Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Dual Syringe Electrospinning of FNfds-modified Hyaluronic Acid
YUAN JI, Dept. of Materials Science, SUNY at Stony Brook, KAUSTABH GHOSH, Dept. of Biomedical Engr., SUNY at Stony Brook, XIAOZHENG SHU, Dept. of Medicinal Chemistry, the University of Utah, JONATHAN SOKOLOV, Dept. of Materials Science, SUNY at Stony Brook, GLENN PRESTWICH, Dept. of Medicinal Chemistry, the University of Utah, RICHARD CLARK, Dept. of Biomedical Engr., SUNY at Stony Brook, MIRIAM RAFAILOVICH, Dept. of Materials Science, SUNY at Stony Brook — We described the fabrication of a unique HA nanofibrous scaffold using dual syringe reactive electrospinning. $3'$-dithiobis(propanoic dihydrazide)-modified HA (HA-DTPH) and Poly (ethylene glycol)-diacrylate (PEGDA) were selected as the cross-linking system. PEO was blended with HA-DTPH to facilitate the fiber formation. Fibronectin functional domains (FNfds) were incorporated with PEGDA and covalently linked to HA via conjugate addition to improve the cell attachment. The as-spun scaffold was soaked into DI water to remove PEO and yield an FNfds-modified HA-DTPH nanofibrous scaffold. Human dermal fibroblasts CF31 were seeded on FNfds-modified HA-DTPH scaffolds. The CF31 fibroblasts showed a unique extended dendritic morphology which is opposed to the typical flattened morphology of cells on regular 2D geometries. Supported by NSF-MRSEC.

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Date submitted: 26 Nov 2005 Electronic form version 1.4