

Abstract Submitted
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Guiding of electrons through insulating PET nanocapillaries D. KEERTHISINGHE, S.J. WICKRAMARACHCHI, A. AYYAD, J.A. TANIS, Western Michigan University, Kalamazoo, B.S. DASSANAYAKE, University of Peradeniya, Peradeniya, Sri Lanka, N. STOLTERFOHT, Helmholtz-Zentrum Berlin für Materialien und Energie, D-14109, Berlin — Electron transmission through insulating capillaries has been actively studied following the discovery of the guiding of 3 keV highly charged ions (HCI) transmitting through such media [1]. Previously results were obtained for electrons incident on polyethylene terephthalate (PET) capillaries [2] and for straight [3] and tapered [4] glass capillaries. New interest has focused on electron energy loss and the temporal charge deposition dependence for incident energies 500 and 800 eV. In the present work a PET sample with a diameter of 100 nm and thickness of 12 μm was bombarded by 300, 500 and 800 eV electrons for several small tilt angles. The angular profiles of the transmitted electron spectra for each sample tilt angle were fit with Gaussian functions that were related to the corresponding observation angle. The results show strong evidence for guiding and for the time dependence of the charge deposition.

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