Abstract Submitted
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Laser Interactions with Vertically-Aligned Carbon Nanotube Arrays[1] DAVID GEOHEGAN, Oak Ridge National Laboratory, CHRIS ROULEAU, ALEX PURETZKY, JEREMY JACKSON, NORBERT THONNARD, ILIA IVANOV, KARREN MORE, CNMS AND MSTD, OAK RIDGE NATIONAL LABORATORY TEAM — Femtosecond and nanosecond laser interactions with vertically aligned carbon nanotube arrays (VANTAs) have been studied in vacuum and background gases. As-grown VANTAs were synthesized by chemical vapor deposition onto Fe/Al-coated Si wafers to typical heights of 10-20 microns. The forests of aligned nanotubes grow from catalyst nanoparticles anchored to the substrate and typically have a disordered layer of nanotubes at their top surfaces. Laser interactions in vacuum, inert, and oxidizing atmospheres were compared. The nanotubes were found to form periodic surface structures in response to repeated laser pulses. Patterning of the nanotube arrays with scanning beams was studied. Damage to the nanotubes was studied by Raman spectroscopy and high-resolution TEM.

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