## Supplementary Materials

## CuSCN as the Back Contact for Efficient ZMO/CdTe Solar Cells

Deng-Bing Li ${ }^{1}$, Zhaoning Song ${ }^{1}$, Sandip S. Bista ${ }^{1}$, Fadhil K. Alfadhili ${ }^{1}$, Rasha A. Awni ${ }^{1}$, Niraj Shrestha ${ }^{1}$, DeMilt Rhiannon ${ }^{2}$, Adam B. Phillips ${ }^{1}$, Michael J. Heben ${ }^{1}$, Randy J. Ellingson ${ }^{1}$, Feng Yan ${ }^{3}$ and Yanfa Yan ${ }^{1, *}$<br>1 Department of Physics and Astronomy, and Wright Center for Photovoltaics Innovation and Commercialization (PVIC), University of Toledo, Toledo, OH 43606, USA; dengbing.li@utoledo.edu (D.B.L.); zhaoning.song@utoledo.edu (Z.S.); sandip.bista@rockets.utoledo.edu (S.S.B.); fadhil.alfadhili@rockets.utoledo.edu (F.K.A.); rasha.awni@rockets.utoledo.edu (R.A.A.); niraj.shrestha@rockets.utoledo.edu (N.S.); adam.phillips@utoledo.edu (A.B.P.); michael.heben@utoledo.edu (M.J.H.); randy.ellingson@utoledo.edu (R.J.E.)<br>2 Ottawa Hills Junior/senior high school, Ottawa Hills Local Schools, Ottawa Hills, OH 43606, USA; rdemilt20@ohschools.org<br>${ }^{3}$ Department of Metallurgical and Materials Engineering, The University of Alabama, Tuscaloosa, Alabama, 35487, USA; fyan@eng.ua.edu<br>* Correspondence: yanfa.yan@utoledo.edu

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Step 1: FTO/ZMO/CdTe stack with $\mathrm{CdCl}_{2}$ treatment

Step 2: Spin-coating CuSCN layer varied by different CuSCN concentrations and spin-coating speeds

Step 3: Activation varied by different temperatures

Figure S1. Schematic illustration of technological steps and investigation design in this work.


Figure S2. Cross-sectional SEM images of complete devices with CuSCN as back contact in (a) low and (b) high magnification.


Figure S3. J-V curves the best cells in devices with different CuSCN thickness.


Figure S4. Statistical results for MZO/CdTe solar cell performances of (a) PCE, (b) Voc, (c) FF, (d) Jsc, (e) series resistance (Rs), and (f) shunt resistance (Rsh) with different CuSCN solutions.
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