Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Structural characterization and molecular dynamics of fullerene or fullerene-derivative nanowhiskers HIRONORI OGATA, SATORU MOTOHASHI, Hosei University — Recently, a new type of fibrous fullerene crystals called fullerene nanowhisker has been reported by a liquid-liquid interfacial precipitation method using saturated *m*-xylene solution of fullerene and isopropyl alcohol. Considerable interests have been generated in the structure and properties of fullerene or fullerene-derivative nanowhiskers. In this study, we present the results of structural characterization and molecular dynamics of C_{60}, C_{70} and $C_{61}H_2$ –nanowhiskers(NWs) by x-ray diffraction and solid state NMR. The XRD pattern of as-grown C_{60}-NWs have a hexagonal structure with lattice constants of a=23.732 and c=10.126. Both solid-state ^{13}C-CP/MAS and wideline ^{1}H-NMR measurement clearly shows that *m*-xylene molecules are included in NWs. Both lineshape and spin-lattice relaxation time of wideline ^{13}C-NMR measurements clearly show that C_{60}-NWs$exhibited the phase transition at 250 K. Detailed results on the molecular dynamics and the other properties$, C_{70}- or $C_{61}H_2$-NWs will be presented.

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Date submitted: 05 Dec 2006 Electronic form version 1.4