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The Structural Origins of Intense Circular Dichroism in a Waggling Helicene Nanoribbon
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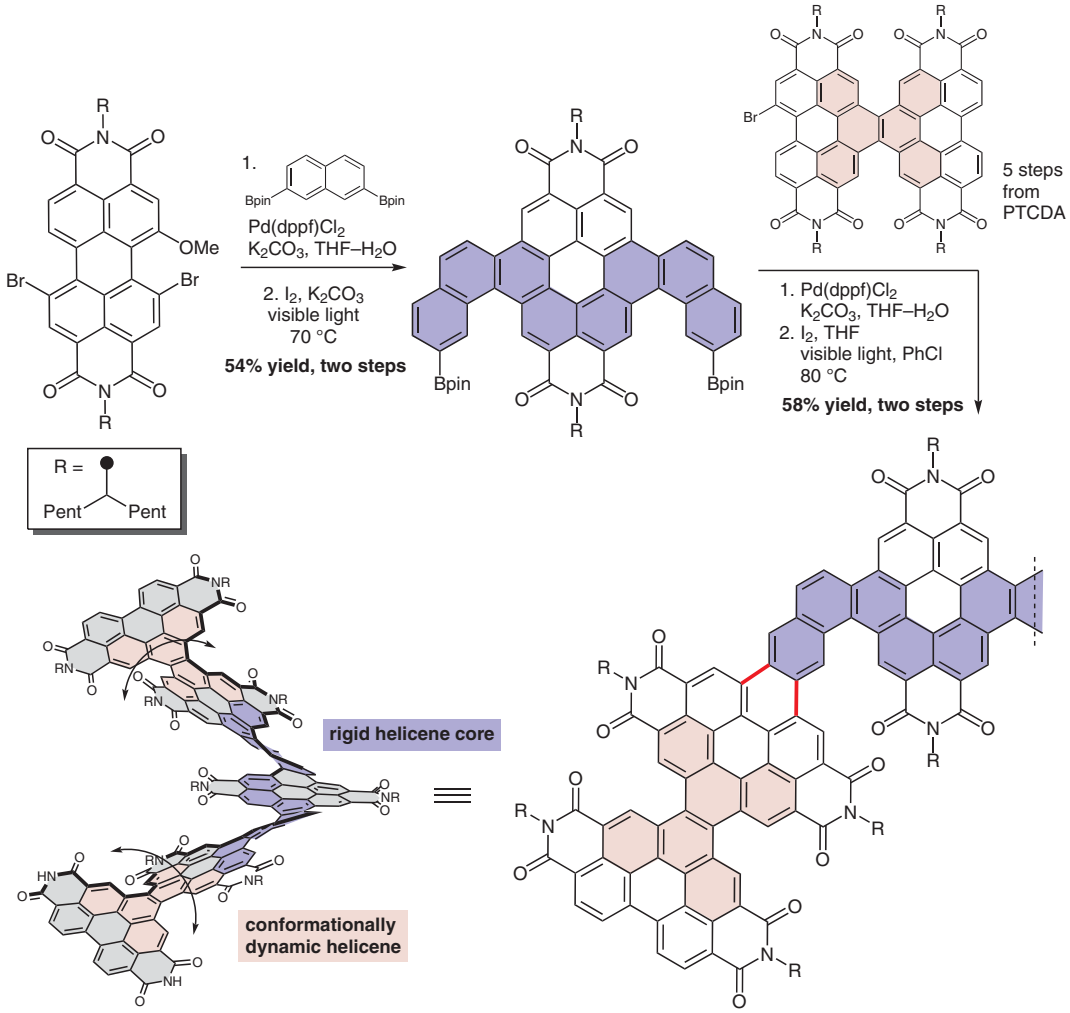
Big Waggles Don't Throw Off the Rotation



Significance: The ability to tune chiroptical responses holds promise for the development of materials with enhanced nonlinear optical effects, chiral sensing, and spin-filtering capabilities. Working towards chiral optoelectronics, considerable effort has been invested in the development of helicene structures that strongly interact with circularly polarized visible light. Reported is the largest molar electronic circular dichroism in the visible range of any molecule.

Comment: The fusion of multiple helicenes into a single nanographene is accomplished by iterative palladium cross-couplings and oxidative cyclizations. The embedded helicenes differ in their conformational lability, with a rigid core group and dynamic pendant groups. Careful comparison of experimental and computed electronic properties reveals that the strong electronic circular dichroism is the result of the rigid chiral helicene core.

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Category
Synthesis of Materials and Unnatural Products

Key words
circular dichroism
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perylenes

Synfact of the Month