Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

The Effect of Electric and Magnetic Fields on Protein Self-Organization and Osteoblast Biomineralization XIAOLAN BA, Stony Brook University, LARA FOURMAN, Plainview Old Bethpage Highschool, SANCHITA SINGAL, Herricks Highschool, YIZHI MENG, MIRIAM RAFAILOVICH, Stony Brook University — The induction of bone formation to an intentional orientation is a potentially viable clinical treatment for bone regeneration. Among the many chemical and physical factors, electric and magnetic fields are an essential way to regulate the behavior of cells and matrix fibers. The aims of this study are to investigate the effects of electric and magnetic fields on protein self-organization and osteoblast biomineralization on polymer surfaces in vitro. To this end, we use atomic force microscopy (AFM) to characterize the morphology of protein fiber and ECM by cells. The mechanical property of protein fibers was investigated by shear modulation force microscopy (SMFM). The late-stage of mineralization was characterized by scanning electron microscopy (SEM) and grazing incident x-ray diffraction (GIXD). The primary data indicated that the magnetic field could enhance the biomineralization of osteoblast.

Xiaolan Ba
Stony Brook University

Date submitted: 21 Nov 2008 Electronic form version 1.4