

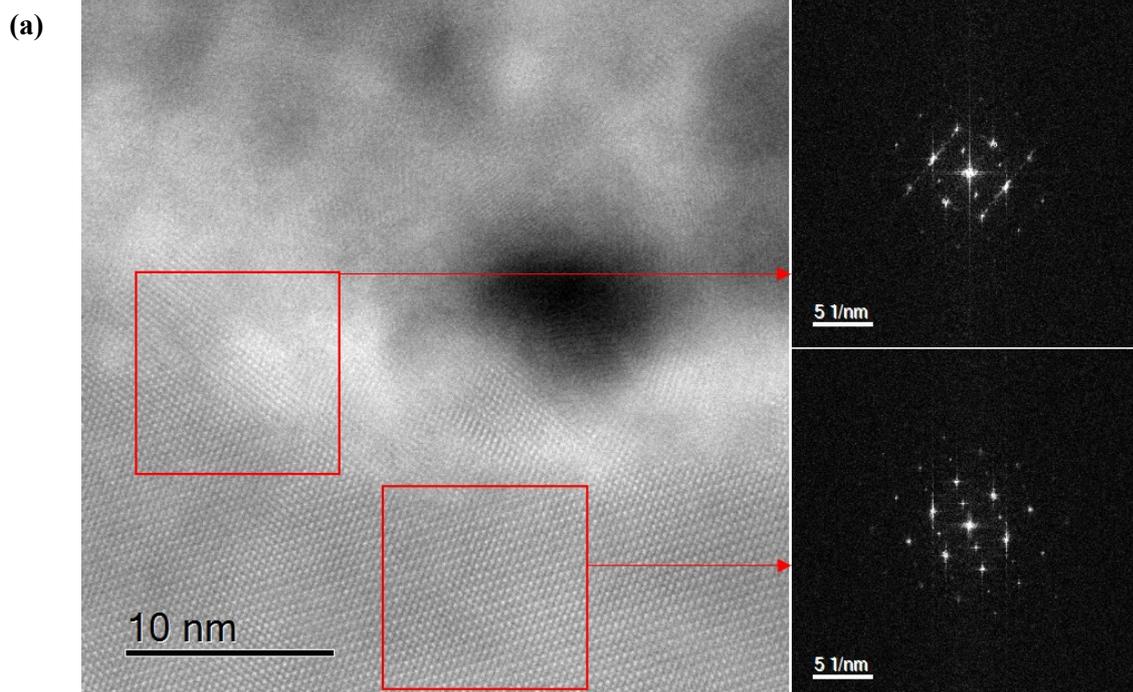
## Supporting Information

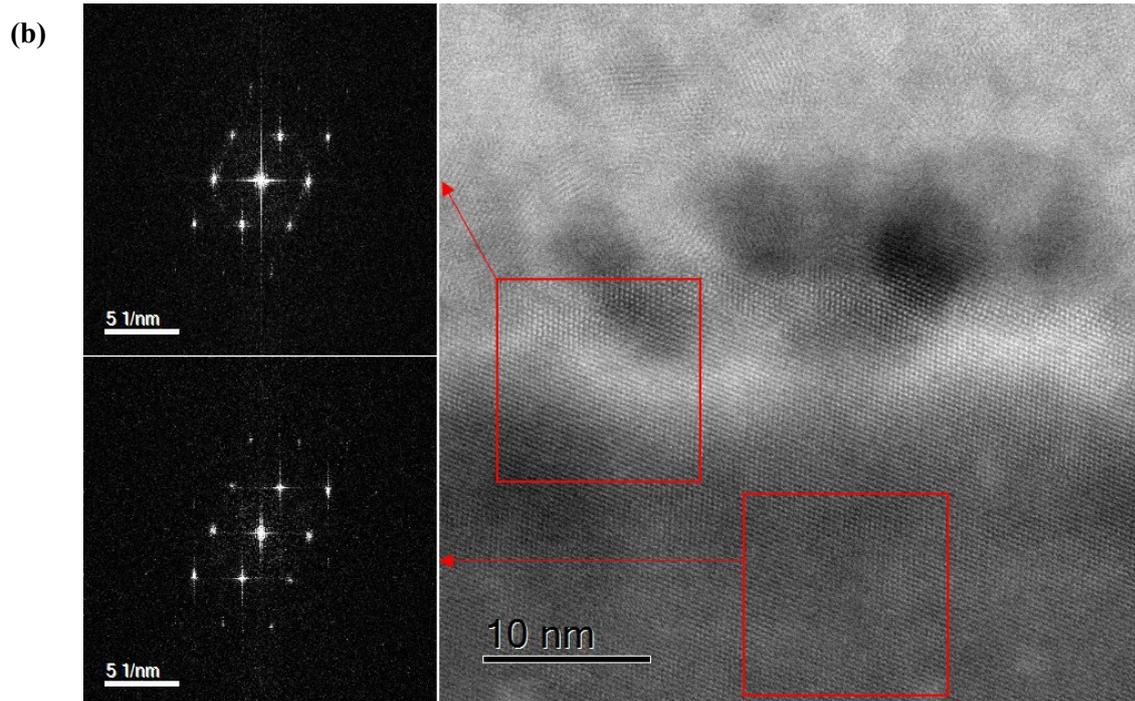
### Beyond 10% efficiency Cu<sub>2</sub>ZnSnS<sub>4</sub> solar cell enabled by modifying the heterojunction interface chemistry

