Supporting Information

Ecofriendly and Nonvacuum Electrostatic Spray-Assisted Vapor Deposition of $Cu(In,Ga)(S,Se)_2$ Thin Film Solar Cells

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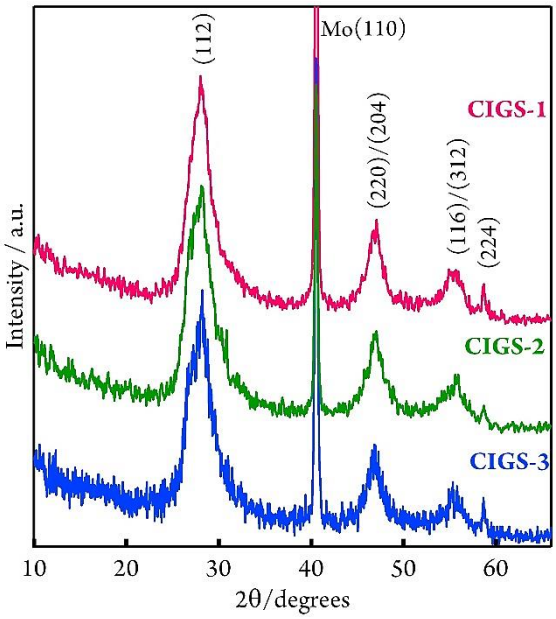

Figure S1. Shows XRD patterns of the as-deposited CIGS thin films with various Cu/(In+Ga) ratios prepared onto Mo-coated SLG substrate.

Table S1. Composition study of the as-deposited CIGS thin films by X-ray fluorescence (XRF) elemental analysis.

Thin Films	**Cu (at%)**	**In (at%)**	**Ga (at%)**	**S (at%)**	**Cu/(In+Ga)**	**Ga/(In+Ga)**
CIGS-1	16.92±0.60	21.51±0.34	6.76±0.29	54.12±1.16	0.60	0.24
CIGS-2	21.96±0.82	22.41±0.78	6.83±0.32	48.42±1.87	0.75	0.23
CIGS-3	20.35±1.99	20.08±1.91	6.09±0.67	52.95±4.54	0.78	0.23
optimized CIGS	19.02±0.42	23.97±0.42	6.90±0.30	50.60±1.37	0.62	0.22

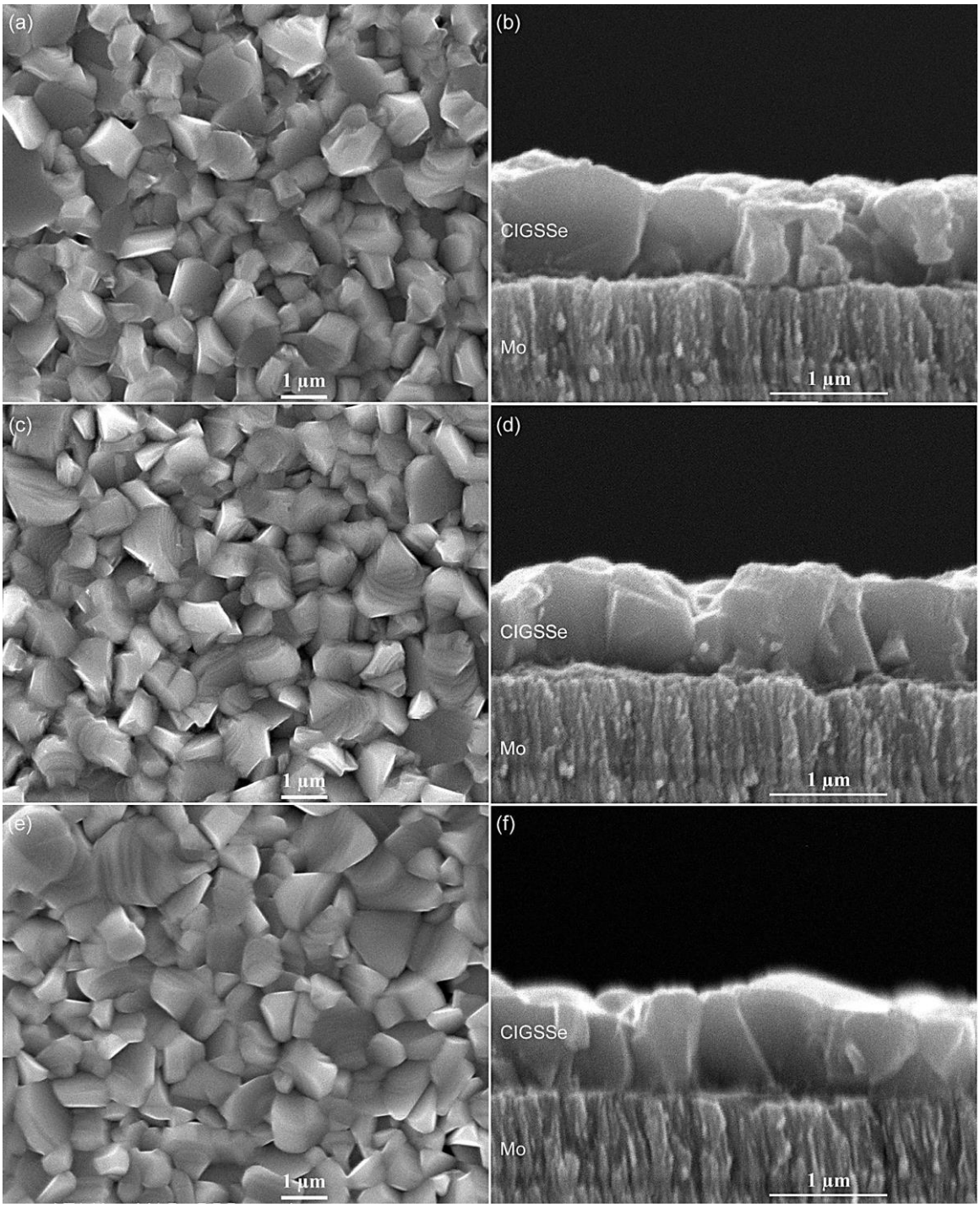

Figure S2. SEM images of the (a,b) CIGSSe-1, (c,d) CIGSSe-2 and (e,f) CIGSSe-3 thin films deposited on to Mo-coated soda-lime glass substrate.