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**Scattering of Terahertz Radiation from Oriented Nanotubes**

SATYA GANTI, NICHOLAS SCHROEDER, GREGORY KOZLOWSKI, JASON DEIBEL, FINN EICHHORN, PETER JEPSEN, KRZYSZTOF KOZIOL, DEPARTMENT OF MECHANICAL AND MATERIALS ENGINEERING, WRIGHT STATE UNIVERSITY COLLABORATION, DEPARTMENT OF PHYSICS, WRIGHT STATE UNIVERSITY COLLABORATION, DEPARTMENT OF PHOTONICS ENGINEERING, TECHNICAL UNIVERSITY OF DENMARK COLLABORATION, DEPARTMENT OF MATERIALS SCIENCE AND METALLURGY, UNIVERSITY OF CAMBRIDGE COLLABORATION — The objective of this research is to characterize the interaction of various oriented carbon nanotubes with terahertz –time domain spectroscopy. This work is performed using a system capable of angle- and polarization- dependent scattering measurements. The scattering, transmission, and absorption properties of bulk materials and devices constructed from oriented nanotubes are determined as a function of the nanomaterial density, growth conditions, impurity level, and composition. Analysis is performed in order to understand the scattering behavior based on using approaches such as surface roughness using SEM, coherent back scattering, short-time fourier transforms effective medium theory is used to approximate the optical properties of the nanotube materials using Maxwell-Garnett and Bruggeman theories.

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