Supporting Information

Controllable Growth of Ga Film Electrodeposited from Aqueous Solution and $Cu(In,Ga)Se_2$ Solar Cells

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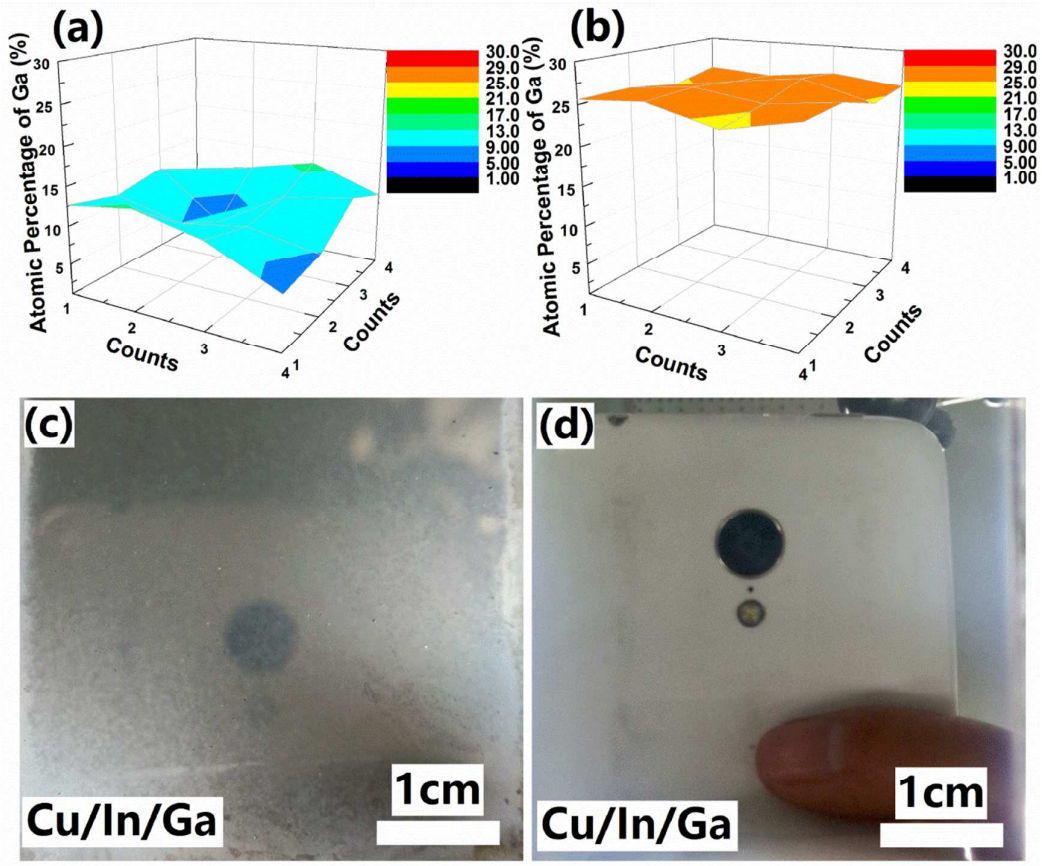

Figure S1 Ga content in (a) (DC-Cu/In)-(DC-Ga) and (b) (PC-Cu/In)-(PC-Ga) samples measured by EDS along the radial direction of the Cu/In/Ga films and photos of Cu/In/Ga precursors of (c) (DC-Cu/In)-(DC-Ga) and (d) (PC-Cu/In)-(PC-Ga) samples

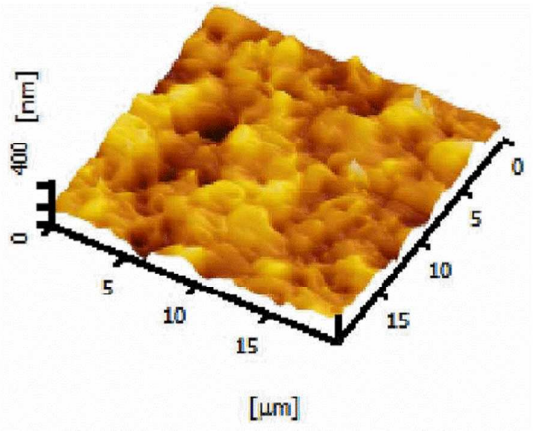

Figure S2 AFM morphological image of the Ga film on Cu/In layer deposited by DCE method with direct current density 125 mA cm^{-2} and with a scanning area of 20 µm×20 µm in size. Cu/(In+Ga) and Ga/(In+Ga) ratios of the film are 0.8 and 0.3 measured by XRF

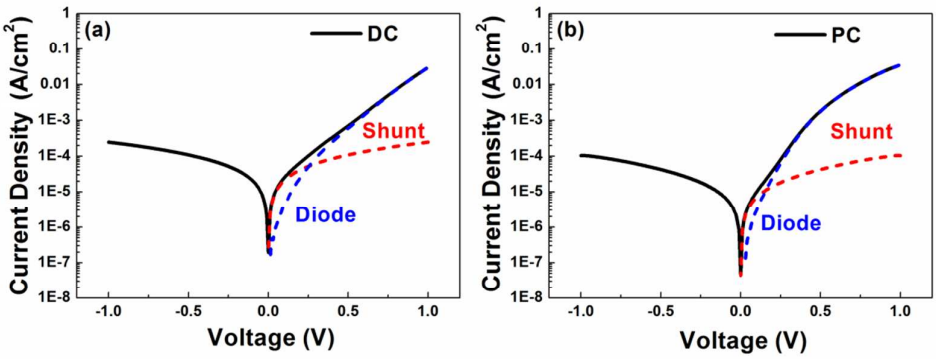

Figure S3 Shunt and diode current of dark J-V curves of (a) CIGSe-DC and (b) CIGSe-PC samples.