

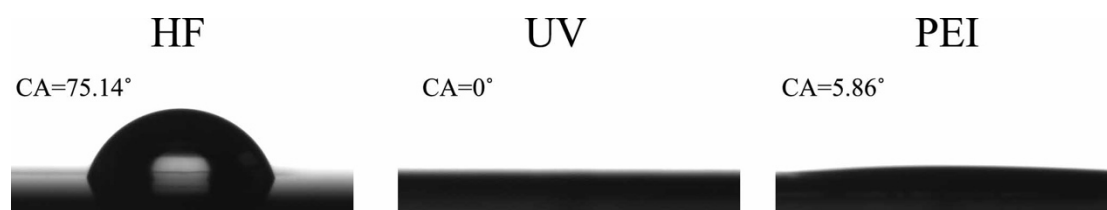
Supporting Information

Optimizing ultrathin Ag films for high performance oxide-metal-oxide flexible transparent electrodes through surface energy modulation and template-stripping procedures

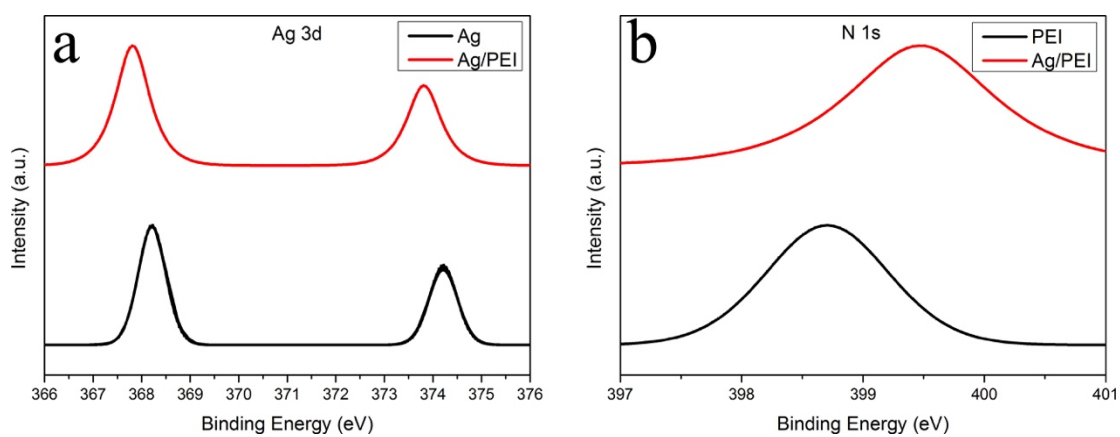
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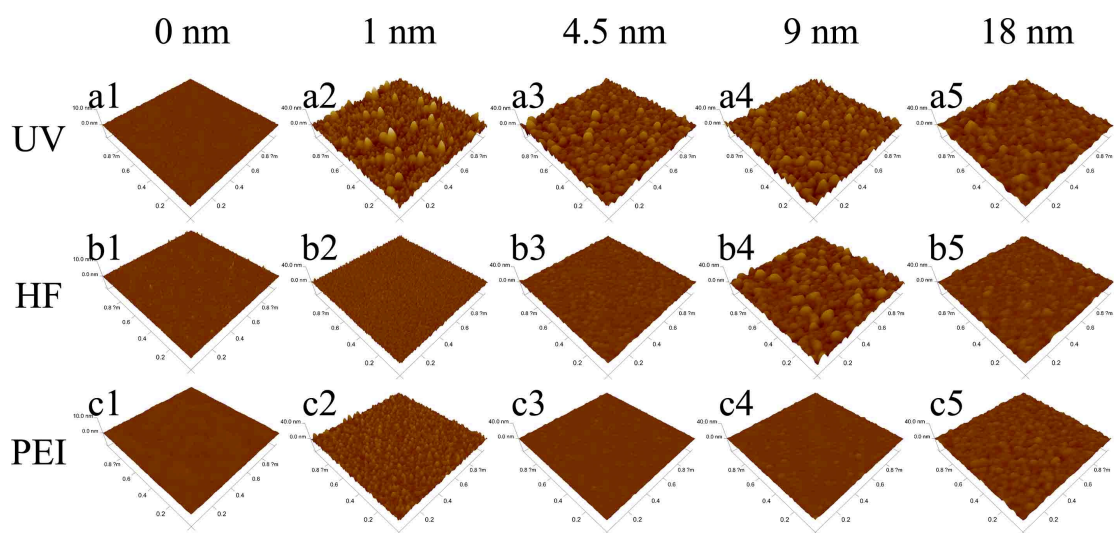
