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Title

Structures and photovoltaic properties of copper oxides/fullerene solar cells

Author

Takeo Oku *, Ryosuke Motoyoshi, Kazuya Fujimoto, Tsuyoshi Akiyama,

Affiliation

Department of Materials Science, The University of Shiga Prefecture

Abstract

Copper oxide (CuO_x) thin films were produced by spin-coating and electrodeposition methods, and their microstructures and photovoltaic properties were investigated. Thin film solar cells based on the Cu_2O/C_{60} and CuO/C_{60} heterojunction or bulk heterojunction structures were fabricated on F-doped or In-doped SnO_2, which showed photovoltaic activity under air mass 1.5 simulated sunlight conditions. Microstructures of the CuO_x thin films were examined by X-ray diffraction and transmission electron microscopy, which indicated the presence of Cu_2O and CuO nanoparticles. The energy levels of the present solar cells were also discussed.

Key words

A. Fullerenes, B. Chemical synthesis, C. Electron microscopy, D. Electrical properties