

Abstract Submitted  
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**Coiled-Coil Helix-Bundle Peptide-Polymer Conjugates** JESSICA

SHU, CEN TAN, YU-JA HUANG, Department of Materials Science and Engineering, University of California, Berkeley, TING XU, Department of Materials Science and Engineering, Department of Chemistry, University of California, Berkeley — Peptide-polymer conjugates have the potential to combine the advantages of synthetic polymers and peptides and may lead to hierarchically ordered, functional soft materials. Maintaining the structure and function of the peptides upon polymer conjugation is essential. Here, we present a solution study of three families of peptide-polymer conjugates to systematically investigate the effect of conjugated polymer on the peptide's secondary and tertiary structures using a photoactive, heme-binding 4-helix bundle. In particular, we focused on the effect of the peptide-polymer conjugate's architecture (side conjugation versus end conjugation) and the hydrophobicity of the synthetic polymer (polystyrene versus poly(ethylene glycol)). Upon attachment of polymer to the peptide N-terminus, the secondary structure was destabilized and the functionality within the bundle was inhibited. The effect was less dramatic with PEG conjugation in comparison to the hydrophobic PS. Upon attachment of PEG to the exterior of the coiled-coil helix bundle, the peptide secondary and tertiary structures were stabilized, and the functionality within the bundle was preserved.

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