

Abstract Submitted  
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**Elastic and inelastic transmission of electrons through tapered glass capillaries** S.J. WICKRAMARACHCHI, D. KEERTHISINGHE, B.S. DAS-SANAYAKE, J.A. TANIS, Western Michigan Univ., T. IKEDA, RIKEN Nishina Center, Japan — The transmission of electrons through tapered borosilicate glass capillaries has been studied for 500 and 1000 eV incident electrons. The energy and angular dependence of the transmitted electrons as well as the temporal charge deposition has been investigated. The capillaries had inlet/outlet diameters of 800  $\mu\text{m}$ /100  $\mu\text{m}$  and 700  $\mu\text{m}$ /20  $\mu\text{m}$  and lengths of 35 mm. Transmission was observed for tilt angles up to  $9.5^\circ$ , and  $1.5^\circ$ , respectively, for the two capillaries. The transmitted electrons were found to have both elastic and inelastic behavior as was observed for electrons through PET [1] and single straight glass capillaries [2]. The charge deposition with time consisted of stable transmission, fluctuations, blocking, and self discharging for both capillaries depending on the sample tilt angle.

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

[2] B.S. Dassanayake *et al.*, *Phys. Rev. A* **81**, 020701(R) (2010).

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