

Comparative study of the electrocatalytic activity of cobalt phthalocyanine and cobalt naphthalocyanine for the reduction of oxygen and the oxidation of hydrazine

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Cobalt phthalocyanine (CoPc) and cobalt naphthalocyanine (CoNPc) exhibit different redox and electronic properties. Redox processes on CoPc are more reversible than on CoNPc. The pH dependence of those processes is also different for these complexes, which could indicate that in the case of CoNPc, the redox couples observed involve the macrocyclic ligand and not the metal as with CoPc. This seems to explain the different redox properties and kinetics for O₂ reduction and N₂H₄ oxidation of these two macrocyclics. In this study we compare the electrocatalytic activity of these two phthalocyanines, adsorbed on glassy carbon, for the electrochemical reduction of O₂ and for the oxidation of hydrazine. © 1998 Elsevier Science Ltd. All rights reserved.