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Visible fluorescence from 5-Angstrom single-wall carbon nanotubes YASUMITSU MIYATA, TOSHIYA NAKAMURA, MIHO FUJIHARA, HONG EN LIM, RYO KITAURA, HISANORI SHINOHARA, Nagoya University — We report the observation of visible fluorescence from the ultrathin single-wall carbon nanotubes (SWCNTs) with diameters of less than 5-Angstrom. Such ultrathin nanotubes were prepared by extracting the inner shells of double-wall carbon nanotubes using ultrasonication [1]. The extracted sample shows two visible photoluminescence (PL) peaks at 700 and 720 nm under light excitation at 410 and 540 nm, respectively. These peaks can be assigned, respectively, as the PL of (4,3) and (5,3) SWCNTs by comparison with the experimental Kataura plot proposed by Weisman et al. [2]. The present findings provide an important insight for the studies of the structural stability and electric structure of ultrathin SWCNTs. [1] Y. Miyata et al. ACS Nano. 4, 5807 (2010), [2] R. Weisman et. al., Nano Lett. 3, 1235 (2003).

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