ESR STUDIES OF THE RADICAL INTERMEDIATES IN AEROBIC REACTIONS OF 3,5-DI-TERT-BUTYL-O-BENZOOQUINONE OXIMES WITH Cu(II), Co(II), Ni(0), Pd(II), VO(II), Mn(II), Zn(II)

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In 1:1 and 1:2 mole ratios of 3,5-Di-tert-butyl-1,2-benzoquinone and aqueous NH₂HCl in the presence of Py react to form oximes. Interaction of these oximes with equivmolar amount metal(II) acetat under an atmosphere of dioxygene leads to the formation of oxime complexes of M(II) and stable radical species of semiquinone type.

The ESR spectra of Cu(ii) and Mn(II) complexes show the typical $^{63,65}$Cu (I=3/2) and $^{55}$Mn(I=5/2) signals with the parameters of $g_{d1}=2.191$, $g_{d2}=2.059$, $A_{d1}=176$ G, $A_{d2}=24.5$ G, $A_{N}=15.6$ G and $g_{iso}=2.032$. Also, $A_{iso}=92.5$ G, without any radical signal. For VO(II) (in 1:1 molar ratio) besides typical $^{51}$V(I=7/2) 8-lines signal ($g_{iso}=1.817$, $A_{iso}=90$ G) also have been observed radical signal consisting of 32-lines with the coupling constants $A_{H}=1.625$ G and $g=2.0145$.

In the case of NiSQ triplets of octet with the ESR parameters of $g=2.0162$, $A^{N}=3.8$ G, $A^{H}=0.3$ G have been observed. ESR for the 1:1 complexes of CoSQ ESR spectrum consist of 19-lines signal with $g=2.0013$, $A^{Co}=8.5$ G $A^{H}=3.5$ G. At the same time for 1:2 CoSQ complex were registreted more complicated spectrum consisting of overlapping two signals with similar $g$-factor and different coupling constants($g=2.0026$, $A^{TM}=3.3$ G, and $g=2.0039$, $A_{1}=1.25$ G, $A_{2}=8.5$ G). All complexes have also strong absorption bands centered at 340-450 nm, 700-900 nm and very similar to those which have been observed for semiquinone radicals.

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