

## Synthesis of novel macrocyclic polyether fullerenes by tether-directed chemistry

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A novel approach to regiochemical control in multiple additions to fullerene- $C_{60}$  has been reported by Hirsch. We have applied this strategy for macrocyclic ether-ester-directed remote functionalization. Compound **1** was synthesized by the condensation of malonyl chloride and triethylene glycol under solid-liquid PTC conditions. The multiple cyclopropanation of [60]fullerene with macrocyclic ether-ester **1** gave almost exclusively regioselective fullerene trisadduct **2**. A similar process with the related macrocyclic ether-ester bismalonate, gave bisadducts as well.

$^3\text{He}$  NMR was used for the characterization of multiple addition pattern toward  $C_{60}$ . Host-guest interactions of polyether  $C_{60}$  derivatives having multi-oxygen binding sites with a series of ligands have been studied by electrospray ionization mass spectrometry (ESI-MS). Structural effects on metal binding of various derivatives will be discussed.

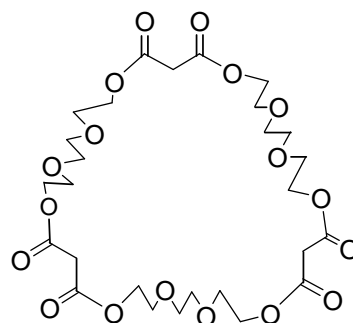


Fig. 1. Compound 1

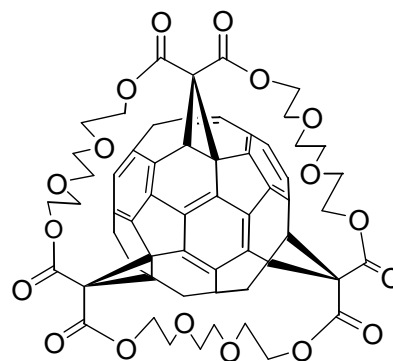


Fig. 1. Trisadduct 2