

Abstract Submitted
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Electric and Magnetic Performances of Self-Doped Sulfonated Polyanilines (SPAN) and Their Copolymers with Polycaprolactone (PCL) Y. MIN, J.C. WU, J.H. PARK, A.J. EPSTEIN, Chemistry and Physics Department, the Ohio State University — A group of “self-doped” conducting polymers such as sulfonated polyaniline (SPAN) and their copolymers with biodegradable polymers such as poly(caprolactone) (PCL) have been successfully synthesized with varying degrees of sulfonation. By adding terminators, a low molecular weight (LMw) conducting biocompatible SPAN was obtained. Conducting biodegradable copolymers (CBCP) of SPAN with PCL were also synthesized by reacting LMw SPAN with caprolactone through a Ring Opening Polymerisation (ROP). These copolymers are not only conducting, but also biodegradable, and can be processed into various conducting biodegradable scaffolds (CBS) for tissue engineering applications through electro-spinning, multilayer self- assembling, soft-lithography. The structure and properties of these materials have been characterized with UV-Vis and FT-IR, NMR, GPC, elemental analysis, CV, TGA, DSC, ESR, and four-probe conductivity measurements. We have discovered that pH has effects on the conductivity of polymers, which can be adjusted by varying the degree of sulfonation. A high conducting S-50 sample was measured with a 0.1 S/cm at pH=7.4, which are very interested in the biomedical application. A comprehensive materials evaluation is on the way and the selected results will be presented.

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