Nitrogen-Free [18]Porphyridoids in Two Steps

Significance: The researchers synthesized substituted and unsubstituted dioxadicarbaporphyrins, which are the first examples of porphyridoids with adjacent indenes. Bis(3-indeny)methane 1 was reacted with various aryl aldehydes to yield compounds 3. Reaction with formaldehyde or an aryl aldehyde followed by oxidation led to the formation of dioxadicarbaporphyrins 5 and 6, respectively. These bilin analogues are interesting as natural products as well as organic opto-electronic materials.

Comment: The reaction of bis(3-indeny)methane 1 with aryl aldehydes was expected to give a symmetrical difulfene; however, the fully conjugated derivative 3 was obtained instead and confirmed with 2D NMR and X-ray crystallography. The \(^1\)H NMR spectra of the porphyridoids 5 and 6 displayed that the macrocycles are diatropic, as expected from the [18]annulene core.