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Fabrication and characterization of flexible organic photovoltaic device based on poly (1,2,3 trihydroxy 4,5 Phenylene)

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A new material based on poly (hydroxyl-phenylene) has been prepared. Polymer doped with some metal chloride salts such as Fe, Co, or Cd was added to the material in order to obtain flexible films of the structure: Aℓ /Poly(1,2,3 trihydroxy-4,5 Phenylene)+ PSS doped M-chloride/ITO

UV-Vis Spectra shows broadband absorption enhancement in the UV, visible and near infrared portion of solar energy. The current density-voltage (J-V) characteristics under forward bias were found to exhibit two regions. At low voltages the devices showed Schottky diode behavior. At higher regions the results showed ohmic conduction. Under reverse bias, the conduction processes were interpreted in terms of both the Pool- Frenkel and Schottky effects. The capacitance versus reverse bias voltage is linear which indicates the formation of Schottky junction, the built-in voltage and the charge concentration were also found to be influenced by the presence of the metal chloride salts. Under illumination, the J-V curves are used to estimate the solar cell parameters such as open-circuit voltage, short-circuit current, fill factor, and energy conversion efficiency.

Biography

Adly H. El-Sayed received M.Sc. (1980) from Alexandria University Egypt and Ph.D. (1987) degree from Alexandria University/Kamerling Onnes Lab. (Leiden Univ. Holland) in the field of ESR in spin-glasses and intermetallic compounds (Semiconductors-Superconductors). He had been employed as post doctoral researcher at Genova University Italy (1990-1991). He is research Professor at faculty of science, Alexandria University from 1991 to present. He is co-author of more than 30 scientific publications in the field of superconductivity, spin-glasses, semiconductors and polymer/metal oxide nanocomposites.

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Investigation of thickness reduction and rolling rate on microstructure and tensile properties of cold rolled ST22 steel sheet

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Cold rolling causes stretching of microstructure and thus directionality of mechanical properties. This kind of directionality of mechanical properties is known as anisotropy. One of the controlled and optimized methods is recrystallization heat treatment causes uniformity in mechanical properties in all ways and isotropic structure. In this investigation effect of cold work percent and rolling rate on nonconformity behavior is studied. After chemical analyzing with quantometery method, the amounts of UTS and yield stress and also elongation percent achieved through tension test results on various samples at three direction with 0,45,90 angles toward rolling extension. Specified that the effect of thickness reduction percent on tensile properties is bigger than rolling rate and UTS and yield stress at the direction of mill extension is more than vertical direction into rolling extension and specified that the sensitivity of yield stress into rolling direction is larger than UTS. Samples with various rolling rate provided and specified that increasing in rolling rate leads to a small growth in amounts of UTS and yield stress.

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