Synthesis of Nanographene Fragments

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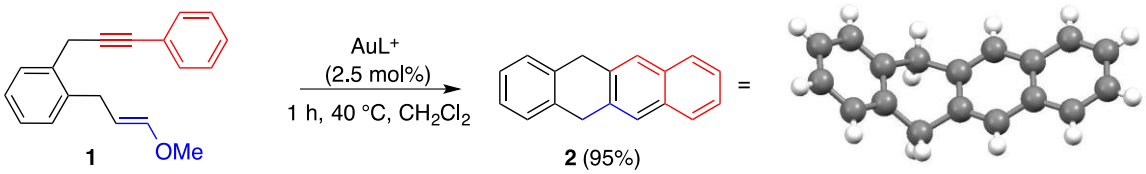
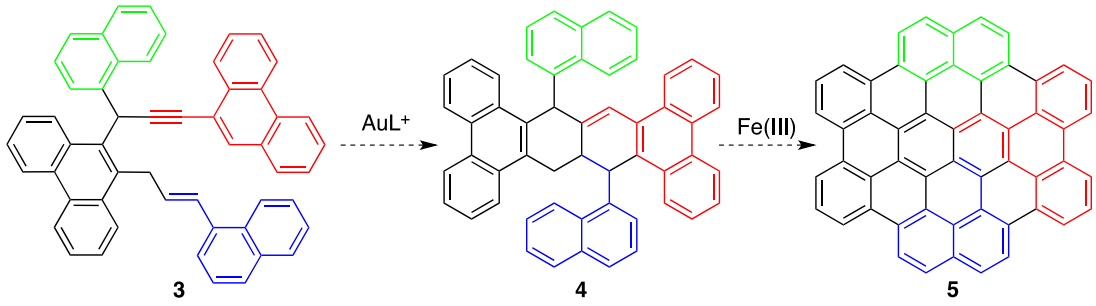
As part of a program on the synthesis of large polyarenes for their application in molecular electronics,[1] our group is developing new strategies for the rational synthesis of well-defined molecular-sized sections of graphite single layers (nanographenes) and linear acenes (tetracene, pentacene, and the like) based on the use of Au(I)-catalyzed reactions. To limit the problems of handling insoluble materials, the transformations leading to planarization will be delayed until the last step(s) of the synthesis.

Thus, we have synthesized dihydrotetracene **2** by cyclization synthesis of functionalized acenes by gold(I)-catalyzed [4+2] cycloaddition of 1,7-enynes, a powerful synthetic method developed in our group.[2]



In addition, we will discuss our work aimed at the preparation of larger polyarenes such as planar C54 derivative **5** from 1,7-enyne **3** using a Lego-type approach. The Diels-Alder reaction of **5** at the bay regions could lead to a C66 nanographene.[3] Using this and related strategies, nanoribbons o non-symmetrical nanographenes could be also obtained.



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