

Abstract Submitted  
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**Structural Studies of Carbon Dust Samples Exposed to NSTX Plasma**<sup>1</sup> YEVGENY RAITSES, CHARLES H. SKINNER, Princeton Plasma Physics Laboratory, FUMING JIANG, THOMAS S. DUFFY, Geosciences, Princeton University, ANGUS PACALA, Stanford University — Raman spectroscopy offers a sensitive measure of the microstructure of carbon dust. We present Raman spectra of dust samples exposed to the NSTX plasma, unexposed dust, carbon deposits produced in an arc discharge, and heat-treated (1500-2000 °C) carbon samples all made from graphite material. The main difference in the measured Raman spectrum is that for the exposed dust samples, the high energy G-mode peak (Raman shift  $\sim 1580 \text{ cm}^{-1}$ ) is much weaker than the defect-induced D-mode peak (Raman shift  $\sim 1350 \text{ cm}^{-1}$ ), while for the unexposed samples, similarly to commercial graphite, the ratio of G-mode to D-mode peaks is always larger than 1. These results indicate that the production of carbon dust particles in NSTX involves modifications of the physical and chemical structure of the original graphite and these modifications are similar to those induced by the arc plasma to carbon particles.

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Yevgeny Raitses  
Princeton Plasma Physics Laboratory

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