

Abstract Submitted
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Direct and indirect transmission of electrons through insulating PET nanocapillaries D. KEERTHISINGHE, S. WICKRAMARACHCHI, J.A. TANIS, Western Michigan University, N. STOLTERFOHT, Helmholtz-Zentrum Berlin für Materialien und Energie, D-14109, Berlin, Germany, B.S. DAS-SANAYAKE, University of Peradeniya, Peradeniya, Sri Lanka — The transmission of 300–800 eV electrons through insulating PET nanocapillaries has been studied to further understand the mechanism following our earlier work [1]. The measurements were done at Western Michigan University for two samples having the same thickness 12 μm , but with capillary diameters 100 nm and 200 nm and pore densities $5 \times 10^8 / \text{cm}^2$ and $5 \times 10^7 / \text{cm}^2$, respectively. The samples were coated with a thin layer of gold (~ 20 nm) to prevent charge up of the sample from the incident beam. The experiment was conducted at energies of 300, 500, and 800 eV for the sample with 100 nm diameters and at 500 and 800 eV for the sample with 200 nm diameters. Observations showed angular distributions with two peaks for both samples [2]. Based on the peak centers, which are related to the sample tilt angles, three different regions were identified as direct, guiding and transition (from direct to guiding). Variation of the FWHM (deg) of the angular distributions and the energy of the transmitted electrons will be discussed for the three regions.

[1] S. Das *et al.*, Phys. Rev A **76** 042716 (2007)

[2] D. Keerthisinghe *et al.*, AIP Conf. Proc. **1525**, 36 (2013) and references therein

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