Photoluminescence from suspended individual $^{13}$C-enriched nanotubes\textsuperscript{1} T. SHIMADA, A. YOKOYAMA, A. ISHII, J. SHIOMI, S. MARUYAMA, Y.K. KATO, The University of Tokyo — We investigate isotope effects on the electronic structure of single-walled carbon nanotubes by photoluminescence microscopy. In order to suspend nanotubes for luminescence measurements, trenches are formed on SiO$_2$/Si substrates by electron beam lithography and dry etching processes. No-flow chemical vapor deposition is used to grow carbon nanotubes with small amounts of isotopically enriched ethanol with 99\% $^{13}$C. Optical measurements are done in air at room temperature using a laser scanning confocal microscope with a wavelength tunable Ti:sapphire laser as an excitation source. We have successfully identified suspended $^{13}$C-enriched nanotubes by photoluminescence imaging and assigned their chirality with excitation spectroscopy.

\textsuperscript{1}This work is supported by the Mitsubishi Foundation, Ogasawara Foundation, Ishikawa Carbon Foundation, KAKENHI, and Global COE Program of MEXT, Japan.

T. Shimada
The University of Tokyo

Date submitted: 17 Nov 2011

Electronic form version 1.4