Novel Aromatics as the Core of Nano-Scale Materials

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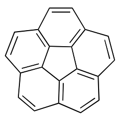
The formula $C_{10n}H_{10}$ includes a series of bowl-shaped carbon-rich structures where in corannulene (**1**) represents n=2, and the simplest capped nanotube, $C_{40}H_{10}$ (**2**), represents n=4.[1] Derivatives of class n=2 continue to lead to many interesting materials.[2] The class of n=4 is also represented by an isomeric structure of **2**, decaethynylcorannulene (**3**). A simple bond energy estimate for the energetics of **3** compared to **2** results in a remarkable value of 300-400 kcal/mol in favor of **2**, and could lead one to question the feasibility for **3** to be isolated as an inert material. From decachlorocorannulene (**4**), decapentynylcorannulene (**5**) can be prepared with the hope of making decapropyl-**2** (**6**). Such an approach would open a solution phase method to the synthesis of mono-disperse single-walled carbon nanotubes.[3] At the same time, corannulene mono-layers on metals reveal new surface phenomena regarding molecular organization and polymorphism.[4] Sym-pentakisarylalkynylcorannulenes offer a different type of materials application in the area of oriented solids and liquid crystals with efficient fluorescence activity.[5]



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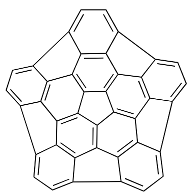

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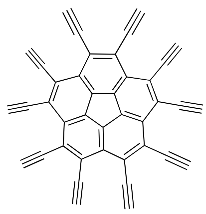

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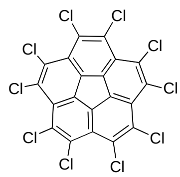

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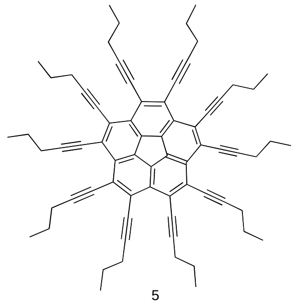

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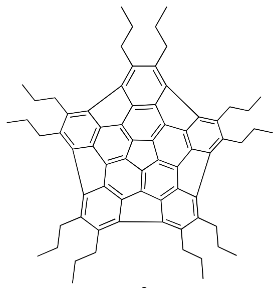

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