Supplementary information

Ultrathin wide band gap kesterites

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Table S1: CZTS thickness series of figure 1, previously published compared to new data.

Thickness [nm]	**Voc** [mV]	**Jsc** [mA/cm2]	**FF** [%]	**Eff** [%]	**Eg** [eV]	**Cu/Sn**	**Zn/(Cu+Sn)**	**Ref**
2000	594	19.6	53.7	5.9	1.47	1.79	0.40	[1]
1500	583	17.6	53.8	5.6	1.47	1.90	0.35	[1]
1000	580	18.0	51.8	5.4	1.48	1.81	0.38	[1]
750	595	17.4	56.5	6.0	1.47	1.88	0.41	[1]
700	497	15.7	49.1	3.8	1.47	1.82	0.38	[1]
500	478	13.2	46.6	3.0	1.49	1.81	0.41	[1]
1000	650	14.0	48.7	4.4	1.52	1.81	0.32	This work
750	630	12.8	41.0	3.3	1.49	1.90	0.36	This work
500	580	13.3	53.1	4.1	1.44	1.90	0.35	This work
350	560	10.9	41.2	2.5	1.50	1.86	0.35	This work

[1] Y. Ren, J.J.S. Scragg, C. Frisk, J.K. Larsen, S.-Y. Li, and C. Platzer-Björkman, *Physica Status Solidi A*, 2015, 1. doi: 10.1002/pssa.201532311

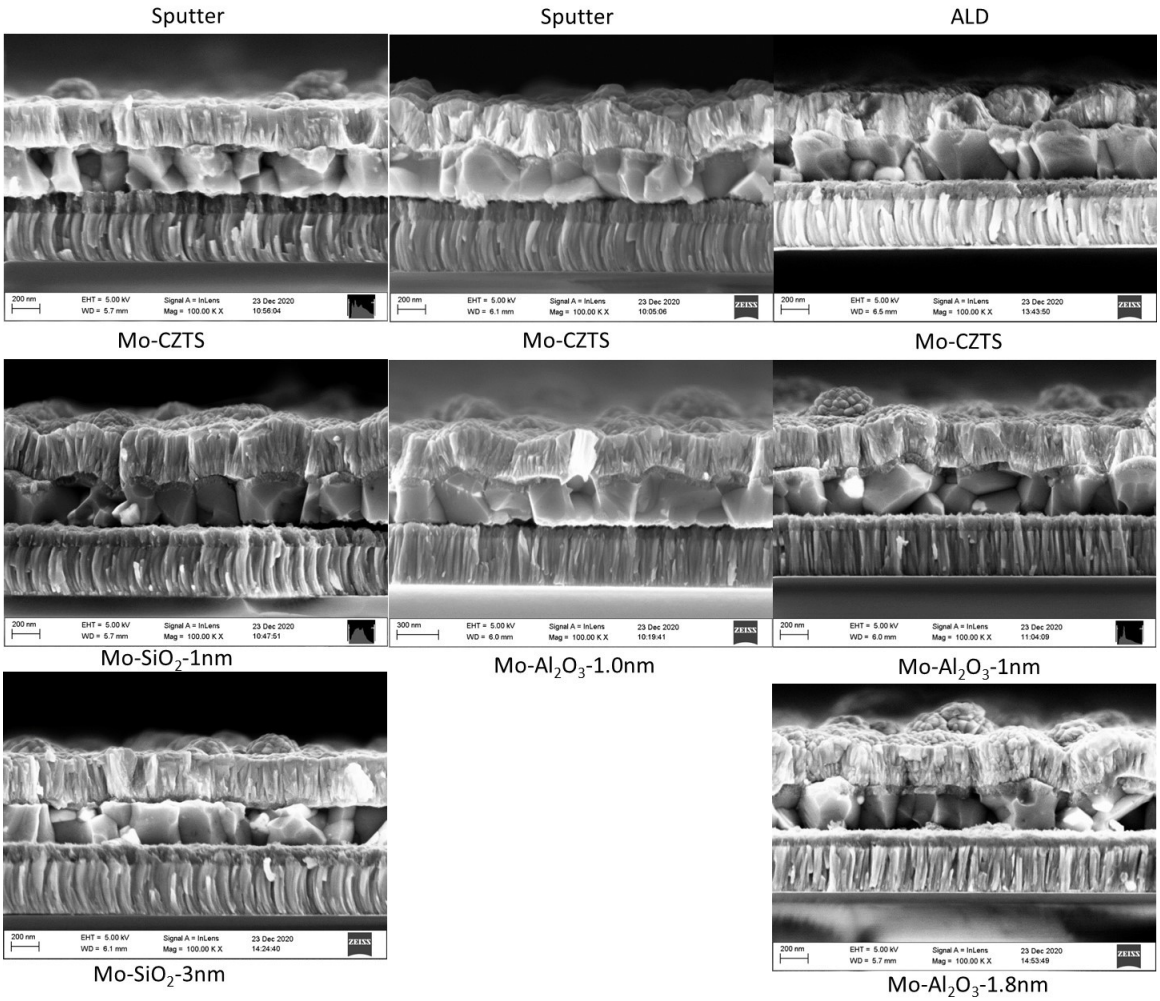

Figure S1: SEM cross sections of Mo/CZTS devices with and without different very thin passivation layers (sputtered SiO_2, sputtered Al_2O_3 and ALD Al_2O_3).

