

# 화학고 세미나

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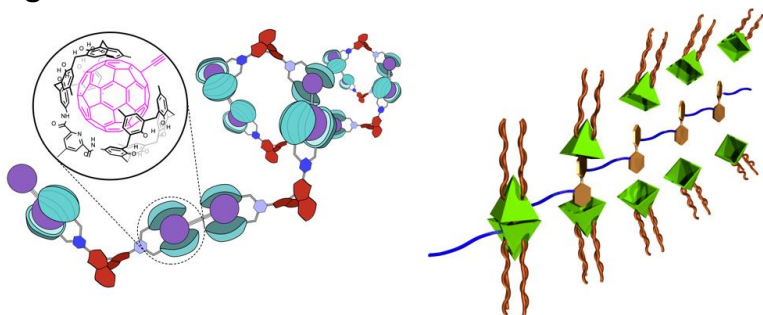
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## Chemistry of Functional Supramolecular Polymers

Our group has been developing calixarene-based synthetic host molecules that have been used for constructing supramolecular polymers with unique structures and topologies. We will describe two main topics, encompassing supramolecular helical fullerene polymers and supramolecular graft polymers.

A biscalix arene encapsulates fullerene within the cavity, which was utilized for supramolecular fullerene polymers. We newly designed chiral ditopic tetrakis-calix arene hosts and a dumbbell-shaped fullerene. The calixarene-fullerene host-guest complexation drove the supramolecular polymerization of a dumbbell-shaped fullerene. The helical fullerene array was visualized by atomic force microscopy. The right-handed and left-handed supramolecular helical polymers were self-sorted when a racemic mixture of ditopic hosts was employed.

A resorcinarene cavitand with four bipyridine units is self-assembled via metal coordination. The cavity of the self-assembled capsule encapsulates 4,4'-diacetoxybiphenyl as a guest. Polymer-attached capsule bound 4,4'-diacetoxybiphenyl units located to polyesters, which resulted in supramolecular graft polymers. The capsule encapsulation extended the chain of the polyester chains via steric interaction between the capsules on the same polymer chain. The graft polymer gels in tetrachloroethane showed self-healing properties.



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