Syntheses and Chemistry of Novel Multiporphyrin Arrays

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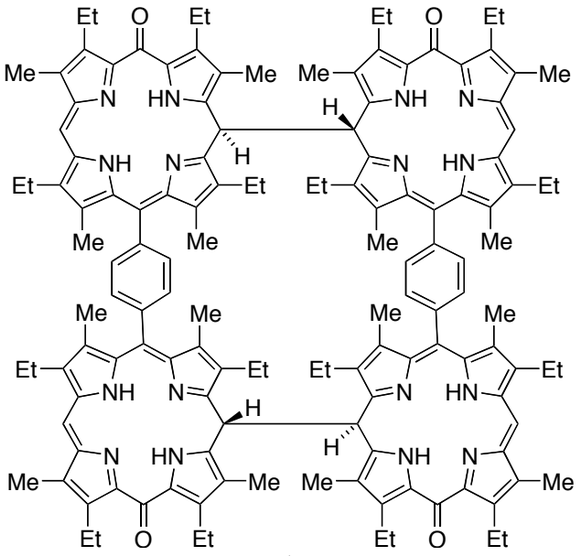
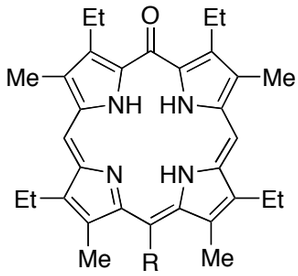
Porphyrins and their numerous derivatives serve important catalytic functions in biology, and are being increasingly investigated for use in chemical catalysis and as versatile building blocks for electronic and optical devices. At the same time, methodology for the chemical synthesis of porphyrin systems has been advanced to levels of amazing sophistication, and details of physicochemical and structural investigations of porphyrinoids have continued to demonstrate the versatility of the porphyrin ligand structure. The lecture will center on the synthesis, structure, chemistry and electrochemistry of porphyrin array systems, such as **1**, and **3**/**4**, consisting of self-assembled redox-active systems (**1**) or fused metallocenometalloporphyrin species (**3,4**).



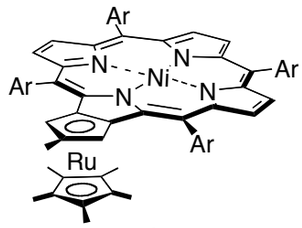
1

Systems such as those exemplified by compound **1** are produced from so-called oxophlorins **2** by oxidation. These "oxo" compounds **2** have biological inportance as intermediates (as their iron complexes) in the catabolism of heme to give bilirubin; they also possess extremely low oxidation potentials.



2

Fused metallocenoporphyrins, such as **3** and **4**, represent an advance in design of redox active porphyrin systems. We and others have synthesized porphyrins which are linked to metallocenes via carbon-carbon bonds, but compounds such as **3** and **4**, in which the metallocene is directly fused to the porphyrin, have only recently been prepared.



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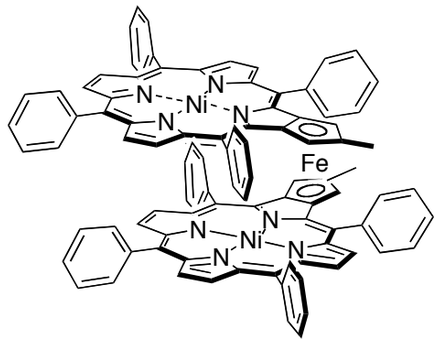

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