Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

A New Design of Coiled-Coil Helix Bundle Peptide-Polymer Conjugates[1] JESSICA SHU, CEN TAN, Department of Materials Science and Engineering, UC Berkeley, WILLIAM DEGRADO, Department of Biochemistry and Biophysics, University of Pennsylvania, TING XU, Department of Materials Science and Engineering, Department of Chemistry, UC Berkeley — Coiled-coil helix bundles, a common tertiary motif found in many natural proteins, underpins many structural and catalytic functions of natural proteins. *De novo* design has shown that the interior of the helix bundle can be tailored to perform well-defined functions, while the exterior dictates the environment in which it is situated. By attaching synthetic polymers to helix bundle-forming peptides, producing peptide-polymer conjugates, the polymer will mediate the interactions between the helix bundle and its environment, enable the macroscopic self-assembly of the bundles, and potentially, allow them to function in non-biological environments. We report a novel design of peptide-polymer conjugates, where upon attachment of polymer to the exterior of the helix bundle stabilizes the peptide secondary and tertiary structures and preserves the built-in function of the bundle. This new design strategy should be applicable to other coiled-coil peptides and shows great promise as an avenue toward peptide-based biomolecular functional materials.

[1]C. Bertozzi and the Molecular Foundry at Lawrence Berkeley National Laboratory

Jessica Shu
Department of Materials Science and Engineering, UC Berkeley

Date submitted: 24 Nov 2007 Electronic form version 1.4