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Synthesis and Derivatization of Expanded $[n]$ Radialenes ($n = 3, 4$)

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Category

Synthesis of
Materials and
Unnatural Products

Key words

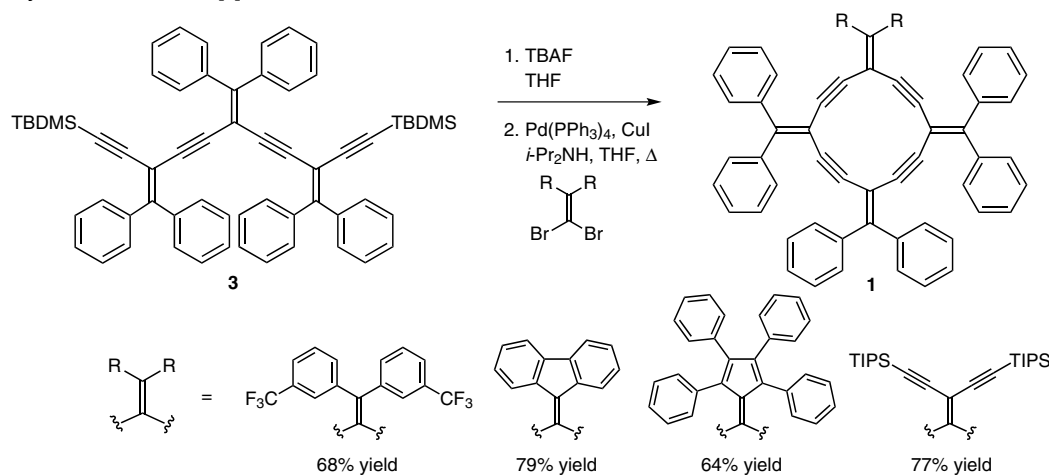
expanded
radialenes

strained
macrocycles

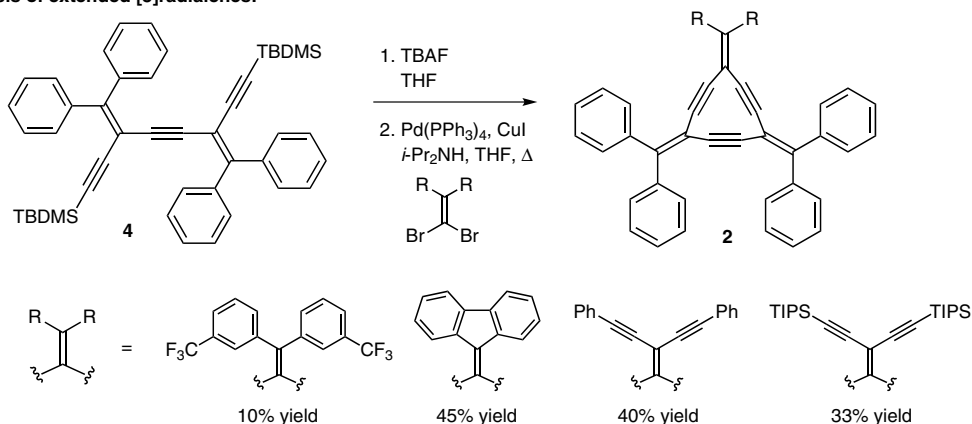
carbon-rich
molecules

Expanded $[n]$ Radialenes: Unusual Carbon-Rich Molecules

Synthesis of extended $[4]$ radialenes:



Synthesis of extended $[3]$ radialenes:



Significance: Conjugated macrocycles belong to a class of carbon-rich molecules that exhibit unusual structures and fascinating electronic and optical properties. Here, Tykinski and co-workers report synthetic approaches to extended $[4]$ radialenes **1** and $[3]$ radialenes **2**.

Comment: Synthesis of the extended radialenes **1** and **2** is accomplished by a one-pot deprotection and palladium-catalyzed cross-coupling reaction of common intermediates **3** and **4**, respectively. Increased bond-angle strain appears to reduce yields in the synthesis of **2** compared to **1**. A modified synthesis that leads to C_2 -symmetric expanded $[4]$ radialenes is also presented in this work.

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