"Pyrazinacenes, Porphyrins and Oxoporphyrinogens"

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Pyrazinacenes [1] are a class of acene (e.g., pentacene) that contain two or more linearly-fused 1,4-pyrazine groups forming potentially n-type semiconducting materials. On the other hand, oxoporphyrinogens [2] are a class of highly colored calix[4]pyrrole derivatives that have significant properties making them useful in sensing and switching applications as well as in molecular nanotechnology. We have developed the syntheses of these compounds for several applications and, in this work, we will discuss not only synthesis but the properties of the compounds. Although we rely heavily on molecular design principles, there has also been an element of serendipity involved and the role of 'luck' in determining the direction of investigations will be described.

In more detail, we will describe how it has been possible to develop the synthesis of the pyrazinacenes [3] based on an initial discovery, while the discovery of some of the properties of the compounds presented will also be assessed. Although intuition in molecular design plays a strong role in the outcome of synthetic schemes, the appearance of serendipitous results also affects the final molecules obtained. For oxoporphyrinogens, origins of molecular recognition from a sensing viewpoint [4] will be considered. Other examples of luck in molecular design may also be considered [5].

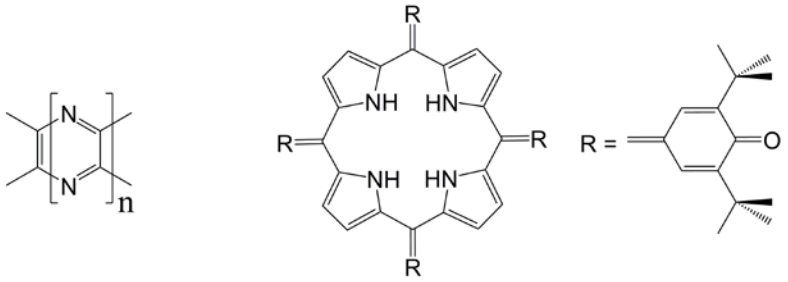

Fig. Pyrazinacenes (left) and oxoporphyrinogens (right).

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