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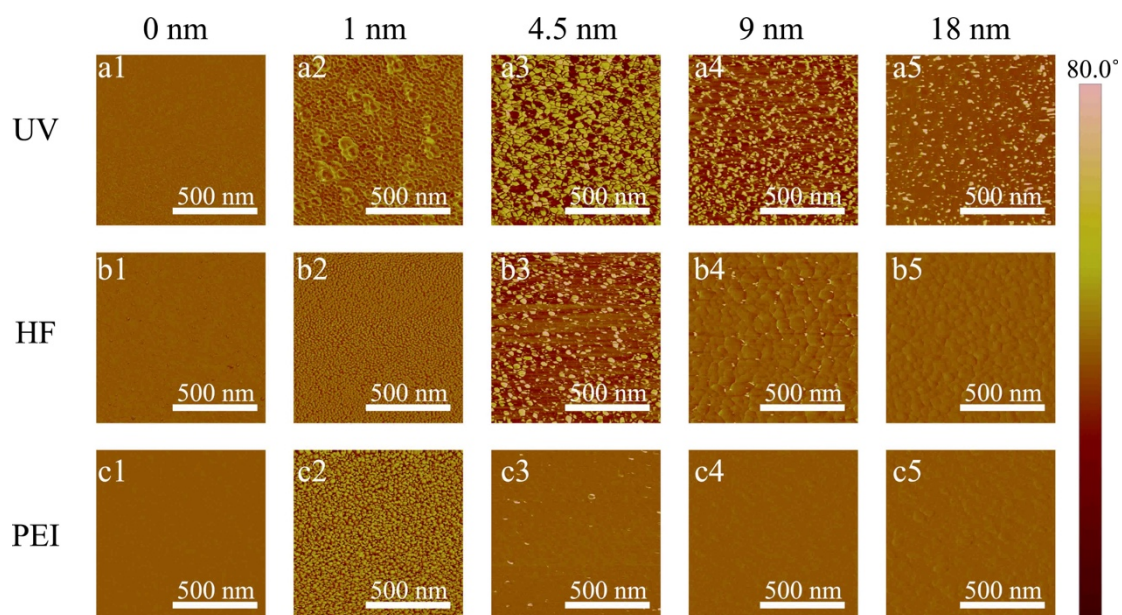
Supplementary Figure S1. Photographs of water droplets on the surfaces of substrates treated by HF, UV and PEI, respectively.



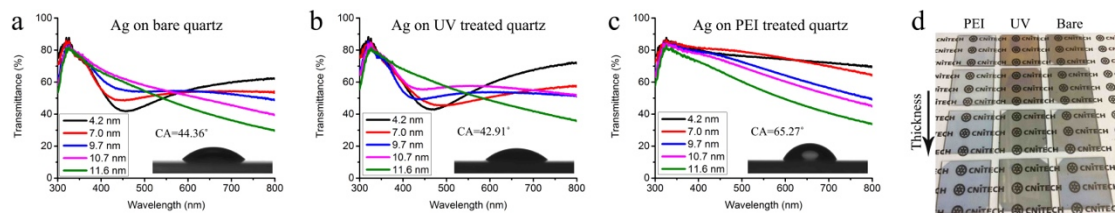
Supplementary Figure S2. High-resolution XPS data of the bare-Ag, Si substrate immediately after PEI treatment, and Ag coated on PEI treated Si (Ag/PEI) samples: **(a)** Ag 3d, and **(b)** N 1s.



