

Synthesis of Silver Powders Destined for Conductive Paste Metallization of Solar Cells Using Butyl-Carbitol and Butyl-Carbitol Acetate Chemical Reduction

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Abstract : the study focuses on a novel process of silver powders synthesis for the preparation of conductive pastes used for solar cells metalization. Butyl-Carbitol and butyl-carbitol Acetate have been used as solvents and reducing agents of silver nitrate (AgNO_3) as precursor to get silver powders. XRD characterization revealed silver powders with a cubic crystal system. SEM micro graphs showed spherical morphology of the particles. Laser granulometer gives similar particles distribution for the two agents. Using same glass frit and organic vehicle for comparative purposes, two conductive pastes were prepared with the synthesized silver powders for the front-side metalization of multi-crystalline cells. The pastes provided acceptable fill factor of 59.5 % and 60.8 % respectively.

Keywords : chemical reduction, conductive paste, silver nitrate, solar cell

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