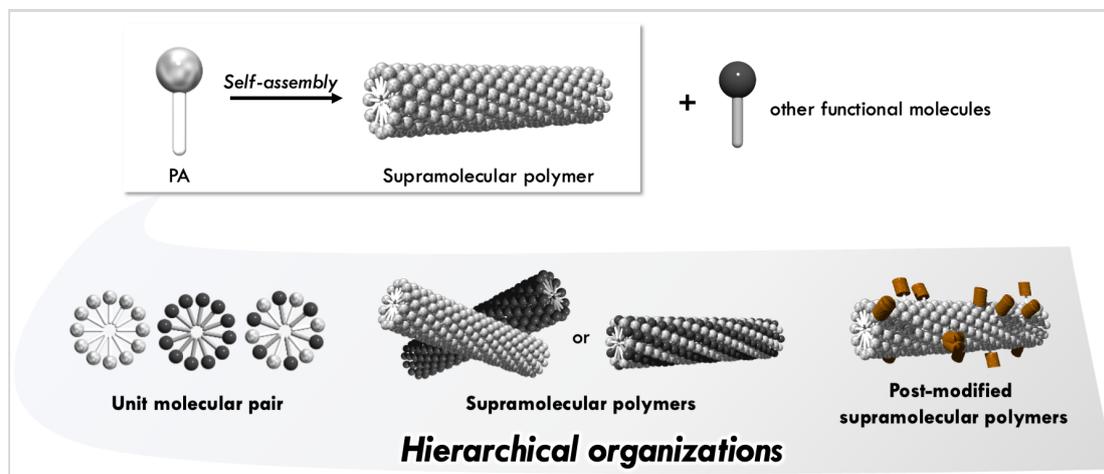


## Biofunctional materials constructed by hierarchical organization of self-assembling peptides

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Peptide amphiphiles (PAs) self-assemble to form various nanostructures in aqueous media depending on the molecular design, assembly pathway, and environment. Supramolecular materials based on PAs show unique (bio)functions, such as binding to and/or controlling biomolecules/cells. Because the functions are highly influenced by the structures of materials, it is of importance to control the supramolecular organizations. We have focused on hierarchical organizations of self-assembling PAs: unit molecular pair, supramolecular polymers, and supramolecular polymers post-modified with functional molecules. To achieve these, we have developed novel strategies using co-assembly system<sup>1,2</sup> and enzymatic reaction<sup>3</sup>. In the presentation, supramolecular strategy for hierarchical organization of self-assembling PAs and post-modification of the assemblies as well as the latest results on the applications for drug delivery system, and multi-enzymatic reactions will be discussed.



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