Cuprous oxide photovoltaic cells trivich

Copper-Cuprous Oxide (Cu2O/Cu) Backwall solar cells were fabricated using thermal oxidation method for the Cu2O thin film deposition. By connecting the cells in an experimental circuit and varying the load resistance from 0? to ?, the short-circuit current, open-circuit voltage, and maximum power point were determined for each of the cell samples.

We improved the photovoltaic properties of Cu 2 O-based heterojunction solar cells using n-type oxide semiconductor thin films prepared by a sputtering apparatus with our newly developed multi-chamber system. We also obtained the highest efficiency (3.21%) in an AZO/p-Cu 2 O heterojunction solar cell prepared with optimized pre-sputtering conditions using our newly ...

Cuprous oxide (Cu 2 O) is a non stoichiometric defect semiconductor. It is envisaged that this semiconductor could be utilised for the fabrication of low-cost solar cells. Copper foil samples, were oxidised in air between 200°C and 1050°C.

Performance of Cu2O/ZnO Solar Cell Prepared By Two-Step Electrodeposition. J ... L. Papadimitriou N. Economou D. Trivich. Materials Science, Physics ... Chemistry, Materials Science. 1979; Using Auger electron spectroscopy, the region near the front contact of cuprous oxide front-wall solar cells was investigated. In cells showing large ...

In this review the developments of Cuprous Oxide (Cu2O) solar cells are reviewed. We discuss the properties of Cuprous Oxide and the methods of the production of Cuprous Oxide. Subsequently, a discussion on the performance ...

DOI: 10.1016/J.SOLMAT.2008.09.023 Corpus ID: 97401865; Electrochemically deposited p-n homojunction cuprous oxide solar cells @article{Han2009ElectrochemicallyDP, title={Electrochemically deposited p-n homojunction cuprous oxide solar cells}, author={Kunhee Han and Meng Tao}, journal={Solar Energy Materials and Solar Cells}, year={2009}, ...

Cuprous oxide (Cu2O) is a promising earth-abundant semiconductor for photovoltaic applications. We report Hall mobilities of polycrystalline Cu2O thin films deposited by reactive dc magnetron sputtering. High substrate growth temperature enhances film grain structure and Hall mobility. Temperature-dependent Hall mobilities measured on these films ...

Cu 2 O (for the crystal structure, see Fig. 6.1) is one of the stable phases of the three well-established copper oxide compounds (the others are Cu 4 O 3 and CuO). It crystallizes in a simple cubic Bravais lattice (Cuprite-Mindat directory, 2010, Cuprite--Webmineral, 2010, Frondel, 1941, Wells, 1984).The space group is Pn3m or O h 4 s unit cell contains six atoms, ...

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Cuprous oxide (Cu 2 O) is a direct-bandgap semiconductor with a bandgap (E g) of about 2.1 eV.This material usually shows p-type conductivity without intentional doping. 1) The optical absorption coefficients of this material are above 10 4 cm -1 near the band edge. 2) In addition, Cu 2 O can be prepared by low-cost methods, for example, oxidation of Cu sheets 3) ...

Cuprous oxide MIS solar cells were made with SiO2 interfacial layers of thickness ranging from 10 to 100 A, and semitransparent layers of Au, Cu, Ag and Al. Results from current-voltage measurements show that Au/SiO2/Cu2O MIS devices are ohmic in nature and have no photovoltaic effect. Ag/SiO2/Cu2O, Cu/SiO2/Cu2O and Al/SiO2/Cu2O exhibit rectifying and ...

Cuprous oxide, with a band gap of 2.0 eV, is an attractive material for solar cells because of low cost and great availability. The current conversion efficiency is 1%, but theoretical estimates ...

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A photo-electrochemical rechargeable solar cell with an inorganic charge-storage material as a third electrode was investigated. The energy-storable function was based on the redox reactions in ...

Cuprous oxide (Cu 2 O) is a non stoichiometric defect semiconductor. It is envisaged that this semiconductor could be utilised for the fabrication of low-cost solar cells. Copper foil samples, were oxidised in air between 200°C and 1050°C. The oxide films grown were then investigated by means of both XRD and SEM. The electrical characteristics of Cu 2 O ...

Introduction Cuprous oxide (Cu20) is a material researchers have found very difficult to work with. ... A front wall Schottky barrier solar cell is usually fabricated by evapo- rating a metal on top of Cu20 under high vacuum conditions thus making a Schottky barrier. ... Radiat. Effects Left., 76 (1983) 87. 30 R. J. Iwanowski and D. Trivich ...

Using Auger electron spectroscopy, the region near the front contact of cuprous oxide front-wall solar cells was investigated. In cells showing large photovoltages, a maximum of the copper concentration being by about 4 at.% percent higher than the bulk concentration was observed at a distance of 70 Å from the metal-semiconductor interface.

Cuprous oxide photovoltaic cells trivich

1.. IntroductionCuprous oxide (Cu 2 O), a direct-gap semiconductor with a band-gap energy of 2.0 eV, has been regarded as one of the most promising materials for application to photovoltaic cells (Pollack and Trivich, 1975).The attractiveness of Cu 2 O as a photovoltaic material lies in the fact that the constituent materials are nontoxic and abundantly available on ...

The effects of transient and steady-state illumination on the electrical properties of single-crystal cuprous oxide have been investigated in the temperature range from 230 to -20 °C. For samples equilibrated well within the region of Cu2O stability, conduction was governed by an acceptor level at 0.4 eV above the valence band as determined from the temperature dependence of the Hall ...

Cuprous oxide (Cu 2 O) is naturally p-type, which has prevented an efficient Cu 2 O solar cell. n-Type doping of Cu 2 O is demonstrated during electrochemical deposition by adding a chlorine (Cl) ... Expand

Preliminary results are presented on photovoltaic cells prepared with thin Cu2O films electrodeposited by 0.4-V cathodic reduction of an alkaline cupric lactate solution either on metal substrates or on transparent conducting glass coated with SnO2, In2O3 or Cd2SnO4. It is shown that photovoltaic cells can be fabricated with electrodeposited Cu2O, both in front- and back ...

We improved the photovoltaic properties of Cu 2 O-based heterojunction solar cells using n-type oxide semiconductor thin films prepared by a sputtering apparatus with our newly developed multi-chamber system. We also obtained the highest efficiency (3.21%) in an AZO/p-Cu 2 O heterojunction solar cell prepared with optimized pre-sputtering conditions using our ...

substance: cuprous oxide (Cu2O) property: transport properties (Reviews in [74N, 75P]) Cu2O is usually p-type. No n-type material could be prepared. As grown material has high resistivity (? > 106 ? cm). ? depends strongly on annealing or photoexcitation [74N]. The temperature and oxygen partial pressure

A Cu nanowire (NW)/cuprous oxide (Cu2O)-based semiconductor-liquid junction solar cell with a greatly enhanced efficiency and reduced cost was assembled. The Cu NWs function as a transparent electrode as well as part of the Cu NWs/ Cu2O coaxial structures, which remarkably benefit the charge separation. The best solar cell reached a conversion efficiency ...

Copper-Cuprous Oxide (Cu2O/Cu) Backwall solar cells were fabricated using thermal oxidation method for the Cu2O thin film deposition. By connecting the cells in an experimental circuit and varying the load resistance from 0? to ?, ...

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