

Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Periodic Modification of Nanofibers by Polymer Crystallization

BINGBING WANG, CHRISTOPHER LI, Drexel University — Electrospinning polymer nanofibers are one of the most useful 1D nanometer-scaled materials that have numerous potential applications in the fields of filter applications, and templates for tissue engineering. Herein we show that polymer nanofibers can also be used as 1D nucleation agents to induce polymer crystallization. Poly(ethylene oxide) was electrospun into nanofibers which was used to induce PEO crystallization in solution. Shish kebab morphology was observed with the nanofiber as the shish and the PEO lamellar crystals as the kebabs. This unique morphology was named as nano fiber shish kebabs (NFSKs). We demonstrated that the structural parameters of the NFSK such as the fiber diameter, periods, the kebab size etc. could be readily controlled by the electrospinning and crystallization conditions. This NFSK also renders 3D features to the otherwise 1D nanofibers. It also serves as a vehicle for incorporating a variety of functional groups to the nanofiber systems, which, in turn, leads to numerous biomedical as well as electronic applications.

Bingbing Wang
Drexel University

Date submitted: 30 Nov 2007

Electronic form version 1.4