

The Frame Guided Assembly

Dongsheng Liu

Department of Chemistry, Tsinghua University, Beijing 100084, China

How to precisely control the shape and size of final assemblies, especially using same amphiphilic molecules and under the same environmental conditions, is always a challenge in molecular assembly. Inspired by the cytoskeletal/membrane protein/lipid bilayer system that determines the shape of eukaryotic cells, we proposed and 'the Frame Guided Assembly' (FGA) strategy to prepare heterovesicles with programmed geometry and dimensions. This method offers greater control over self-assembly: with same molecular system, the size of final assemblies could be tuned at 1 nm level and their shape could vary from spherical to cubic, and even given sized two dimensional sheets. Most importantly, the principle of the FGA could be applied to various materials such as block copolymers, small molecules including surfactants and lipids, which is a general rule in self-assembly.



Scheme 1. Schematic illustration of the Frame Guided Assembly

Funding by the NSFC is gratefully acknowledged.

[1] Zhao, Z., Chen, C., Dong, Y., Yang, Z., Fan, Q., * Liu, D., *: *Angew. Chem. Int. Ed.* **2014**, 53, 13468-13470.

[2] Zhou, C., Wang, D., Dong, Y., Xin, L., Sun, Y., Yang Z., Liu, D.,*: *Small* **2015**, 11(9-10), 1161-1164.

[3] Dong, Y., Sun, Y., Wang, L., Wang, D., Zhou, T., Yang, Z., Chen, Z., Wang, Q., Fan, Q., Liu, D.,*: *Angew. Chem. Int. Ed.* **2014**, 53(10), 2607-2610.