MS43-O2 **Solution and Solid-State Supramolecular Chemistry of Naphthalenediimides** G. Dan Pantos,[a,b] Jeremy K. M. Sanders[b] [a]*Department of Chemistry, University of Bath, UK,* [b]*Department of Chemistry, University of Cambridge, UK*
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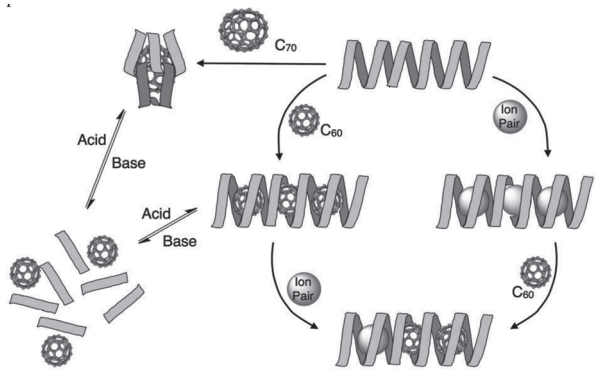
Amino-acid derivatives of naphthalenediimide (NDI), depending on the solvent used, form either supramolecular nanotubes or đ-stacked assemblies in solution and the solid-state. The supramolecular nanotubes act as receptors for fullerenes, condensed aromatic systems and ion pairs. C_{60} forms a closed-packed one-dimensional array inside the nanotube, while the ion pair complexation ability of the nanotubes is size selective. The supramolecular nanotubes form mixed fullerene-ion pair inclusion complexes. C_{70} templates the formation of a hexameric NDI receptor at the expense of the nanotube. All these supramolecular structures can be destroyed and reformed using a deprotonation / re-protonation mechanism.



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Keywords: supramolecular chemistry; chirality; fullerenes

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Currently the chemistry of silicon is mainly based on silicon(IV), whereas that of silicon(II) is still in its infancy. A silylene (R_2Si:) is a molecule with a divalent neutral silicon atom holding a lone pair of electrons. We elaborated the synthesis of the first base-stabilized dichlorosilylene that is stable at room temperature. The structure features a trigonal pyramidal threefold-coordinated silicon atom with the stereochemically active lone pair at the apex. The Cl-Si-Cl angle of only 97.3°, the side-on coordination of the NHC and the shape of the lone-pair suggest that the silicon atom is barely sp^2 hybridized and that the lone-pair adopts predominantly s-character [1]. Incorporation of a silylene in a Si_3PC five-membered ring stabilizes the heavier anti-aromatic CP^+ congener. Although this anti-aromatic ring is 24 kcal/mol higher in energy than the virtual aromatic anion the silicon and phosphorus atoms offer sufficient stabilization allowing the isolation of the cation [2]. The silylene activates white phosphorus and we were pleased to synthesise of a neutral acyclic P_4 chain. The Z-diphosphene isomer consists of two Si atoms and four P atoms, which together form a neutral acyclic Si_2P_4 (Si=P–P=P–P=Si) chain with 6p electrons accommodated in a diphosphene and two phosphasilene units [3]. The obstacles in the refinement of the various structures are discussed.

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