Electronic Supplementary Material

A Low Temperature Growth of Cu_2O Thin Films as Hole Transporting Material for Perovskite Solar Cells

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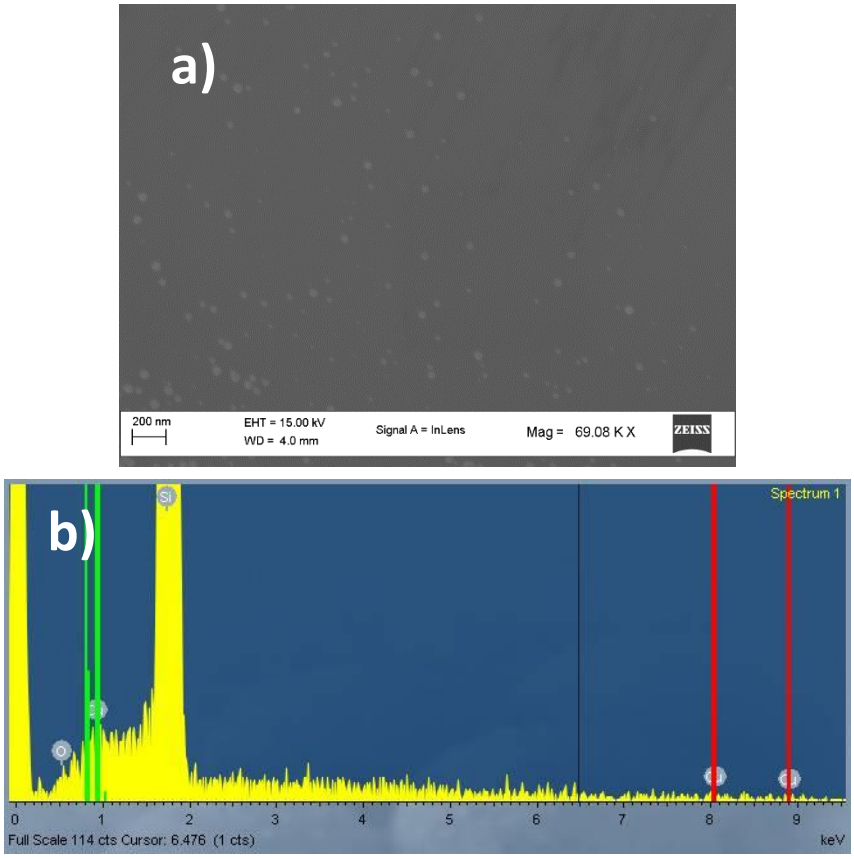

Figure S1. FE-SEM plan-image and EDX spectrum of the Cu_2O thin film deposited on Si substrate at 200 °C.

