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Optimization of the electrical conductivity of copper phthalocyanine for the formulation of a conductive ink applicable by screen printing on textile materials

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We report results on the conductivity of conductive ink based on copper phthalocyanine, which contain different organic solvents, i.e. dimethylsulfoxide (DMSO) or THF and with different percentage of copper phthalocyanine. Conductive inks were prepared from the copper phthalocyanine by dispersion of the conductive pigment in a screen printing paste. A Variety of patterns have been developed with different percentages of CuPc on a cotton substrate using the screen printing technique. Simultaneously, the presence of solvent residue in the printed pattern also resulted in poor control of the morphology and conductivity of the pattern. The solvent effect on copper phthalocyanine dispersion's was studied by UV visible spectroscopy and the minimum sheet resistance of printed circuit board was reached at about 3% of CuPc in THF and DMSO with 1 MΩcm and 1.8 MΩcm respectively.

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