

Supplementary Information

Nanostructured p-type CZTS thin films prepared by facile solution process for 3D p-n junction solar cells

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Table S1. Compositional ratio of elements in CZTS films.

	$\text{Cu}/(\text{Zn}+\text{Sn})$	Zn/Sn	$\text{S}/(\text{Cu}+\text{Zn}+\text{Sn})$
S540	0.69	1.05	1.56
S570	0.70	1.06	1.75
Sputter	0.82	1.17	1.42

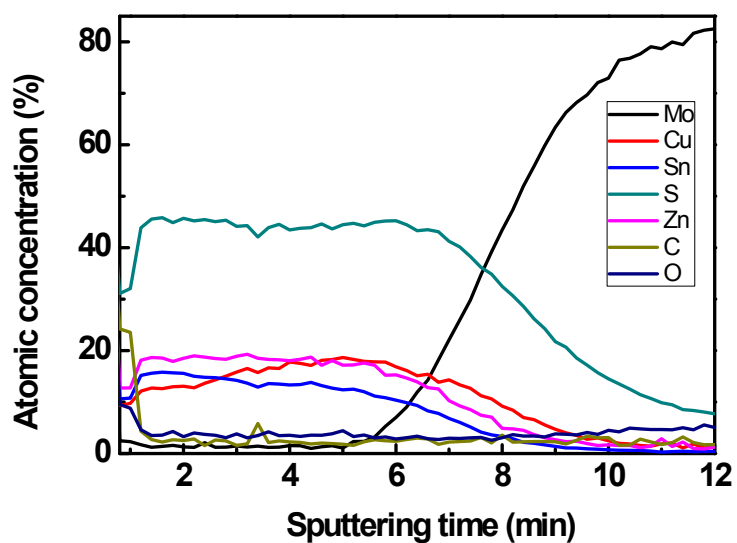


Figure S1. Auger Electron Spectroscopy (AES) of a nanoporous CZTS thin film of S540.

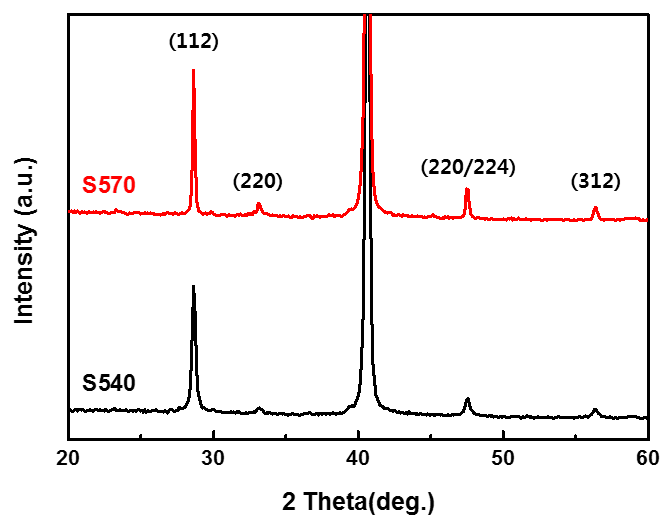


Figure S2. XRD patterns of nanoporous CZTS thin films of S540 and S570.

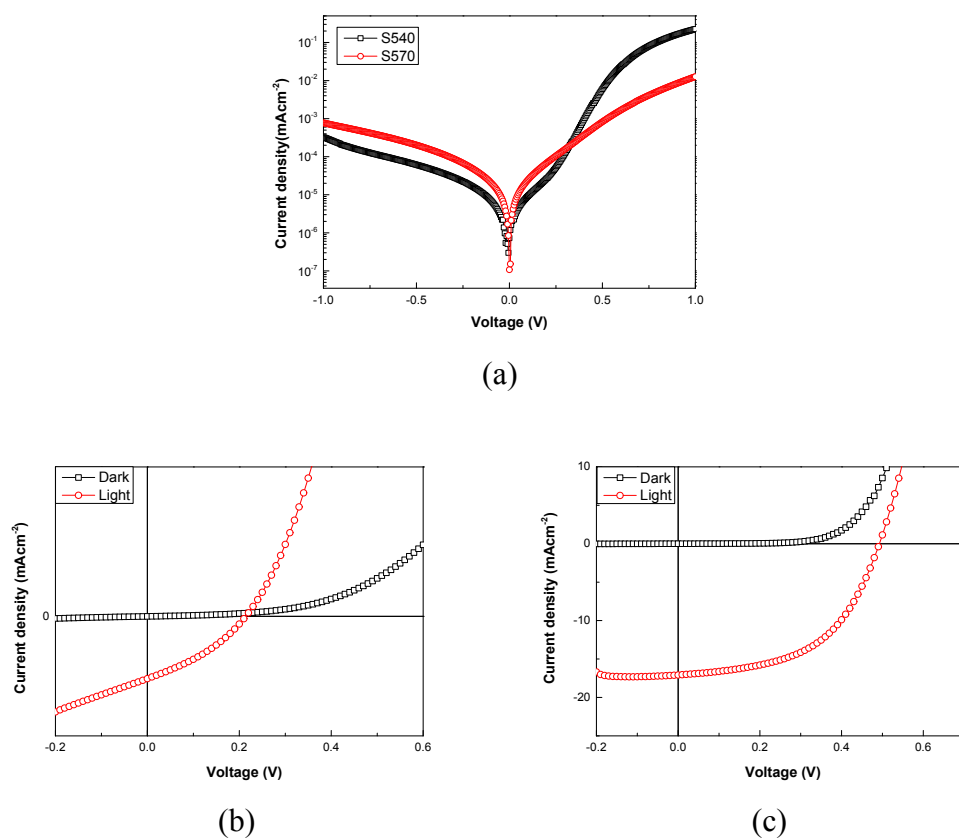


Figure S3. (a) Current density-voltage curves of solar cells with nanoporous CZTS of S540 and S570, and light & dark J-V curves of solar cells of (b) S540 and (c) S570.

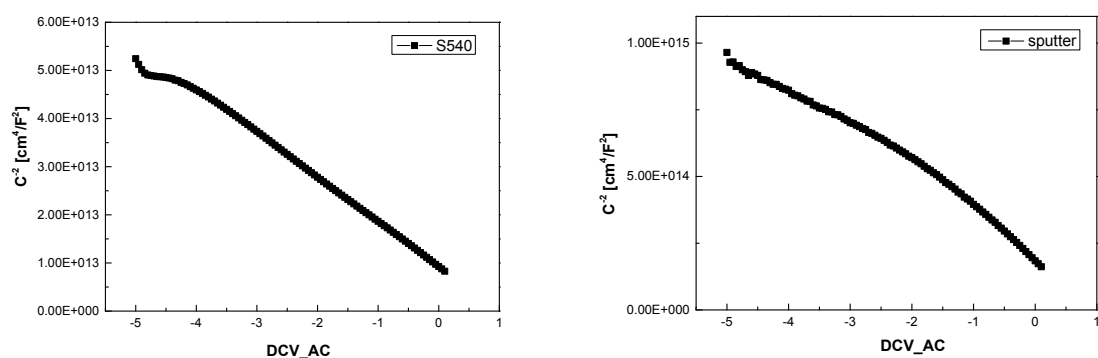


Figure S4. Mott-Schottky plots of solar cells with nanoporous CZTS of S540 and sputtered CZTS..