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Target Diffusion and Concentration Control of Varying Hydrophobicity Drugs in an Injectable Solid Self-Assembling Peptide Hydrogel JESSIE E.P. SUN, University of Delaware, SIGRID LANGHANS, SEUNG JOON LEE, AI DuPont Children's Hospital, SAMEER SATHAYE, University of Delaware, JOEL P. SCHNEIDER, National Cancer Institute at Frederick, DARRIN J. POCHAN, University of Delaware — We studied diffusion profiles of varying hydrophobicity drugs in a beta-hairpin peptide hydrogel solid that is shear thinning, injectable, and immediate reheals after shear. These rheological properties result from its entangled and branched fibrillar nanostructures, formed from intrmolecular folding and consequent intermolecular assembly of the peptides. Different chemotherapeutic drugs at different concentrations with greatly differing properties were encapsulated to show direct targeting drug delivery. Using in vitro and spectroscopy techniques, we showed controlled, sustained diffusion of the drugs. We were able to protect and keep active, hydrophobic agents that otherwise would be deactivated through traditional delivery methods. We also showed that we can maintain low, targeted, and constant dosages, preserving surrounding areas from lack of target specificity of certain drugs.

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