Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Electrospinning of Biocompatible Nanofibers ANDREW J. COUGHLIN[1], North Carolina State University, HAILEY A. QUEEN, North Carolina State University, SETH D. MCCULLEN, North Carolina State University, WENDY E. KRAUSE, North Carolina State University — Artificial scaffolds for growing cells can have a wide range of applications including wound coverings, supports in tissue cultures, drug delivery, and organ and tissue transplantation. Tissue engineering is a promising field which may resolve current problems with transplantation, such as rejection by the immune system and scarcity of donors. One approach to tissue engineering utilizes a biodegradable scaffold onto which cells are seeded and cultured, and ideally develop into functional tissue. The scaffold acts as an artificial extracellular matrix (ECM). Because a typical ECM contains collagen fibers with diameters of 50-500 nm, electrostatic spinning (electrospinning) was used to mimic the size and structure of these fibers. Electrospinning is a novel way of spinning a nonwoven web of fibers on the order of 100 nm, much like the web of collagen in an ECM. We are investigating the ability of several biocompatible polymers (*e.g.*, chitosan and polyvinyl alcohol) to form defect-free nanofiber webs and are studying the influence of the zero shear rate viscosity, molecular weight, entanglement concentration, relaxation time, and solvent on the resulting fiber size and morphology.

[1]Supported by NC State University's Undergraduate Research Awards Grants administered through the Office of Undergraduate Research.

Wendy E. Krause
North Carolina State University

Date submitted: 30 Nov 2005 Electronic form version 1.4