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Dimeric and Trimeric Catenation of Giant Chiral [8 + 12] Imine Cubes Driven by Weak Supramolecular Interactions
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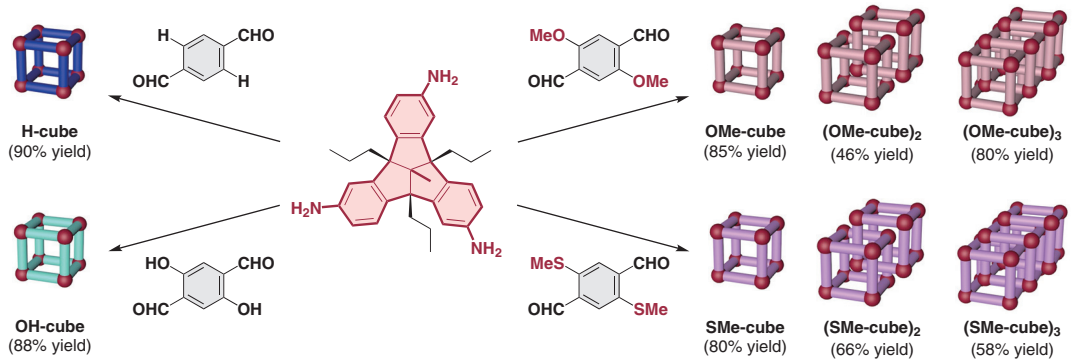
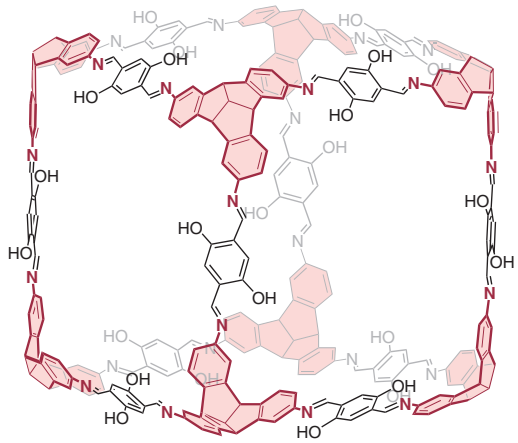
Catenation of Chiral Cubes





OH-cube

*Alkyl substituents of tribenzotriquinacene are omitted for clarity.

Significance: Catenanes are at the forefront of research efforts for fabricating molecular machines and intelligent materials. Among the various synthetic tactics developed, aromatic stacking interactions represents the most widely used operating driving force for assembling. Here, the authors report a distinct approach to both monomeric and catenated cages, which are directed by weak dispersion interactions and solvophobic effects.

Comment: Taking 1,4-disubstituted terephthalaldehydes as edges and chiral triamino-tribenzotriquinacenes as vertices, a series of giant [8+12] cubes are successfully obtained via imine condensations. Systematic investigations further indicate that the catenation processes are mainly promoted by dispersion forces among the substituents, such as methoxy and methylthio on terephthalaldehydes, rather than the π–π stacking interactions.

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Key words
catenanes
chiral cubes
catenated cubes
imine condensation

Synfact of the Month