

## Functionalized calix[8]arenes, synthesis and self-assembly on graphite

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### Abstract

With the intention of building hollow tubular structures by self-assembly, we have designed and successfully synthesized a series of calix[8]arene derivatives. Their phenolic units were functionalized in p-position by various groups which are able to interact via hydrogen bonding or  $\pi$ - $\pi$  stacking. Ethynyl, amide, urea, or imide links were chosen for the covalent attachment of these functional groups, to ensure the adjustment of an optimal distance for their interaction. Two different kinds of nanostructures selfassembled on a highly oriented pyrolytic graphite (HOPG) surface were found by scanning force microscopy: parallel aligned nanorods in which the calixarene molecules are adsorbed edge-on on the graphite, providing evidence that these calix[8]arene derivatives stack in a tubular fashion, and micrometer long fiber bundles most probably composed of many nanorods. © 2005 American Chemical Society.

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