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(n,m)-dependent environmental effect on photoluminescence of single-walled carbon nanotubes YUTAKA OHNO, Nagoya Univ., PRESTO/JST, SHINYA IWASAKI, Nagoya Univ., YOICHI MURAKAMI, Univ. of Tokyo, SHIGERU KISHIMOTO, Nagoya Univ., SHIGERU MARUYAMA, Univ. of Tokyo, TAKASHI MIZUTANI, Nagoya Univ., NAGOYA UNIV. COLLABORATION, PRESTO/JST COLLABORATION, UNIV. OF TOKYO COLLABORATION — The photoluminescence (PL) map was measured for 20 chiralities of single-walled carbon nanotubes (SWNTs) suspended in air, and the E_{11} and E_{22} were compared to the results reported for SDS-wrapped SWNTs [1]. The E_{11} and E_{22} are mostly blueshifted by a few tens of meV, except for E_{22} of type-II near zigzag SWNTs which show a redshift. The energy shifts of E_{11} and E_{22} from those of SDS-wrapped SWNTs, ΔE_{11} and ΔE_{22}, show clear dependence on the chirality, in particular on the chiral angle rather than the diameter. E_{11} and E_{22} show different dependences on the chiral angle between type-I and type-II SWNTs. In the case of type-I SWNTs, ΔE_{11} is lager for the larger chiral angle whereas ΔE_{22} is smaller for the larger chiral angle. In contrast, type-II SWNTs shows the opposite dependences. The difference between type-I and type-II disappears for the SWNTs with the chirality near armchair. The chiral angle dependence of environmental effect can be explained by difference in effective mass. [1] R. B. Weisman *et al.* *Nano Lett.* **3** 1235(2003).

Yutaka Ohno
yohno@nuee.nagoya-u.ac.jp
Nagoya University

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