

Effects of metal ions concentration on electrodeposited CuZnSn film and its application in kesterite $\text{Cu}_2\text{ZnSnS}_4$ solar cells

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Tubshin Hreid^a, Jianjun Li^b, Yi Zhang^b, Henry J. Spratt^c, Hongxia Wang^{a*}, Geoffrey Will^{a*}

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Supplementary information

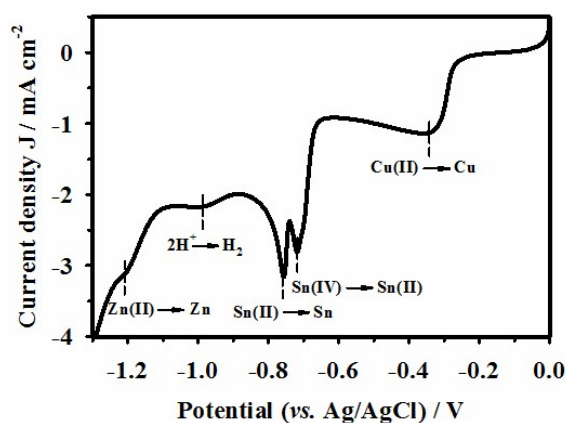


Fig. S1. linear voltammogram of the co-electrodeposition of copper tin and zinc (Mo/SLG substrate working electrode, Pt counter electrode and Ag/AgCl/Saturated KCl Reference electrode) immersed in 200mM $\text{Na}_3\text{C}_6\text{H}_5\text{O}_7 \cdot 2\text{H}_2\text{O}$ and 20 mM $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$, 10 mM $\text{ZnSO}_4 \cdot 7\text{H}_2\text{O}$ and 10mM SnSO_4 . Scan rate: 10 mV s^{-1} . The potential started at 0 V and was scanned in the negative direction.

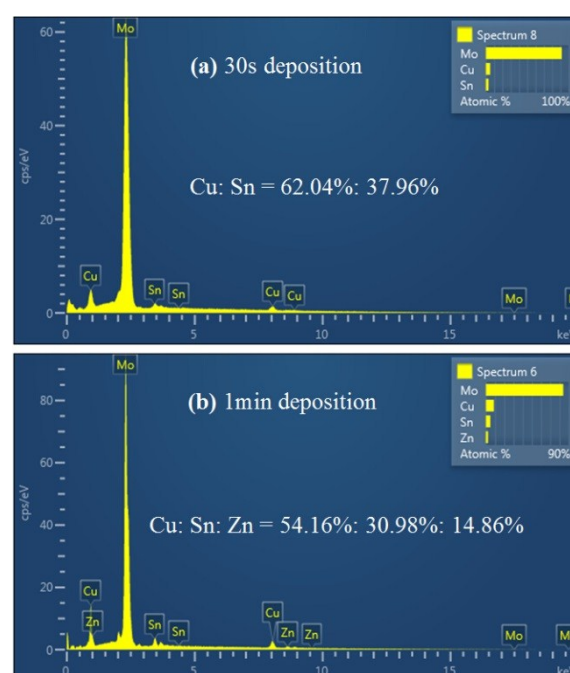


Fig. S2. EDS spectrum of the electrodeposited alloy film with different duration (a) 30s and (b) 1 min film, both deposited from the electrolyte solution containing 200mM $\text{Na}_3\text{C}_6\text{H}_5\text{O}_7 \cdot 2\text{H}_2\text{O}$ and 20 mM $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$, 10 mM $\text{ZnSO}_4 \cdot 7\text{H}_2\text{O}$ and 10mM SnSO_4

^a School of Chemistry, Physics and Mechanical Engineering, Science and Engineering Faculty, Queensland University of Technology, Brisbane, QLD, 4001, Australia

^b Institute of Photoelectronic Thin Film Devices and Technology, Nankai University, Tianjin 300071, China

^c Central Analytical Research Facility, Institute for Future Environments, Queensland University of Technology, Brisbane, QLD, 4001, Australia

* Email: hx.wang@qut.edu.au; g.will@qut.edu.au

Electronic Supplementary Information (ESI) available: [details of any supplementary information available should be included here]. See DOI: 10.1039/x0xx00000x