

Insights: Publications

Liquid-like Phases Preorder Peptides for Supramolecular Assembly

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Controlling supramolecular assembly remains a major challenge for materials science and synthetic biology. Biopolymers organize into multimolecular architectures via two-step nucleation processes involving dynamic intermediate solute-rich phases. Here we present spectroscopic analyses of metastable phases formed with a congener of the Alzheimer's disease A β peptide that reveals diverse populations of single β -sheets. The degree of order in this liquid-like particle phase is remarkable both in the range of sheets and the selection of a single propagating nucleus. The resulting fibril seed is less stable in solution and cooperatively transforms into another fibril. The conformational dynamics of this peptide provide a mechanistic model for controlling the range of polymorphic amyloid assemblies in health and disease.