

Abstract Submitted  
for the MAR17 Meeting of  
The American Physical Society

**Photovoltaic Cells involving Iodine-doped Nonconjugated Conductive Polymers: Studies of Cell Stability over time** JUSTIN VAN CLEAVE, and, MRINAL THAKUR, Photonic Materials Research Laboratory, Auburn University, AL — The stability of photovoltaic cells involving iodine-doped nonconjugated conductive polymers in Gratzel-type cells has been evaluated. These devices require a liquid electrolyte for cell functions. Typically a cell constructed using TiO<sub>2</sub>/iodine-doped polyisoprene/carbon on ITO structure has a photovoltage of about 0.73 volt and a current density of about 0.27 mA/cm<sup>2</sup> for an incident light intensity of about 4 mW/cm<sup>2</sup>. As the liquid electrolyte introduced in the cell is lost its performance degrades until the device no longer functions. A sealing method has been developed in order to preserve the electrolyte within the cell and its effect on the lifetime of the cell has been determined. Optical microscopy along with electrical measurements were performed to evaluate the cell functions over time. Sealed cells were found to function for around 30 days, while the unsealed ones degraded within 3 days. Improvement of the sealing methods is presently under investigation.

Mrinal Thakur  
Photonic Materials Research Laboratory, Auburn University, AL

Date submitted: 22 Nov 2016

Electronic form version 1.4