

Abstract Submitted
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Carbon Nanomaterials Under Highly Energetic Heavy Ion Irradiation J.M. CALLAHAN, Michigan State University, B.W. JACOBS, Sandia National Laboratories, CA, K. MCELROY, M.A. CRIMP, Michigan State University, R.M. RONNINGEN, A.F. ZELLER, National Superconducting Cyclotron Laboratory, H.C. SHAW, NASA Goddard Space Flight Center — The radiation performance of carbon nanomaterials: carbon onions and single-walled carbon nanotubes under highly energetic heavy ion irradiation was investigated, with highly oriented pyrolytic graphite (HOPG) used as the control. Samples were irradiated with a krypton-86 beam at 142 MeV/nucleon, a krypton-78 beam at 140 MeV/nucleon, and a calcium-48 beam at 140 MeV/nucleon and 70 MeV/nucleon at the National Superconducting Cyclotron Laboratory at Michigan State University. Fundamental structural and chemical modifications were investigated using Micro Raman spectroscopy and high-resolution transmission electron microscopy (HRTEM). Results indicated that the radiation resiliency of the single-walled carbon nanotubes exceeded that of highly oriented pyrolytic graphite, while the carbon onions showed structural modifications of the outer onion layers in the form of faceting and onion fusion.

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