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Chiral Selection of Single-Wall Carbon Nanotubes in Murine Organs JOHN HEDDLESTON, National Institute of Standards and Technology, ASHWIN BHIRDE, ZHE WANG, National Institute of Biomedical Imaging and Bioengineering, CONSTANTINE KHRIPIN, JEFFREY FAGAN, MING ZHENG, National Institute of Standards and Technology, XIAOYUAN CHEN, National Institute of Biomedical Imaging and Bioengineering, ANGELA HIGHT WALKER, National Institute of Standards and Technology — Single-wall carbon nanotubes (SWCNTs) have garnered significant interest as innovative tools for biomedical applications. They are being used for a variety of purposes, e.g. to deliver drug payloads, monitor cellular activity, or as in vivo imaging tools. However our current understanding of how SWCNTs behave in biological systems is limited. In this work we use Raman spectroscopy to measure the radial breathing modes (RBMs) of SWCNTs in murine organs following intravenous administration. We identify RBMs in multiple homogenized organs and can additionally measure the less SWCNT-specific carbon Raman peaks in others. Further, we quantify significant changes in the relative contribution of different SWCNTs chiralities to the overall RBM distribution. We observe this change in SWCNTs with a smaller diameter (7.6 A) but not in larger diameter tubes (14 A). These data are among the first to measure RBMs in organs and suggest that chiral selection can occur in biological systems with susceptibility for selection dependent on SWCNT diameter.

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