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NIR-luminescence mapping and Raman spectroscopy of single-walled carbon-13 nanotubes YUHEI MIYAUCHI, SHOHEI CHIASHI, SHIGEO MARUYAMA, Dept. of Mech. Eng., The Univ. of Tokyo — Photoluminescence and Raman scatterings of single-walled carbon nanotubes (SWNTs) synthesized from isotopically-modified ethanol were studied. Using Alcohol catalytic CVD (AC-CVD) technique optimized for the efficient production of SWNTs from very small amount of ethanol, SWNTs consisting of carbon-13 isotope ($SW^{13}CNTs$) were synthesized in addition to normal SWNTs consisting of mainly ^{12}C. The vibrational features of $SW^{13}CNTs$ were compared with those of normal SWNTs through NIR-luminescence mapping and Raman spectroscopy. There was almost no change in Raman spectra shape of $SW^{13}CNTs$ except for the Raman shift frequency down-shifted as much as square-root of mass ratio 12/13. In addition to Raman spectroscopy, we have mapped the NIR-luminescence of D_2O-surfactant dispersions of both $SW^{13}CNTs$ and $SW^{12}CNT$. By comparing the two maps, luminescence peaks corresponding to electronic transitions with vibrational excitation were identified.

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