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Effects of Nanoscal Holes on Schottky Solar Cells VINCENT DEGEORGE, John Carroll University, ANDREW HIGGINS, SERGEI URAZHDIN, West Virginia University — Increasingly efficient solar to electrical energy conversion is of increasing interest and demand as a viable and sustainable means of renewable energy. The effects of nanoscale patterning at the metal-semiconductor interface of a schottky solar cell are investigated. Effects beyond those produced by variations in the active area of the cell due to the patterning are expected to be observed. N-type GaAs(100) substrates were used in the fabrication of the thin film solar cells. A selection of samples was made porous on the nanoscale using electrochemical etching. Indium was deposited by thermal evaporation to form the metal-semiconductor schottky barrier. On the porous samples the evaporation was done at an angle so as to form intermittent discontinuities in the schottky barrier on the nanoscale. Both porous and nonporous schottky solar cells underwent current/voltage measurements under various lighting conditions in order to determine their photovoltaic characteristics. Photoresponse was indeed observed in the In-GaAs solar cells. However the collected data remains inconclusive as to the effects of the nanoscale discontinuities on the thin film cell.

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