Category

Synthesis of Materials and Unnatural Products

Key words

chlorins

porphyrins

pyrroles

condensation

unsymmetric

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Toward a General Synthesis of Chlorins

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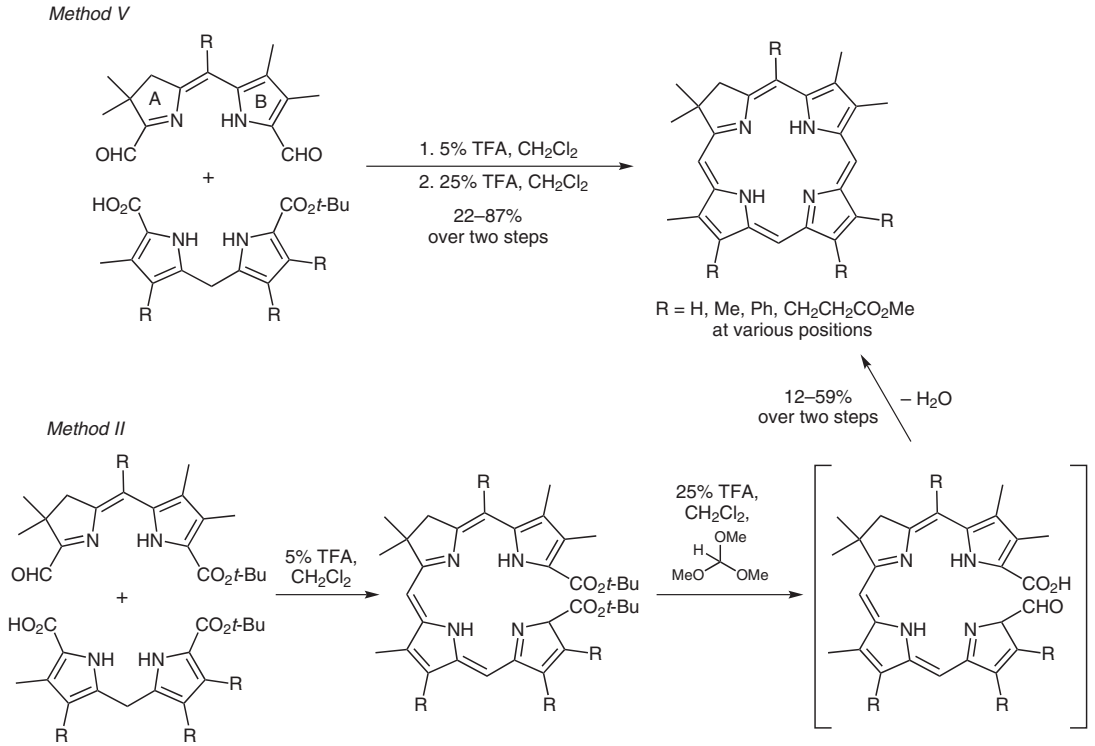
A [2+2] Approach to Unsymmetrical Chlorins



Significance: Chlorins are a family of natural chromophores that can be found in many terrestrial and marine organisms, the most notable member being chlorophyll *a*. Additionally, synthetic variants have found application in materials science, light-energy conversion, and photodynamic therapy for the treatment of certain cancers. Controlling the nature and position of substituents around the chlorin nucleus is critical for tuning of their properties. The authors present several strategies to obtain unsymmetrical chlorins, two of which are shown above.

Comment: The regioselectivity in *Method V* results from condensation with the more reactive pyrroline aldehyde (ring A). All [2+2] condensation methods presented provide single regioisomers of non-symmetric chlorines with a variety of substitution patterns in a one-flask procedure. Additionally, there is no post-cyclization oxidation required to generate the aromatic macrocycles.

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