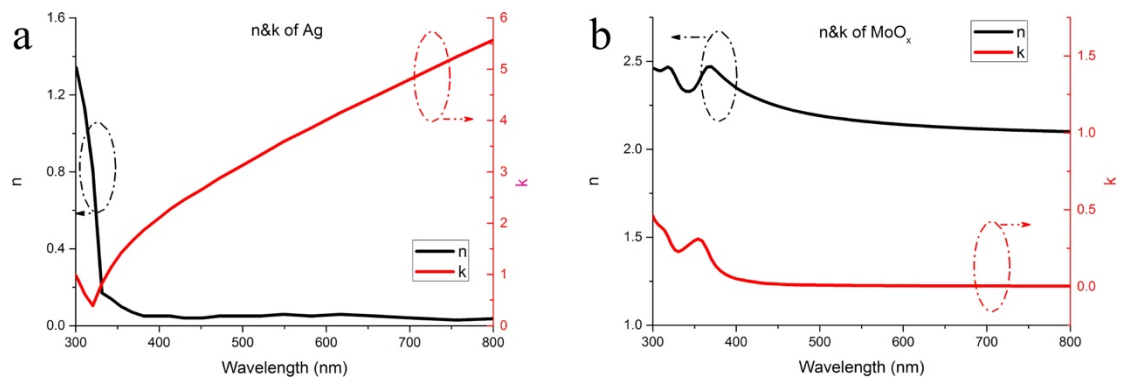
Supplementary Figure S3. 3-dimensional AFM images of various thickness of Ag on substrates treated by **(a1) - (a5)** UV, **(b1) - (b5)** HF and **(c1) - (c5)** PEI, respectively.



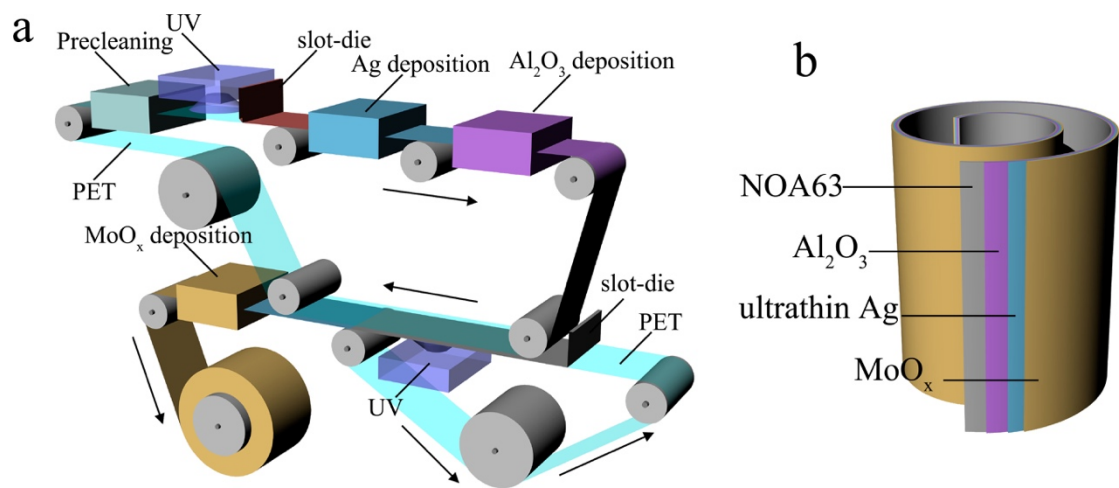
Supplementary Figure S4. AFM phase images of various thickness of Ag on substrates treated by **(a1) - (a5)** UV, **(b1) - (b5)** HF and **(c1) - (c5)** PEI, respectively.



