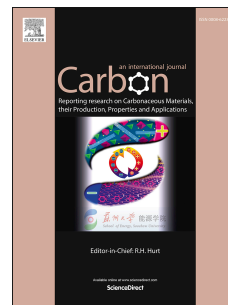


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# Hexagonal Rotator Order of Bound Ionic Surfactants and Temperature Triggered Dispersion of Carbon Nanotubes

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**Abstract.** Oxidized Carbon Nanotubes (CNT) form stable adducts with ammonium ions exhibiting long alkyl chains. Outer surfaces of CNT adducts are completely covered by hydrocarbon tails, which spontaneously organize in hexagonal rotator order, with 1 hydrocarbon tail per 8 graphitic carbon atoms of the external CNT wall. Order-disorder transitions, which involve loss of packing and of zig-zag planar conformation of the bound hydrocarbon tails, occur by heating at temperatures not far from room temperature and lead to temperature-triggered dispersion in organic media of the CNT adducts. CNT adduct formation is reversible with pH changes, as clearly shown by reversible moving of CNT between apolar and polar immiscible phases.

**Keywords:** CNT adducts, WAXD, DSC, UV-Visible

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