

Preparation and Characterization of Organic Silver Precursors for Conductive Ink

Authors : Wendong Yang, Changhai Wang, Valeria Arrighi

Abstract : Low ink sintering temperature is desired for flexible electronics, as it would widen the application of the ink on temperature-sensitive substrates where the selection of silver precursor is very critical. In this paper, four types of organic silver precursors, silver carbonate, silver oxalate, silver tartrate and silver itaconate, were synthesized using an ion exchange method, firstly. Various characterization methods were employed to investigate their physical phase, chemical composition, morphologies and thermal decomposition behavior. It was found that silver oxalate had the ideal thermal property and showed the lowest decomposition temperature. An ink was then formulated by complexing the as-prepared silver oxalate with ethylenediamine in organic solvents. Results show that a favorable conductive film with a uniform surface structure consisting of silver nanoparticles and few voids could be produced from the ink at a sintering temperature of 150 °C.

Keywords : conductive ink, electrical property, film, organic silver

Conference Title : ICAPE 2018 : International Conference on Advances in Printed Electronics

Conference Location : Paris, France

Conference Dates : October 29-30, 2018