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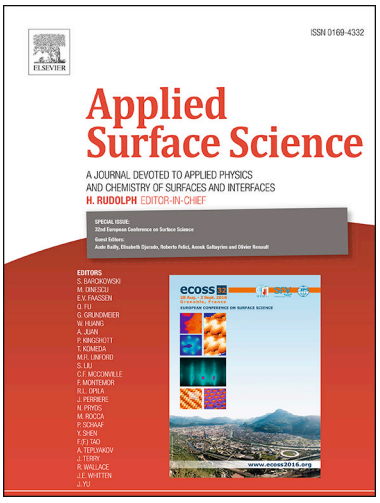

Full Length Article

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Transparent conductive CuS film prepared on A4 sized PET substrate by chemical bath deposition method

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Abstract

Transparent conductive CuS film was prepared on A4 sized polyethylene terephthalate (PET) substrate through chemical bath deposition method reacting at a mild temperature of 35 °C by using copper nitrate and thiourea as precursors and triethanolamine as complexing agent. Characterization studies showed that the as prepared nanoparticles were closely packed and tightly adhered onto the surface of the PET substrate with the highest ASTM 5B level, and formed a homogeneous nanosized CuS film with satisfied conductivity and transmittance. It was found that the light transmittance with the film was negatively correlated with its conductivity. When the light transmittance for the film prepared under optimized conditions was enhanced from 55.0 to 71.7%, the conductivity underwent a consistent deterioration, and the corresponding sheet resistance value was increased from 74.12 to 196.20 Ω/□. Although bending operation was testified to be an important influencing factor on the properties of the film and could let its resistance vary along with the decrease of curvature radius, the amplitude of variation was limited. Both of conductivity and transmittance remained almost unchanged for the film to which hundreds of severe bending operations were subjected.

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