

Abstract Submitted  
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**Reconstruction of Bone Nanostructure using Hierarchically Ordered Polymer Nanofibers** XI CHEN, WENDA WANG, SHAN CHENG, BIN DONG, CHRISTOPHER LI, Drexel University — Natural bone is comprised of hydroxyl apatite (HA) crystals periodically templated by collagen fibers with precisely controlled crystal orientation. No synthetic materials can mimic natural bone with controlled mineral orientation and periodicity. Herein we report that this structural challenge can be met using hierarchically ordered nanofiber shish kebabs (NF-SKs), constructed via combination of electrospinning polycaprolactone (PCL) and controlled crystallization of PCL-*b*-poly acrylic acid (PCL-*b*-PAA). These NFSKs were employed as a template to control the nucleation and growth of hydroxyapatite nanocrystals. HA crystals were formed on such templates with controlled orientation and periods. Such a biomimetic structure serves as a promising bone scaffold material for tissue engineering.

Xi Chen  
Drexel University

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