LIGHT SENSING PROPERTY OF AMORPHOUS SILICON THIN FILM PIN DIODE: SOLAR CELL AND PHOTODIODE

COMMITTEE CHAIR
Dr. Yue Kuo (CHEN/MSEN)

COMMITTEE MEMBERS
Dr. Zhengdong Cheng (CHEN/MSEN)
Dr. Philip R. Hemmer (ECEN/MSEN)
Dr. Jorge M. Seminario (CHEN/MSEN)

Kibum Kim

Kibum Kim is a Ph.D candidate in the Department of Materials Science and Engineering. His dissertation advisor is Professor Yue Kuo. His research interest is light-sensing of pin diodes in solar cell and photodiode applications. Prior to starting his Ph.D program in 2012, He worked at Merck company.

Email: tionoption@gmail.com

ABSTRACT
The amorphous silicon pin thin film diode has been used for a solar cell and photodiode applications. According to the applications, the light-sensing property has been studied. For the solar cell application, the performance and stress-induced degradation of the amorphous silicon solar cells with pin and nip stacked structures prepared in the single chamber PECVD have been studied. The film deposition sequence affected the solar cell performance, degradation, and recovery. For the photodiode applications, the light sensing characteristic of the amorphous silicon photodiode has been studied with respect to the light wavelength and intensity effect. Also, the mechanism of asymmetric carrier transfers observed during the light-sensing of the amorphous silicon photodiode has been confirmed using different i-layer thickness, combined electric-optical stress method, and three narrow-band lights.

SELECTED PUBLICATION