Abstract Submitted
for the APR16 Meeting of
The American Physical Society

Antimony-Doped Tin Oxide Thin Films Grown by Home Made Spray Pyrolysis Technique GBADEBO YUSUF, BABATUNDE KEJI BABATOLA, ABDULAHI DIMEJI ISHOLA, Department of Science Laboratory Technology, Osun state polytechnic, Iree, AYODEJI O. AWODUGBA, Department of Pure and Applied Physics, Ladoke Akintola University of Technology, Ogbomoso, SOLAR CELL COLLABORATION — Transparent conducting antimony-doped tin oxide (ATO) films have been deposited on glass substrates by home made spray pyrolysis technique. The structural, electrical and optical properties of the ATO films have been investigated as a function of Sb-doping level and annealing temperature. The optimum target composition for high conductivity and low resistivity was found to be 20 wt. % $SnSb_2$+90 wt. ATO. Under optimized deposition conditions of 450^oC annealing temperature, electrical resistivity of 5.210^{-4} Ω-cm, sheet resistance of 16.4 Ω/sq, average optical transmittance of 86% in the visible range, and average optical band-gap of 3.34eV were obtained. The film deposited at lower annealing temperature shows a relatively rough, loosely bound slightly porous surface morphology while the film deposited at higher annealing temperature shows uniformly distributed grains of greater size. Keywords: Annealing, Doping, Homemade spray pyrolysis, Tin oxide, Resistivity

Gbadebo Taofeek Yusuf
Osun state polytechnic, Iree

Date submitted: 10 Jan 2016 Electronic form version 1.4