SYNTHESIS AND STRUCTURE OF MESO-SUBSTITUTED PORPHYRIN METAL COMPLEXES

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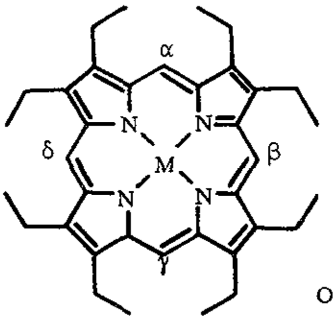
The synthesis of meso-substituted octaethylporphyrin is reported: nitration of octaethylporphyrin with $Zn(NO_3)_2 \cdot 6H_2O$ yields mono-, di-, tri-, and tetranitro-octaethylporphyrinatozinc(II) and formylation of copper, nickel and palladium porphyrin complexes yields monoformyl-(Cu^{II}, Ni^{II}, and Pd^{II}) and diformyl(Cu^{II})octaethylporphyrin metal complexes. The exclusive α, γ,-orientation for dinitro- and diformylporphyrins is proved on the basis of n.m.r. spectra of the free bases obtained by demetallation of the complexes. Specific α, γ,-orientation of octaethylporphyrin complexes has been interpreted in terms of relative stability of disubstituted porphyrin metal complexes (α,β and α,γ). The strain energy of α, γ-disubstituted complex(D_{2h}) would be less than that of the α,β-disubstituted complex(C_{2v}). The trend of the substitution reaction of porphyrin diacid will be compared with present results.



Octaethylporphyrin - M^{II}