

Organic layers on silicon with potential application in hybrid solar cells

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Abstract

Investigations of the optical gap and the transport gap of two phthalocyanine (Pc) materials: CuPc and H₂Pc, deposited on hydrogen passivated Si were performed by means of spectroscopic ellipsometry and combined valence band photoemission and inverse photoemission. The optical gaps have found to be approximately the same value for both Pcs, namely 1.75 eV, while the transport gaps have values of (2.2 ± 0.2) eV. Based on the values obtained the high similarity of these Pcs is discussed.

Keywords: Phthalocyanine; Spectroscopic ellipsometry; Photoemission; Inverse photoemission; Transport gap; Optical gap

Nomenclature

Quantities

IE, E_t , EA, E_{opt} , Φ /eV

Pressure/Pa