

Abstract Submitted
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Electron field emission from Carbon Nanotube Composites: Transport and Local Electric Fields¹ DAVID CAREY, THOMAS CONNOLLY, RICHARD SMITH, University of Surrey, JONATHAN COLEMAN, Trinity College Dublin — Electron field emission characterisation of carbon nanotube polymer composites has been performed where emission at low nanotube mass fractions (<10%) has been observed. Nanotubes have been embedded in two different types of polymer: PmPV, a conjugated polymer and PVA, polyvinyl alcohol. It shown that for nanotubes embedded in PmPV, the field emission is strongly influenced by charge transport through the film. For nanotubes in PVA a transition from bulk transport to a Fowler-Nordheim emission mechanism is seen as the mass fraction exceeds about 1-2%. Estimates of the local field as a function of mass fraction are also shown. The potential role of nanotube – polymer composites produced by solution processing to large area cathodes with a controllable mass fraction will be discussed.

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