Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Self-assembly behavior of poly(fluorenyl styrene)-*block*-poly(2-vinyl pyridine) and their blends with single wall carbon nanotubes *(SWCNT)* RAFFAELE MEZZENGA, ETH Zurich, Switzerland, CHAOXU LI, University of Fribourg, Switzerland, JUNG-CHING HSU, WEN-CHANG CHEN, National Taiwan University, Taiwan, KENJI SUGIYAMA, AKIRA HIRAO, Tokyo Institute of Technology, Japan — We describe a supramolecular strategy to disperse carbon nanotubes in block copolymer matrices. To achieve the desired functions and morphologies, comb-type architectures in which one and two fluorene units attached on the styrene ring of polystyrene-*block*-poly(2-vinyl pyridine) were studied. Depending on the pendant fluorene units, the block ratio, the casting solvent and thermal annealing history, multiple morphologies were found. The phase diagram, compared to PS-*b*-P2VP, was interpreted in terms of the conformational asymmetry arising from grafting of fluorene units of variable lengths. Hydrogen bonds between COOH-SWCNT and P2VP favor miscibility of SWCNT within P2VP domains and the blending of these two components is reflected both on the final morphologies and on the electron conductivity of the blends.

Raffaele Mezzenga
ETH Zurich

Date submitted: 05 Nov 2009 Electronic form version 1.4