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Injectable Self-Assembling Peptide Hydrogel: Effects of Hydrophobic Drug Encapsulation and Delivery JESSIE SUN, BRANDON STEWART, ALISA LITAN, University of Delaware, SIGRID LANGHANS, Nemours Alfred I duPont Hospital for Children, JOEL P. SCHNEIDER, National Institute of Health, DARRIN J. POCHAN, University of Delaware — We successfully encapsulated and continuously delivered a hydrophobic drug over the course of a month at effective, significant concentrations in a beta-hairpin peptide network that self-assembles into a shear-thinning injectable solid with immediate rehealing behavior. The peptidic network of the hydrogel is a result of the entangled and branched fibrillar nanostructure. This nanostructure protects the hydrophobic drug in an aqueous environment, while still maintaining original hydrogel network structures and properties. The characterization of the location and effect of the drug on the overall hydrogel properties over time are important to understand for future encapsulations of similarly hydrophobic payloads. The characterization techniques used to better understand the release and properties of the drug-gel constructs include rheology, small angle x-ray and neutron scattering, and in vitro methods.

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