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In Situ Production of Nano-Cu on a Cotton Fabric Surface by Ink-Jet Printing

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Abstract : The nano-Cu particles were produced on cotton fabric substrate by ink-jet printing technology with water-soluble ink, which was based on copper. The surface tension and viscosity of the prepared inks were evaluated. The ink-jet printing process was repeated 1, 3, and 5 times in order to evaluate variations in the optical properties by changing thickness of printed film. Following initial drying of the printed film, the samples were annealed at different temperatures (150 °C, 200 °C and 250 °C) to determine the optimum temperature for the parameters set out in this experiment. The prepared nano-Cu particles were characterized by XRD and UV spectroscopy. The appearance of printed image and the nano-Cu particles morphology were observed by SEM. The results demonstrated that the ink-jet printing technology can be used to produce nano-particles on the cotton fabrics surface.

Keywords : ink-jet printing, nano-cu, fabric ink, in situ production, cotton fabric, water-soluble ink, morphology
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