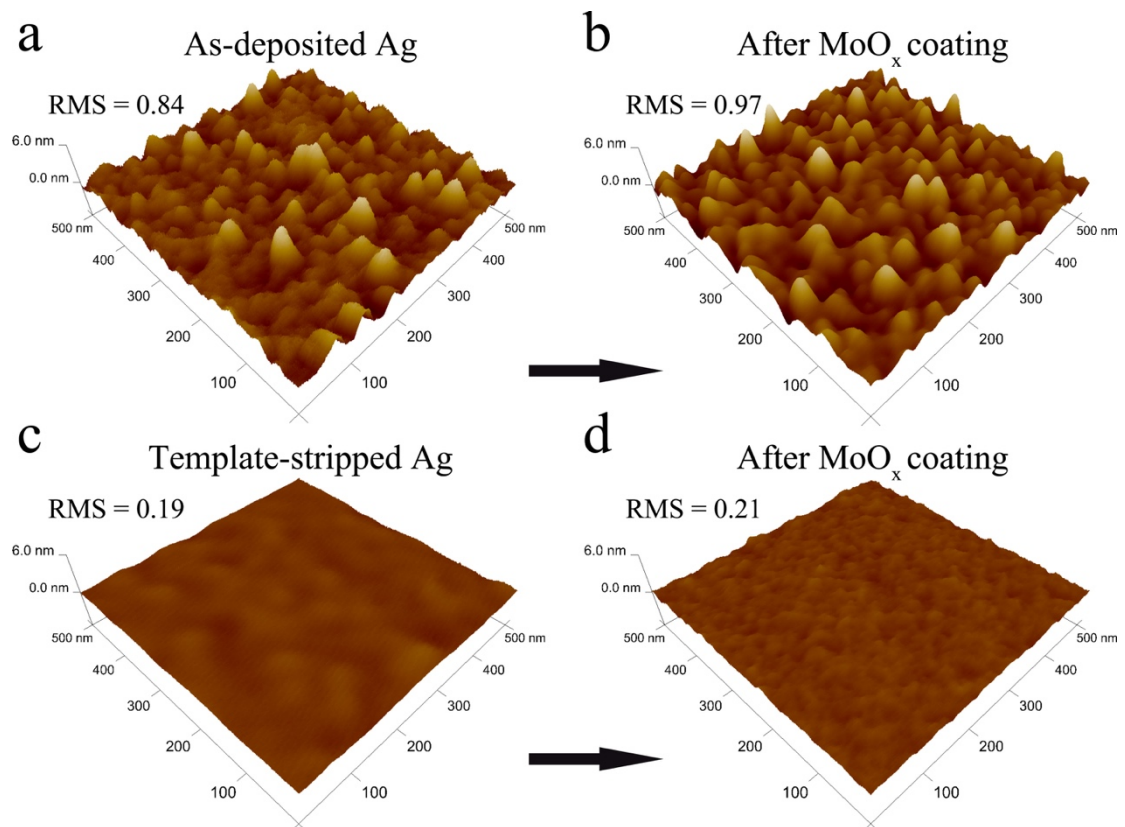
Supplementary Figure S5. (a)-(c) Optical transmittance spectra and **(d)** photographs of various thickness of Ag film on quartz substrates that were pre-treated by different procedures. The inset depicts photograph of water droplet on the surface of substrate.



