

DEVELOPMENT OF TRANSPARENT CONDUCTIVE FILMS MADE FROM AQUEOUS CARBONE NANOTUBE INKS

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Producing of transparent, conductive and flexible electrodes is a major challenge for the development of new touch screens, photovoltaic panels or light emitting diodes. Current technologies rely on the use of costly and brittle inorganic oxides[1].

Carbon nanotubes (CNTs) are among the most promising candidates as an alternative to inorganic oxides. They have a high aspect ratio and excellent mechanical and electrical properties. Therefore they can form conductive networks at low density on flexible surfaces in order to achieve the best possible combination of conductivity and optical transparency.

In order to scale-up the CNT films manufacturing of CNT films, we formulate adapted CNT dispersions. We've developed conductive inks by dispersing high quality CNTs (G/D ratio > 35) in aqueous solutions in the presence of surfactants and / or conductive polymers. These aqueous dispersions can be deposited as few μm thin liquid films over flexible substrates without dewetting effects. We achieve homogeneous film deposition using Mayer rod coating[2] and higher throughput methods such slot die coating. Following this way, we are able to produce high performances transparent conductive films made from aqueous dispersions by scalable method.

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[2] B. Dan, G. C. Irvin, and M. Pasquali, *ACS Nano*, 3 (2009), pp. 835–843.