Electronic Supplementary Material (ESI) for Energy & Environmental Science.

Is Cu a Stable Electrode Material in Hybrid Perovskite Solar Cells for 30 Years Lifetime?

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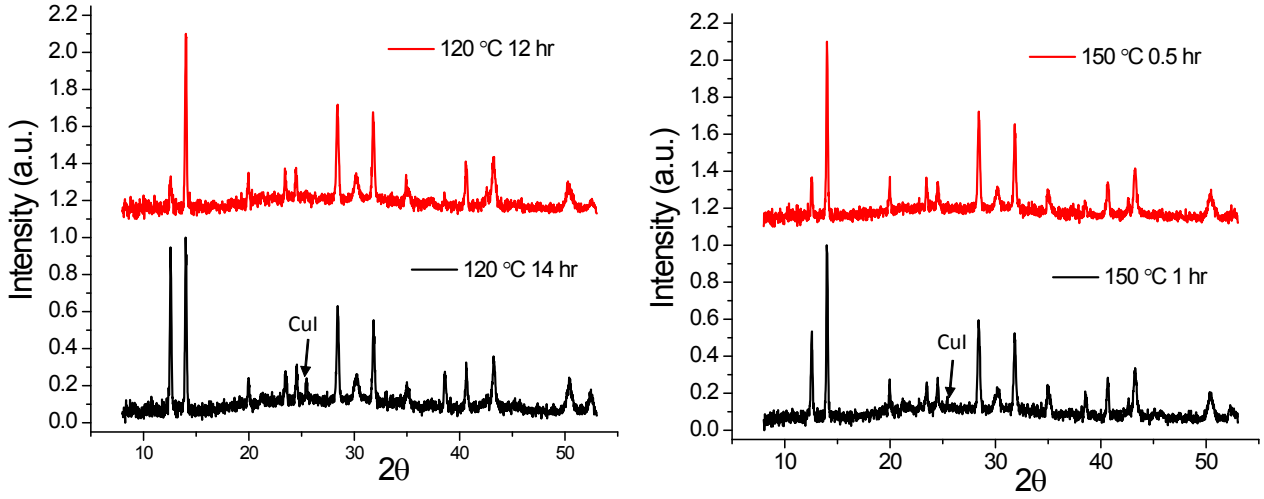

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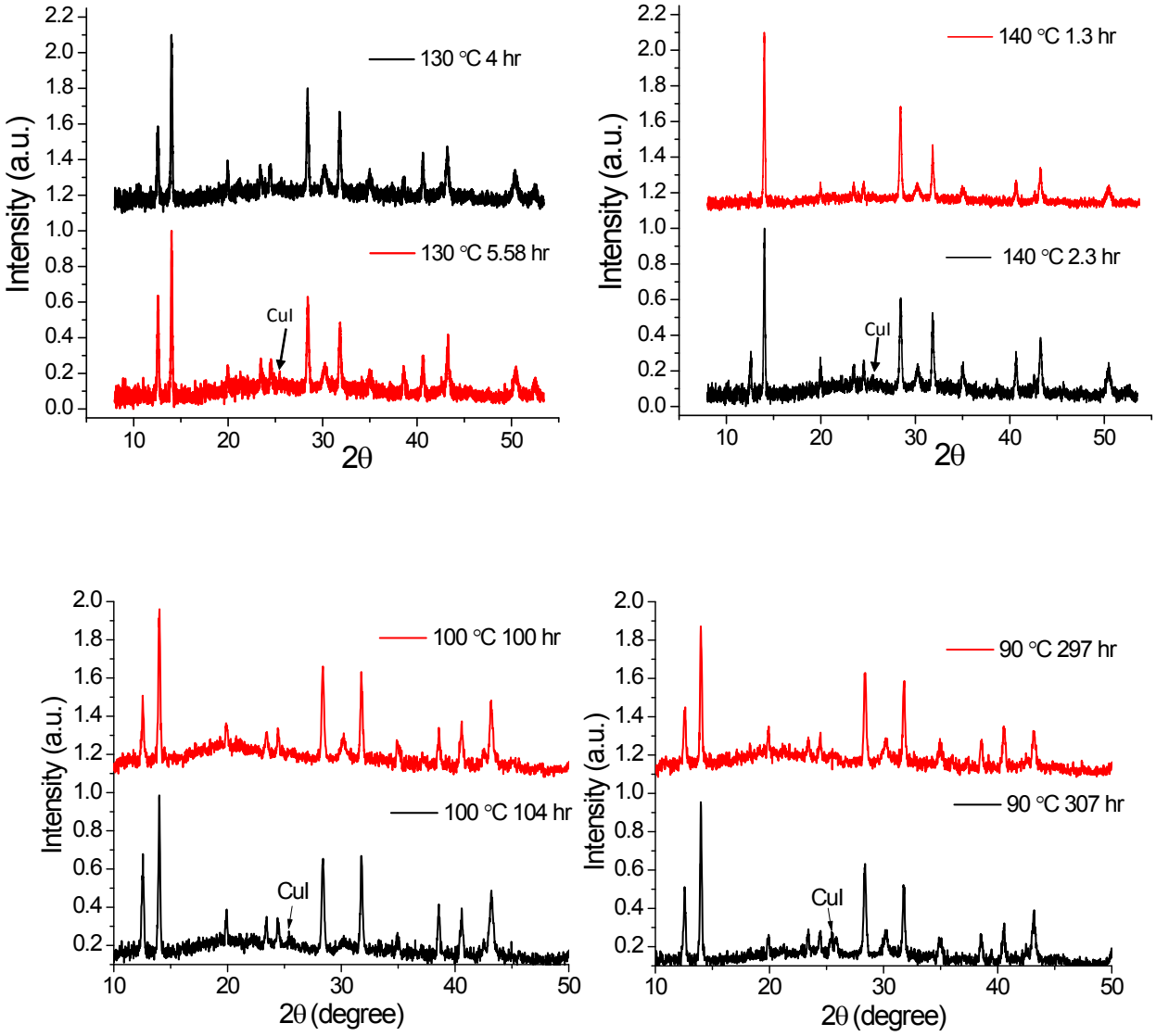
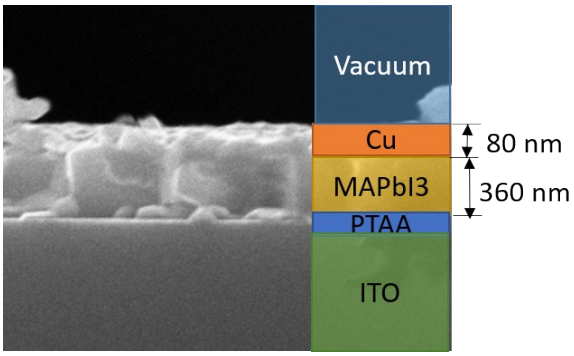


Supplement Figure S1 XRD of samples with structure of ITO/PTAA/Perovskite/Cu/Polystyrene (PS) after annealing at 120°C/12 hours, 120°C/ 14 hours, 150°C/0.5 hour, 150°C/1hour, 130°C/4 hours, 130°C/5.58 hours, 140°C/1.3 hours,140°C/2.3 hours, 100 °C/100 hours, 100 °C/104 hours, 90 °C/297 hours, 90 °C/307 hours. PS here is used to prevent perovskite decompose during thermal annealing.



Supplement Figure S2 Cross-section of the vertical device