Supramolecular Fullerene Assembly Formed by Host-Guest Interaction of Calix[5]arene and Fullerene

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We have been working on developing supramolecular assemblies driven by the host-guest complexation of a calix[5]arene and fullerenes. Covalently-linked double-calix[5]arenes take up C\textsubscript{60} into their cavities. This complementary interaction creates a strong non-covalent bonding. Accordingly, the iterative self-assembly between dumbbell fullerene 1 and an achiral ditopic host produces the supramolecular polymer networks.\textsuperscript{1}

In this presentation, we will report that the synthesis of chiral ditopic host 2 and its supramolecular complexation with 1. The chiral binaphthyl linker provides the asymmetric binding environments in the two fullerene binding sites; thus, their iterative binding can produce the supramolecular helical fullerene array in nanospace. The synthesis of 1 and 2 has been finished. Now, their supramolecular assembly is under investigation.

Figure 1. Supramolecular assembly of 1 and 2.

References