Characterization of Photo-reduced Silver Organometallic Salt Deposited by Inkjet Printing

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Abstract

The use of ink jet printing to produce metallized patterns on temperature-sensitive substrates is attractive for applications such as printed electronics and MEMS. Silver (in either suspension or solution) is a widely investigated material for such inks due to high conductivity when compared to alternatives such as conductive polymers. The use of silver nanoparticle suspensions enables processing temperatures as low as 150 °C, with conductivity approaching that of the bulk material. Work presented within demonstrates the use of a silver organometallic salt dissolved in xylene that can be printed readily and undergoes photolysis to elemental silver when exposed to a 514 nm laser. Conductive tracks produced by this method are characterized to demonstrate their use for metallization at near room temperature with a feature resolution below 10 μm.

Author Biography

Jonathan Stringer is currently a research assistant in the School of Materials at the University of Manchester, United Kingdom. He was previously awarded a MEng in Materials Science, also from the University of Manchester. His research looks into the physics of ink jet printing, in particular the processes of droplet deposition, coalescence and phase change from printable ink to functional material.