Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Optimizing Ionic Electrolytes for Dye-Sensitized Solar Cells XIAOJUAN FAN, SARAH HALL, Dept. of Physics, Marshall University — Dye-sensitized solar cells DSSCs provide next generation, low cost, and easy fabrication photovoltaic devices based on organic sensitizing molecules, polymer gel electrolyte, and metal oxide semiconductors. One of the key components is the solvent-free ionic liquid electrolyte that has low volatility and high stability. We report a rapid and low cost method to fabricate ionic polymer electrolyte used in DSSCs. Poly(ethylene oxide) (PEO) is blended with imidazolinium salt without any chemical solvent to form a gel electrolyte. Uniform and crack-free porous TiO_2 thin films are sensitized by porphrine dye covered by the synthesized gel electrolyte. The fabricated DSSCs are more stable and potentially increase the photo-electricity conversion efficiency.

Xiaojuan Fan
Marshall University

Date submitted: 23 Nov 2008 Electronic form version 1.4