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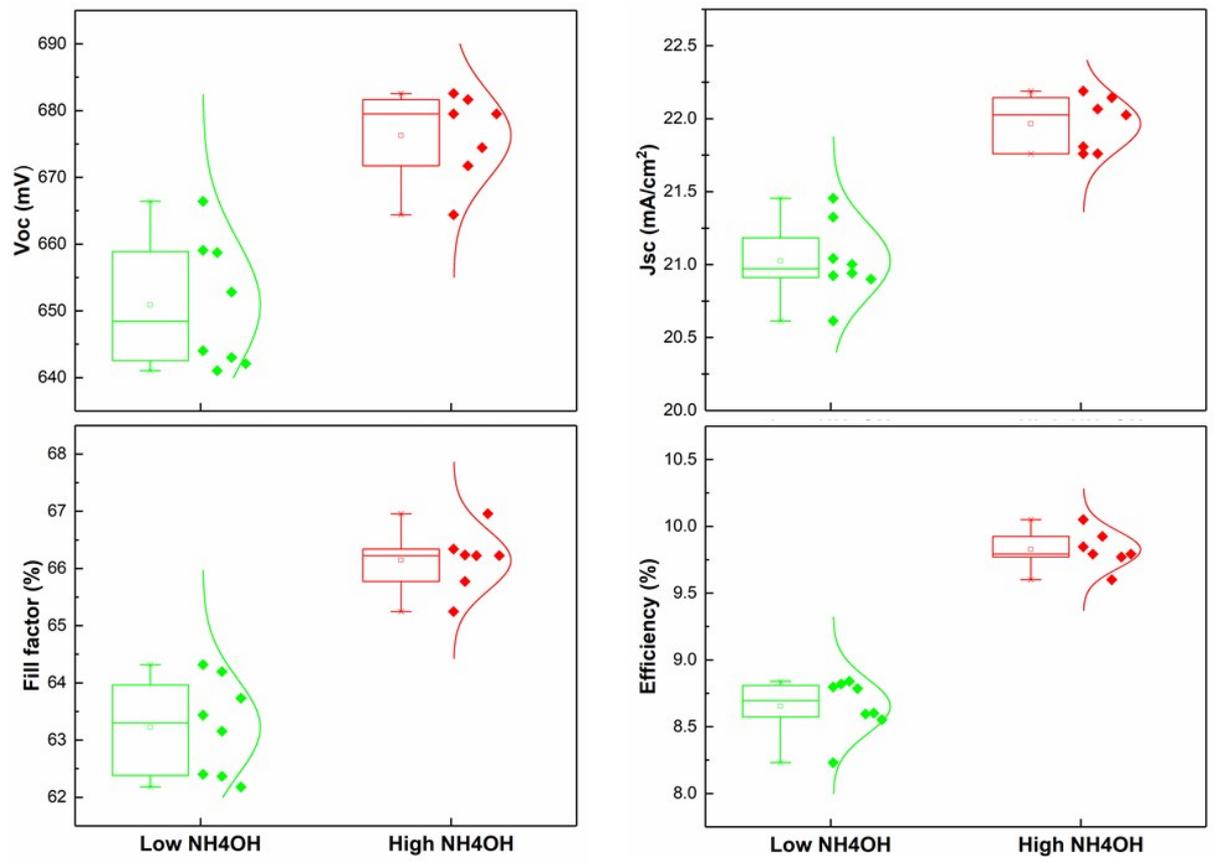
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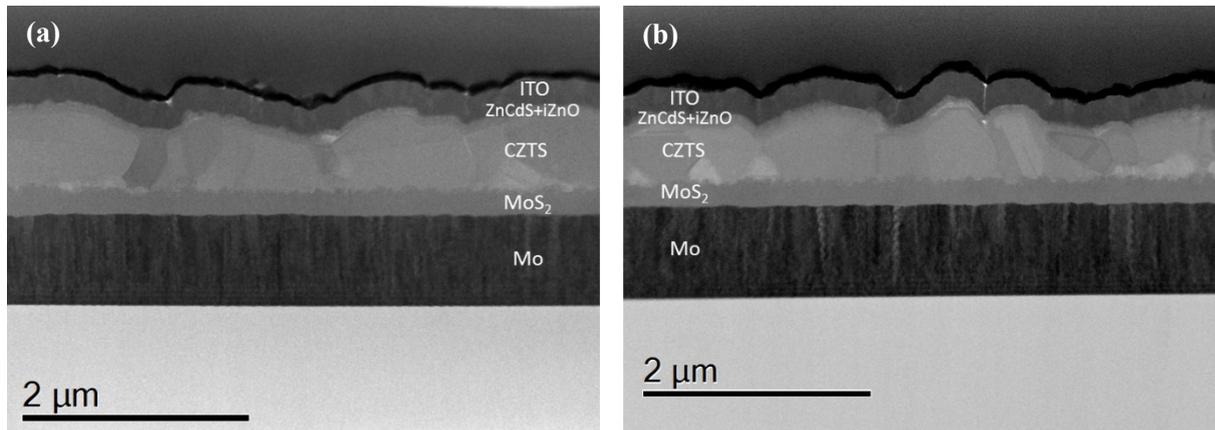


