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Gap states density measurement in copper oxide thin films

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Abstract: The density of gap states near the Fermi level have been measured in copper oxide (CuO) thin ?lms deposited by spray pyrolysis technique. The measurement method is based on the exploitation of the current–voltage characteristics of the space charge limited current (SCLC) measured in a sandwich Au/CuO/Au structure. The measured gap states density is equal to 1.5x1014cm-3 and 2.0 x1014 ev-1 respectively in films prepared at 300 and 400 °C substrate temperature, while the defect position are located at 16 and 20meV above Fermi level. The carriers mobility and concentration are also determined from SCLC, the obtained results are in good agreement with Hall effect measurement ones.

Keywords : Density of states Thin ?lms Spray pyrolysis Solar cells