

Exploiting The Oxacalixarene Scaffold: Structural Diversity, Macrocyclic Hosts, Multicalixarenes, and Molecular Tweezers



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The Katz laboratories have discovered that structurally diverse oxacalixarenes are readily formed in a single step and in high yield by condensation of dipheols with dihalogenated electrophiles bearing electron-withdrawing functionality. Reaction of 2,7-dihydroxynaphthalimides and 2,7-dichloro-1,8-naphthyridine creates a macrocyclic framework with a U-shaped topology. The topology enforces a spacing of approximately 7 Å between opposing walls of the formed cavity, creating potential "molecular tweezers". These tweezers exhibit selective solution-phase binding to aromatic guests bearing hydrogen-bond donors. The fluorescence properties of the naphthalimide core are being harnessed for the development of oxacalixarenes as molecular sensors for neutral organic molecules.

