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Effect of Thin Polymer Layers on the Performance of ZnO/Cu_2O Solar Cells[1] TALIA GERSHON, KEVIN MUSSELMAN, ANDREW MARIN, JUDITH MACMANUS-DRISCOLL, University of Cambridge — Transition metal oxides are a class of stable, non-toxic, and inexpensive semiconductors with great potential in low-cost photovoltaics (PV) applications. Cu_2O is a versatile p-type oxide that absorbs visible light and can be solution-processed at low temperatures. ZnO is a wide-E_g n-type material with good electronic properties and has already been widely incorporated into other low-cost PV technologies such as organic and dye-sensitized solar cells. While ZnO/Cu_2O devices have large theoretical efficiencies (as high as 20%) [1], practical devices do not reach their full potential due to poor charge collection and recombination. ZnO/Cu_2O PV's can be improved by optimizing deposition conditions, such as solution pH and temperature, and device geometry, such as layer thickness [2]. This talk, however, will discuss how semiconducting polymer layers can further enhance performance for scalable device fabrication. In particular, polymer type and the Cu_2O/polymer interface will be discussed as routes to better performance.

[1] J. Nelson. *The Physics of Solar Cells.* Imperial College Press, 2003
[2] Musselman et al., unpublished

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