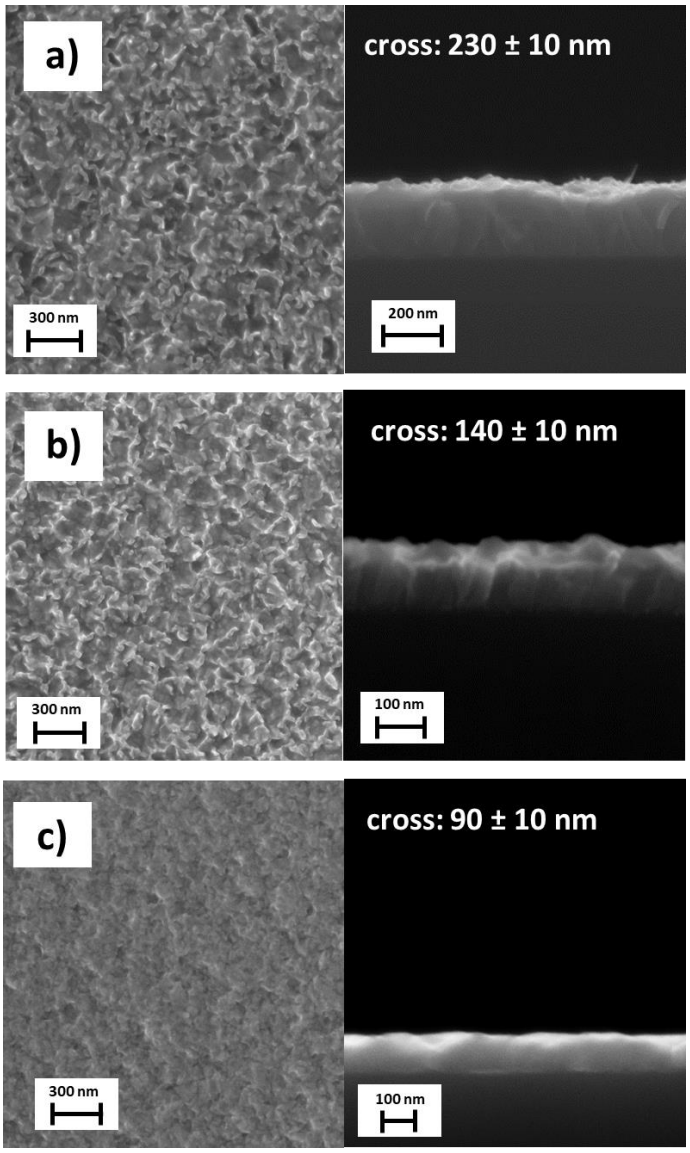

Figure S2. FE-SEM images in plain and cross of Cu_2O thin films deposited on Si substrate at 250 °C with different vaporization temperature and deposition time: a) T_{vap}: 140 °C, t: 30 min; b) T_{vap}: 140 °C, t: 15 min c) T_{vap}: 130 °C t: 15 min.

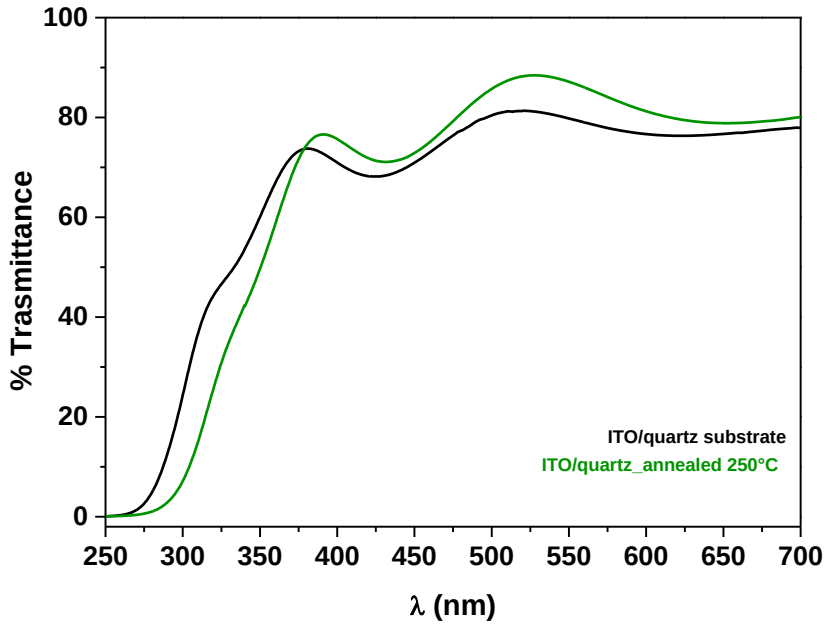

Figure S3. Transmittance spectra of the ITO/quartz substrate (black line); ITO/quartz substrate annealed at 250 °C.

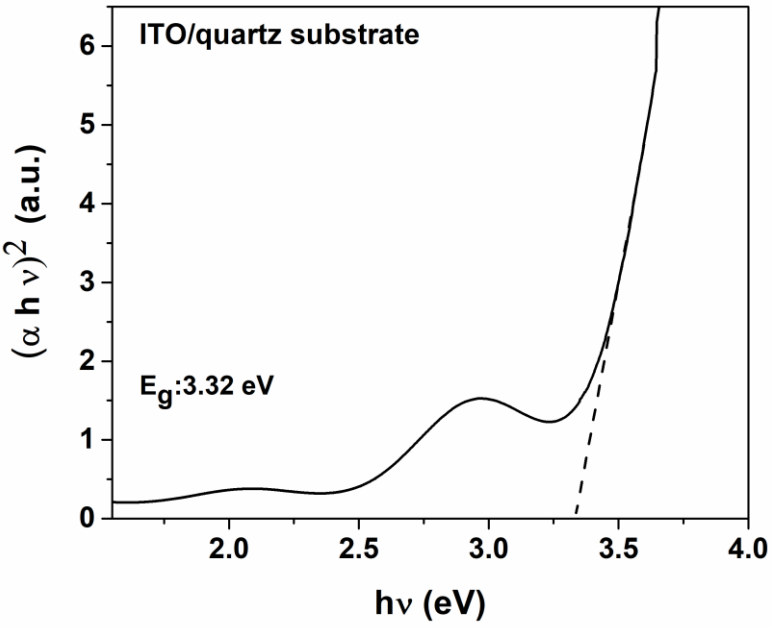

Figure S4. Tauc's plot [$(\alpha h\nu)^2$ against photon energy ($h\nu$)] of the ITO/quartz substrate.