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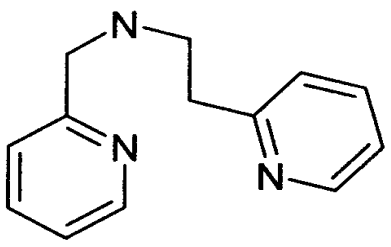
Effect of chelate-ring over the stabilization of copper-dioxygen adducts

RAJEEV GUPTA and RABINDRANATH MUKHERJEE
Department of Chemistry, Indian Institute of Technology,
Kanpur 208 016, India

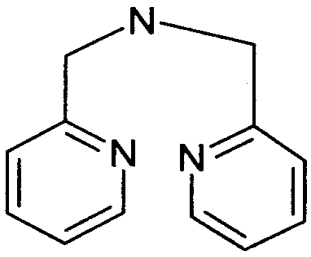
Copper-dioxygen adducts are very important in biological systems as well as in synthetic oxidation chemistry. Very few such intermediates have been characterized, and the structural factors responsible for catalytic effectiveness of the copper catalysts remain ambiguous. The oxidation chemistry of well-characterized copper-dioxygen adducts is thus expected to provide the basis for designing and developing new catalytic oxidation systems.

Chelate-ring size makes considerable difference in the reactivity of such complexes. Systematic variation of chelate-rings can lead to better understanding of the factors responsible for occurrence of such copper-dioxygen adducts.

In this presentation, two ligands, MeL and MeL*, have been used to demonstrate the effect of chelate-rings over the stabilization of the copper-dioxygen intermediate species. One such species with ligand MeL has been used to show the oxidation of externally added substrates. Final end products of both ligands are discussed in detail to throw some light on the difference in the behaviour of chelate-rings.



MeL



MeL*