

Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Steric Mode Separation of Nanotubes Using Electric Field, Field-Flow Fractionation FREDERICK PHELAN, BARRY BAUER, NIST — A Brownian dynamics simulation is used to study the separation of rodlike particles in Electric Field, Field-Flow Fractionation (EF-FFF), in which in addition to the FFF cross-flow, a uniform AC field acts in the gradient direction. Under these conditions, the electric field acts to align the tubes in the gradient direction in competition with both the shear field and Brownian motion. The simulation results show that as the rods become increasingly aligned, they undergo a transition from normal mode to steric mode separation. By exploiting field conditions in which either metallic or semi-conducting types are preferentially oriented relative to the other, this can be used in the context of nanotube separation as a means for separating tubes by type.

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Date submitted: 18 Dec 2008

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