Abstract Submitted
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Adsorption of TCNQ on the inside and outside surface of single-wall carbon nanohorn aggregates[1] RYOTA YUGE, NEC, MASAKO YUDASAKA, NEC, SORST-JST, JIN MIYAWAKI, SORST-JST, TOSHINARI ICHIHASHI, NEC, HIDETO IMAI, NEC, YOSHIMI KUBO, NEC, SUMIO IIJIMA, NEC, SORST-JST, Meijo University — Storage and release of various materials into/from single-wall carbon nanohorns (SWNH), a type of single-wall carbon nanotubes, have been studied well, thus SWNHs have become potentially useful in many fields. However, not much is known about the mechanism of adsorption on the walls of SWNHs, which we have investigated using Tetracyano-*p*-quinodimethane (TCNQ). SWNHs were pretreated with O_2 at 550^oC to open holes, followed by the treatment with H_2 at 1200^oC to remove functional groups (SWNHh). Thermogravimetric analysis revealed that the quantities of TCNQ inside and outside were estimated to be about 0.07 and 0.11 g per 1 g of SWNHh, respectively, which did not increase even for the TCNQ overdosing. Raman spectra of TCNQ adsorbed on SWNHh (TCNQ/SWNHh) showed red shifts of several vibration modes of TCNQ, while the C=C ring stretching (CCr) showed the large blue-shift. This indicates that the quinoid ring of TCNQ strongly interacted with graphene sheets of SWNHh. The blue-shift of CCr Raman-peak is not observed for the charge transfer complexes such ash TTF/TCNQ, Cu/TCNQ, and so on. We will discuss the reason for the large-blue shift of CCr peak of TCNQ adsorbed on SWNHs in the talk.

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