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Supplementary

Fabrication and Characterization of $Cu_2ZnSnSe_4$ Thin-Film Solar Cells using a Single-Stage Co-Evaporation Method: Effects of Film Growth Temperatures on Device Performances

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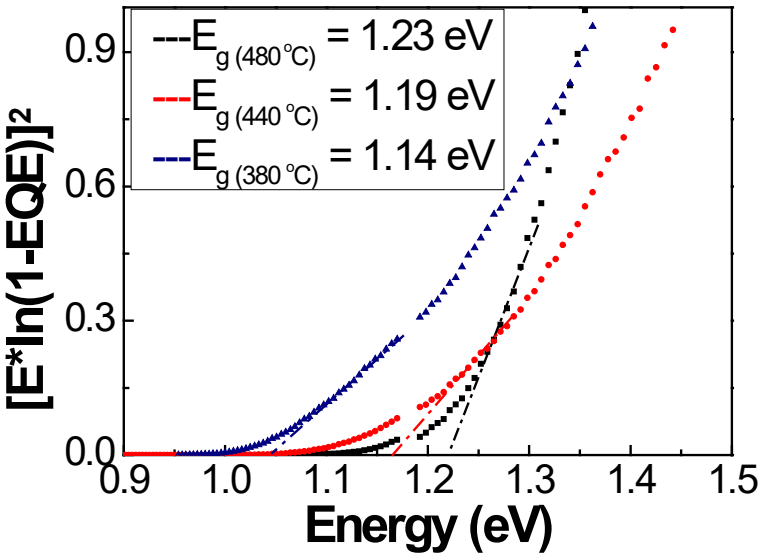

Figure S1. Estimated bandgap from EQE spectra of all the solar cell devices based on the CZTSe absorber layer prepared at different growth temperatures ranging from 380 to 480 °C.

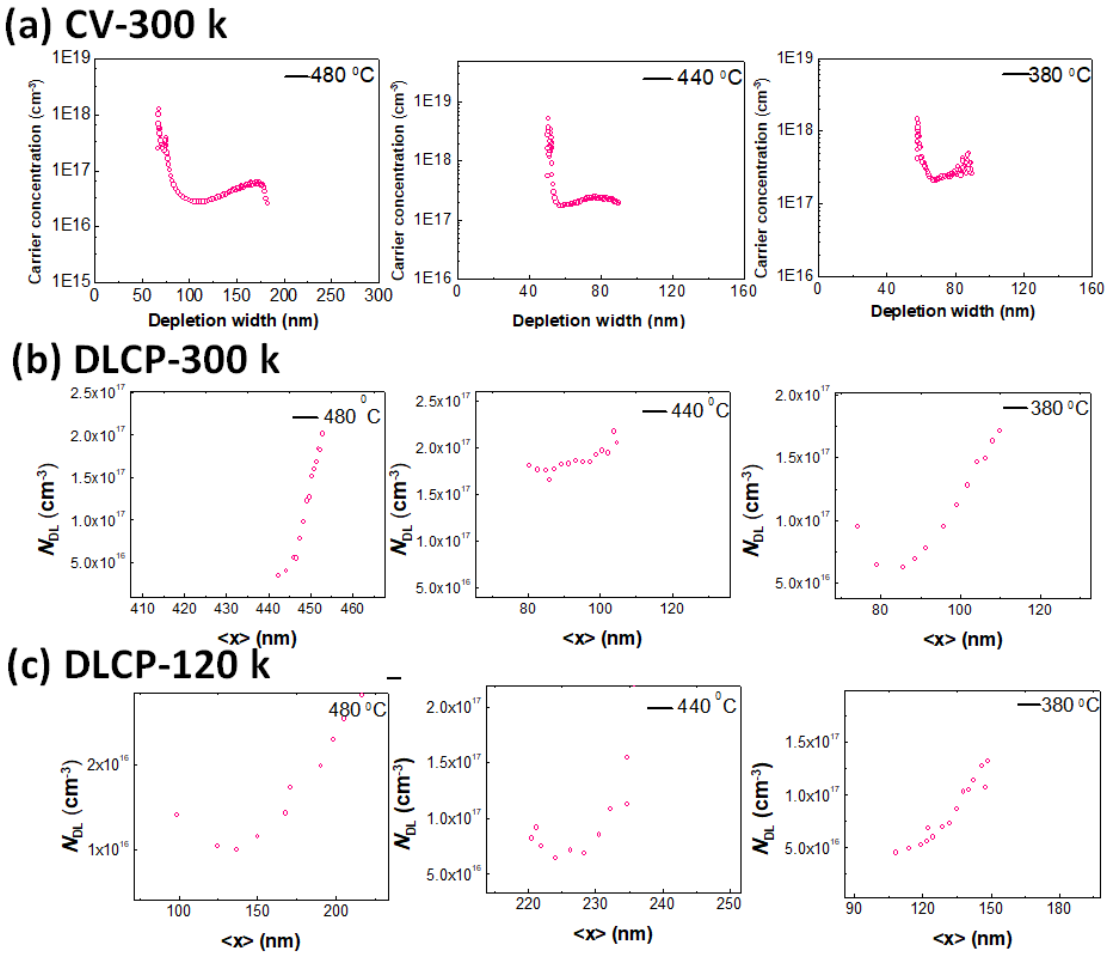

Figure S2. (**a**) Capacitance voltage (C-V) at 300 k; (**b**) Drive level capacitance voltage (DLCP) at 300 k (**c**) DLCP at 120 k; of the all the solar cell devices based on the CZTSe absorber layer prepared at different growth temperatures.