Kyung Hwan Kim et al., J Pet Environ Biotechnol 2014, 5:4
http://dx.doi.org/10.4172/2157-7463.S1.007

OMICS Group Conferences
Accelerating Scientific Discovery

2nd World Congress on
Petrochemistry and Chemical Engineering
October 27-29, 2014 Embassy Suites Las Vegas, USA

Electrical, optical and structural properties of Ga-Al doped ZnO/Copper/Ga-Al doped ZnO multilayer electrode for thin film solar cells

Kyung Hwan Kim, Yu Sup Jung and Hyung Wook Choi
Gachon University, Republic of Korea

We have investigated electrical, optical and structural properties of Ga-Al doped ZnO/Copper/Ga-Al doped ZnO multilayer electrode for thin film solar cells. The Ga-Al doped ZnO/Copper/Ga-Al doped ZnO multilayer films were deposited on polyethersulfone (PES)substrate at room temperature. The multilayer films consisted of intermediate Cu metal layers, top andbottom Ga–Al doped ZnO layer. The multilayer with PES substrate had advantages such as low sheetresistance, high optical transmittance in visible range and stable mechanical properties. From the results,sheet resistances of multilayer showed 12Ω/sq with 9 nm of Cu metal layer thickness. Average opticaltransmittance of multilayer film showed 80% in visible range (380–770 nm) with 9 nm of Cu metal layerthickness. Moreover the multilayers showed stable mechanical properties than single-layered Ga–Aldoped ZnO sample during the bending test due to the existence of ductile Cu metal layer.

khkim@gachon.ac.kr