Electronic Supplementary Material (ESI) for RSC Advances.

Supporting Information for

Thermally-derived liquid phase involving multiphase $Cu(In,Ga)Se_2$ nanoparticles for solution-processed inorganic photovoltaic devices

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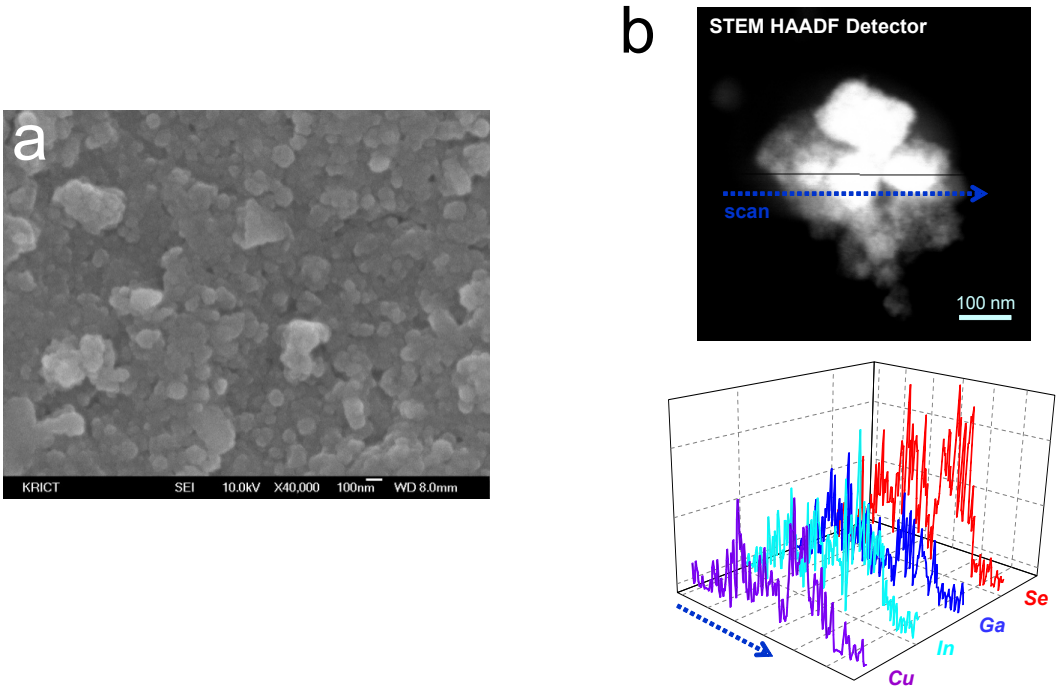

Figure S1. (a) SEM image, (b) STEM image and TEM-EDS compositional profiles for as-synthesized multiphase, stoichiometric CIGSe nanoparticles.

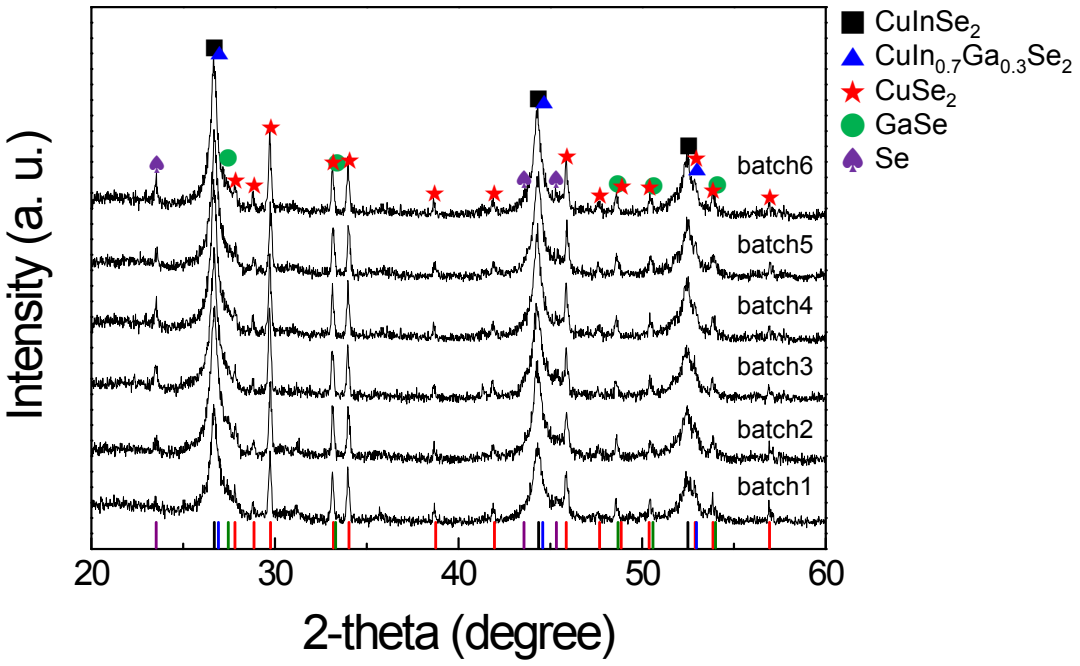

Figure S2. XRD spectra for as-synthesized multiphase, stoichiometric CIGSe nanoparticles by multiple experiments under same synthetic condition for proving reproducibility of multiphase CIGSe nanoparticles.

