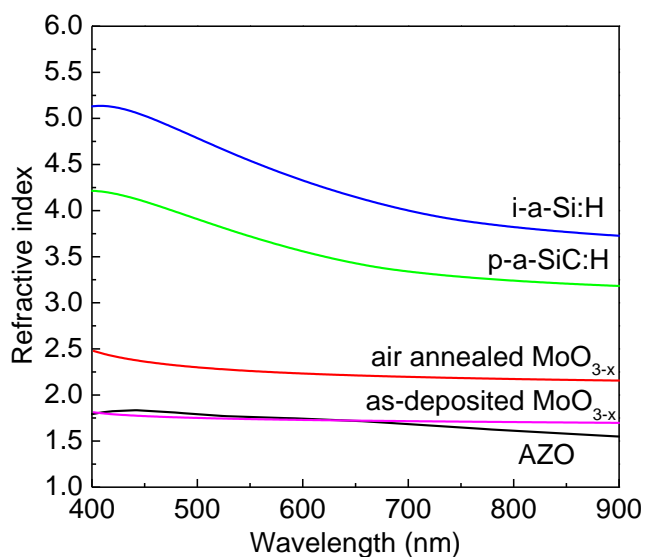


Figure S4. Refractive index of AZO, MoO_{3-x}, p-a-SiC:H and i-a-Si:H thin films. The refractive index of the sol-gel derived AZO thin film was calculated based on the Manifacier method (J.C. Manifacier et al., J. Phys. E: Sci. Instrum., 9, 1002-1004, 1976.) by using the data of transmittance and reflectance, while the refractive index of other films were measured using a spectroscopic ellipsometer (M-2000U, J. A. Woollam). The as-deposited MoO_{3-x} sample is a thin film with a

thickness of ca. 30 nm that was thermally evaporated on a glass substrate. The air annealed MoO_{3-x} sample is the one that received an annealing in ambient air at 350°C for 5 min after the evaporation deposition.