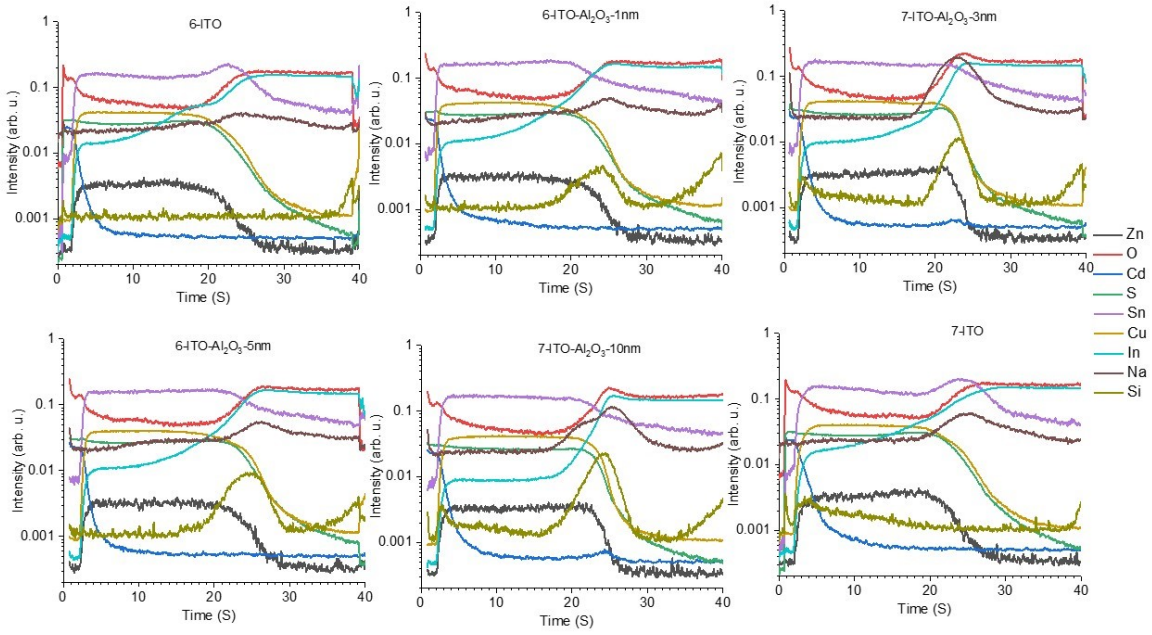

Figure S2: GDOES of ITO/CZTS with increasing thickness of sputtered SiO2 passivation layers.

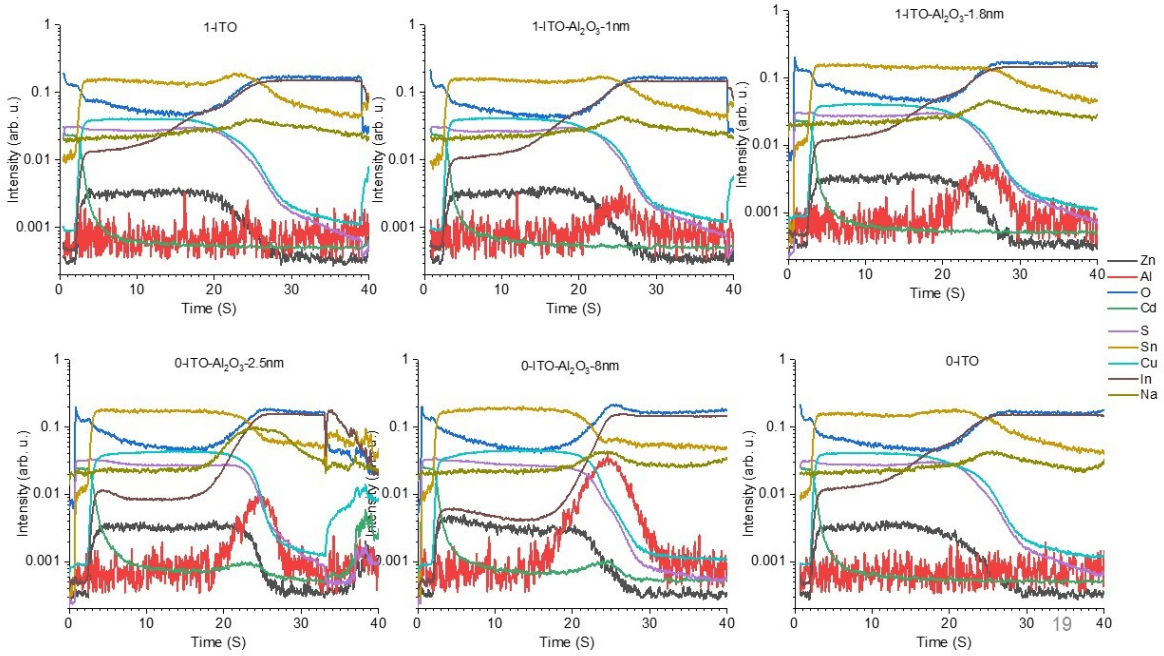

Figure S3: GDOES of ITO/CZTS with increasing thickness of ALD Al2O3 passivation layers.