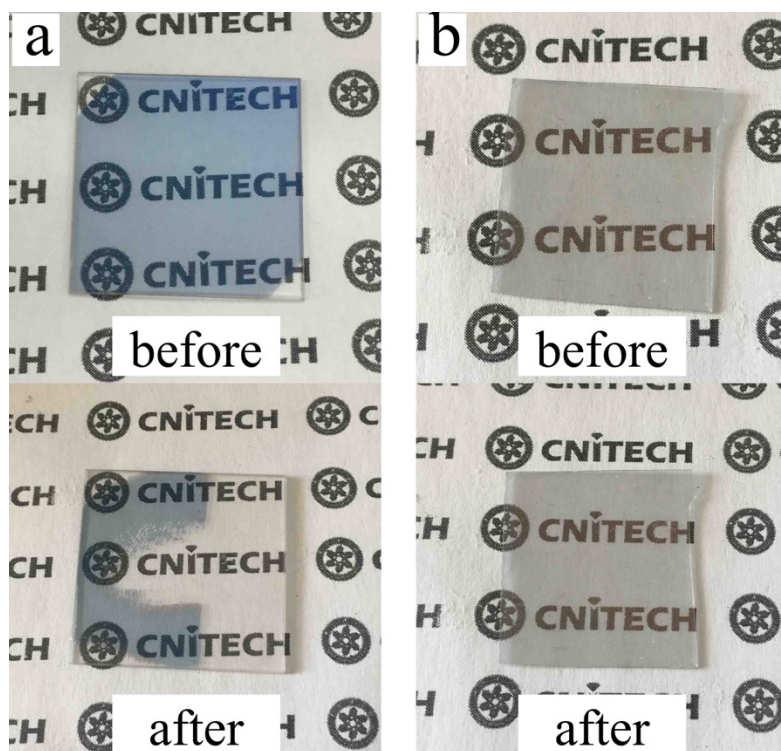
Supplementary Figure S6. Refractive indexes of **(a)** Ag and **(b)** MoO_x used in simulation.



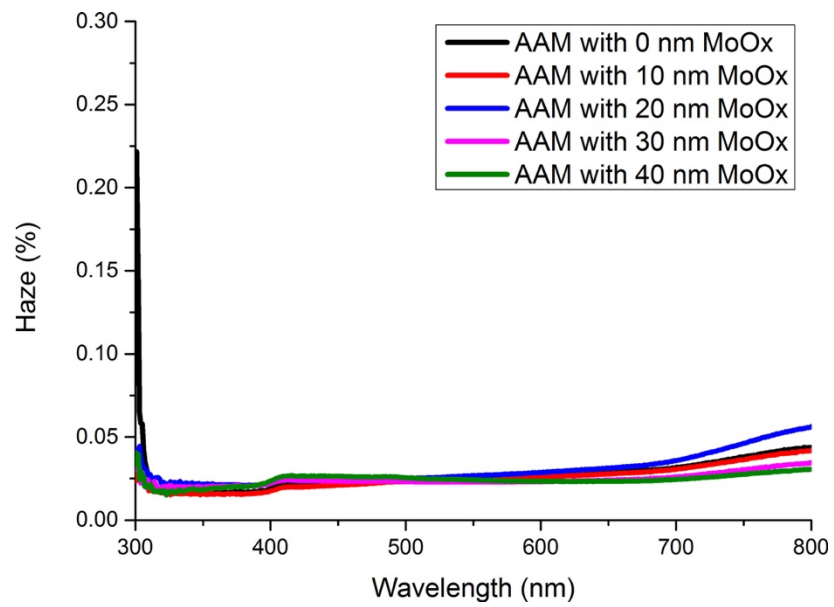
Supplementary Figure S7. Diagrams for the fabrication process of the large-area AAM based TCEs. **(a)** Continuous roll-to-roll sputtering system to fabricated AAM based TCEs. **(b)** Structure of the fabricated AAM based TCEs.



Supplementary Figure S8. AFM topography images of of as-deposited and template-stripped Ag film before and after MoO_x layer coating.



Supplementary Figure S9. Photographs of (a) as-deposited ultrathin Ag film and (b) template-stripped Ag film before (up) and after (down) the scraping test.



Supplementary Figure S10. The haze curves of the AAM films with various thickness of MoO_x layer.