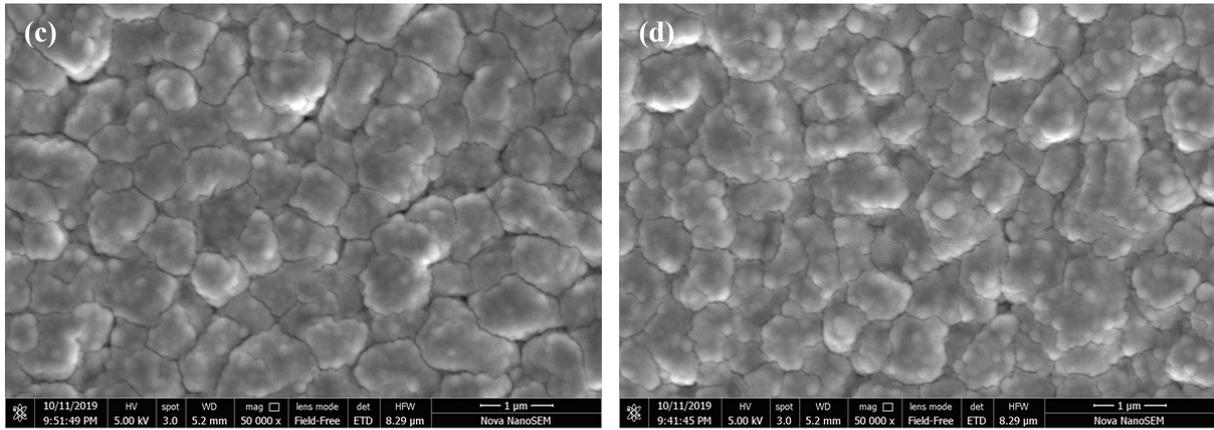


**Figure S1** The fast Fourier transform (FFT) patterns of the interface region for CZTS solar cells prepared with ZnCdS buffer layer deposited with (a) low and (b) high ammonia concentration.

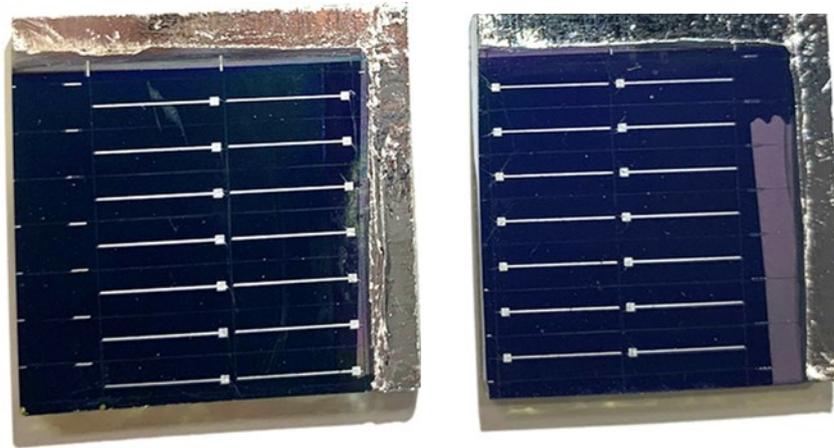


**Figure S2** The statistical data of Voc, JSC, FF, and PCE for the CZTS solar cells prepared with ZnCdS buffer layer deposited with low and high ammonia concentration.





**Figure S3** TEM cross sectional and SEM top view images of the CZTS devices prepared with ZnCdS buffer layer deposited with (a, c) high and (b, d) low ammonia concentration.



**Figure S4** Photos of CZTS devices prepared with ZnCdS buffer layer deposited with (left) high and (right) low ammonia concentration (where 14 cells are shown). All the CZTS devices are fabricated on 2.5 cm×2.5 cm glass substrates.