# Self-Organization of Differently Modified Colloidal Particles Toward Novel Building Blocks

임채호[1,2], 김신현[1,2], 심태섭[1,2], 양승만[1,2,*]
[1]KAIST 생명화학공학과; [2]광자유체집적소자연구단
(smyang@kaist.ac.kr*)

Colloidal clusters have been studied as a building block for unusual lattices of colloidal crystals, which cannot be achieved by self-assembly of spherical colloids. However, we cannot achieve configurational diversity of colloidal clusters with monodisperse colloidal particles. In this case, most of the clusters composed by less than 12 particles have shown to have the minimal second moment structures. In this work, we introduce the bidisperse colloidal particles of different surface properties onto O/W emulsion interface to create the colloidal clusters which have enhanced complexity compared with the minimal second moment structures. To modify the surface property of particles, we treated silica particles with silane coupling agents such as dichlorodimethylsilane (DCDMS) and octadecyltrimethoxy-silane (OTMOS). Then, we applied dye molecules on the surface of silica spheres to distinguish silica spheres from those which have different surface properties. In oil-in-water emulsion, as the volatile oil droplets containing bidisperse colloids were evaporated, the colloids formed aggregates in the aqueous medium, which showed much richer configurations of particle coordinations in comparison with conventional colloidal clusters.