Electrochemistry of Metallocorroles and Related Pyrrole Chelates

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Within the ever-growing tree of chemistry lies a multifaceted branch concerned with the interplay between electrical and chemical effects termed electrochemistry. Similar to the application of widely employed spectroscopic methods, electrochemical methods, such as cyclic voltammetry, serve as tools for probing chemical systems and can offer simplistic information such as formal electrode potentials ($E'_{1/2}$) for a given redox reaction and the number of electrons involved in a specific process, to more complex mechanistic information about the site and/or product(s) of an electron transfer under various solution conditions.[1] Moreover, when electrochemical methods are paired with spectroscopic methods, such as UV-vis spectroscopy, even more detailed information about the product of electron transfer can be ascertained. This synergistic approach is employed in the current study which examines the electrochemical behavior and related spectral properties of metallocorroles and a related trianionic pyrrole-based metallochelate whose core structures are shown in the figure below.

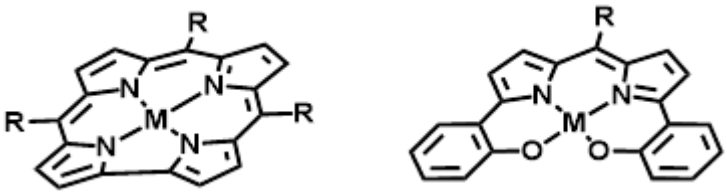

Figure: Core structures of investigated trianionic pyrrole-based macrocycles.

REFERENCES

1. Bard, A. J.; Faulkner, L. R., Electrochemical Methods: Fundamentals and Applications. Wiley: New York, 1980.