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Sydnone-Based Approach to Heterohelices through 1,3-Dipolar-Cycloadditions

J. Am. Chem. Soc. **2019**, *141*, 1435–1440.

A New Twist on Sydnones

Selected examples:*

62% (66%) yield

79% (88%) yield

49% (16%) yield

60% (66%) yield

76% (70%) yield

18% (81%) yield

70% (56%) yield

73% (78%) yield

53% (63%) yield

*Yields in parantheses represent yield of intermediate sydnone.

Significance: While helicenes have held the attention of chemists for years, expedient, selective syntheses to access such architectures are few and far between. In this report, Audisio and co-workers disclose a two-step method to a variety of pyrrole-containing heterohelices through the cycloaddition of arynes and sydnones.

Comment: To form the helical product selectively, it was found that the phenanthryne cycloaddition partner was key. The use of naphthyne and benzyne cycloaddition partners resulted in eroded selectivity. Computational studies revealed that a C–H $\cdots\pi$ interaction stabilized the transition state for the helicene.

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Category

Synthesis of
Materials and
Unnatural Products

Key words

sydnones

benzynes

helicenes

cycloaddition

Synfact
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