

Abstract Submitted
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Polymer-Peptide Nanoparticles: Synthesis and Characterization

HE DONG, JESSICA Y. SHU, TING XU — Conjugation of synthetic polymers to peptides offers an efficient way to produce novel supramolecular structures. Herein, we report an attempt to prepare synthetic micellar nanoparticles using amphiphilic peptide-polymer conjugates as molecular building blocks. Spherical nanoparticles were formed upon dissolution of peptides in PBS buffer through the segregation of hydrophobic and hydrophilic segments. Both molecular and nano-structures were thoroughly investigated by a variety of biophysical techniques, including circular dichroism (CD), dynamic light scattering (DLS), size exclusion chromatography (SEC), transmission electron microscopy (TEM) and small angle X-ray scattering (SAXS). The results demonstrate that structural properties of these biohybrid materials depend on both the geometry of the hydrophobic domain and the size of synthetic polymers. Given the diversity of functional peptide sequences, hydrophilic polymers and hydrophobic moieties, these materials would be expected to self-assemble into various types of nanostructures to cover a wide range of biological applications.

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