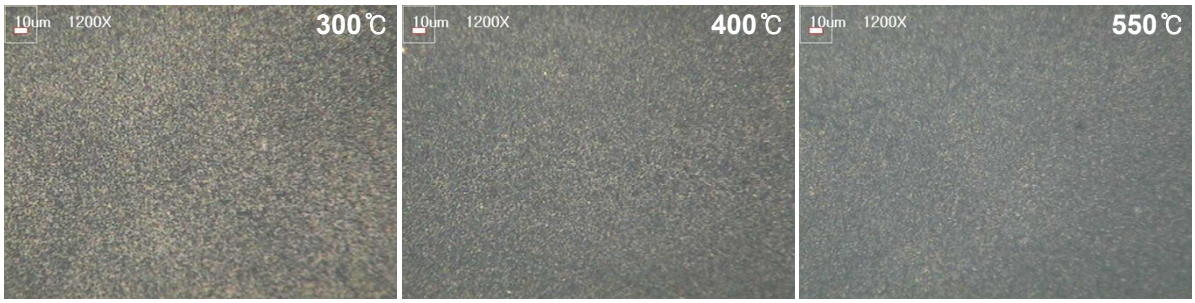

Figure S3. Top-view optical microscope images for the solution-processed multiphase CIGSe-based particulate films selenized at (a) 300, (b) 400, and (b) 550 °C. All scale bars are 10μm.

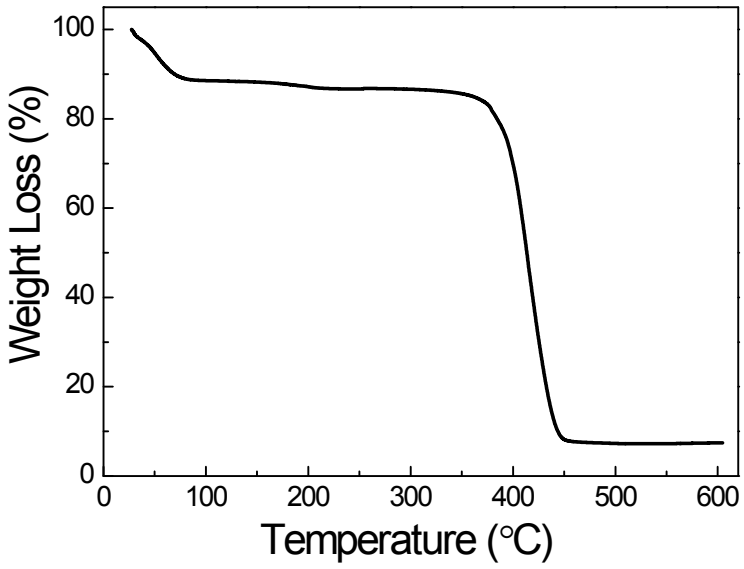

Figure S4. TGA results for PVP under an oxygen free atmosphere (nitrogen). The heating rate was 5 °C/min. The weight loss below 90 °C is due to the evaporation of absorbed water and the weight loss above 100 °C is attributed to the thermal decomposition of PVP.

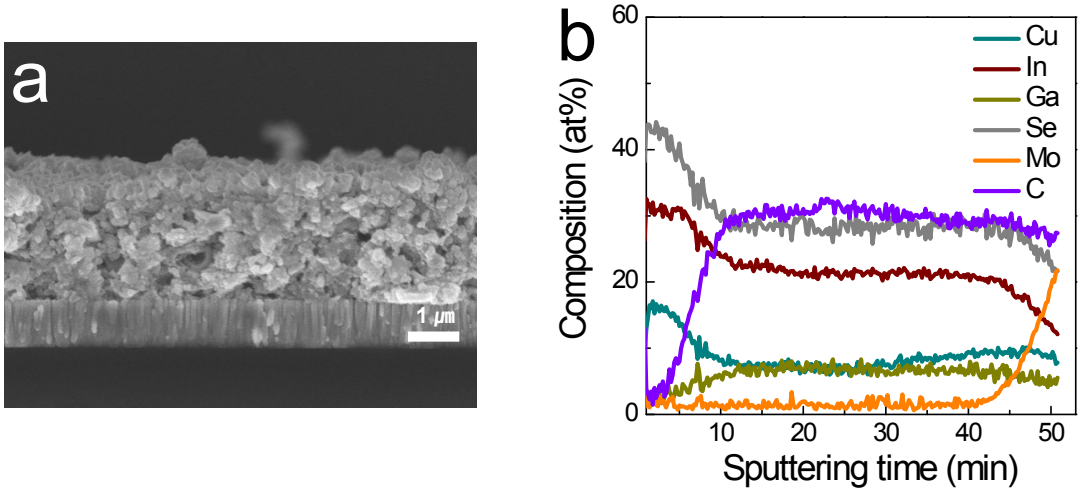

Figure S5. (a) Cross-sectional SEM image and (b) AES depth profile for the solution-processed multiphase CIGSe-based particulate films selenized at 550 °C.