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Peptidyl Materials Formed Through Click Chemistry Enhanced Coiled-Coil Interactions KENNETH KOEHLER, University of Delaware — Biologically derived materials offer a level of sophistication synthetically fabricated materials have only attempted to mimic. This level of complexity may be found in materials such as peptides. Implementing new theory and modeling, peptides with the propensity to form coiled-coil (CC) bundles were designed and synthesized. Through the use of this *de novo* approach, modeling allowed prediction of the feasibility to include non-natural amino acids conducive to click chemistry into the peptide. Amino acids showcasing thiol or alkyne functionalities were considered owing to the ability of these moieties to participate in the thiol-ene and copper click reactions respectively. Once synthesized, the peptides decorated with these clickable motifs were placed in solution and allowed to self-assemble into CC's. CD spectroscopy and DLS experiments confirmed the formation and assembly of CC's. Click reactions were then incited to link the CC assemblies together and form a network with predictable dimensionality and pore size between CC bundles. To incite network formation, click reactions between CC side chain residues and suitably functionalized crosslinkers were implemented. The linking of coiled-coils and material formation were assessed using DLS and TEM.

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