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Fabrication of Schottky Barrier Solar Cells of Copper (I) Oxide (Cu_2O) by the Process of Partial Thermal Oxidation

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Copper (I) Oxide (Cu_2O) is a non-stoichiometric semi-conductor. It is envisaged that this semiconductor could be used for the fabrication of low-cost solar cells. These solar cells have been fabricated by researchers using 100 micrometer thick copper sheets. For the purpose of this research, copper foil sample was oxidized in air between 250°C and 1050°C . The oxide films grown were then investigated by means of SEM. This research produced $\text{Cu}/\text{Cu}_2\text{O}$ solar cells with copper sheet 100 micrometer thick using prolonged annealing times and different annealing temperatures to study the development that were achieved in solar cell performance. The investigation of morphology was taken by scanning electron microscopy and (I – V) curve have been carried out, a cell of 42mV open-circuit, voltage, V_{oc} , $6.7 \mu\text{A}$. short circuit current, I_{sc} and conversion efficiency of $1.42 \times 10^{-4}\%$ has been achieved. This research also detected the effect of prolonged annealing time on the performance of $\text{Cu}/\text{Cu}_2\text{O}$ Schottky barrier solar cell due to continuous reaction of cuprous oxide with oxygen.

Biography:

Sulayman Muhamma Kabeer was Completed BSc.Ed in Physics from Usmanu Danfodiyo University, Sokoto, Nigeria (2002 - 2007). He had completed M.Sc. in Physics from the University of Bakht-Er-Ruda, Sudan in 2015 and he presently doing Ph.D. in Physics in the same institution. Presently, he is working as a Lecturer in Integrated Science Department, Kogi State College of Education Ankpa, Nigeria where he is a lecture Physics. He also a visit Academic in Metropolitan Group of Schools, Kaduna, Nigeria where he provide tutorial and practical sessions in Physics and Mathematics. His area of research interest is Material Science and Photonics.