

Abstract Submitted
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Structural studies of carbon dust samples exposed to NSTX plasma¹ FUMING JIANG, Princeton University, YEVGENY RAITSES, CHARLES SKINNER, Princeton Plasma Physics Laboratory, THOMAS DUFFY, Princeton University — Raman spectra were measured for different dust samples exposed to the NSTX plasmas with and without Lithium coating on the walls, unexposed dust samples, carbon deposits produced in an atmospheric pressure helium arc discharge, and heat-treated carbon samples. For the unexposed particles, the high energy G-mode peak ($\sim 1580\text{ cm}^{-1}$) is much stronger than the defect-induced D-mode peak ($\sim 1350\text{ cm}^{-1}$). For dust particles exposed to the plasma, the ratio of G-mode to D-mode peaks is lower and becomes even less than 1. This behavior indicates on a strong increase of structural disordering in plasma exposed samples. Because we found similar plasma-induced structural modifications in dust particles exposed under the different background gases (hydrogen and helium) and the different plasma conditions of the arc and NSTX experiments, our results suggest that the observed structural modifications can be unrelated to hydrocarbon compositions on the dust surface or implantation.

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