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ESR monitoring of electron transfer to some nickel complexes with α-diimine ligands

© **Yulia B. Dudkina**, **Tatiana V. Gryaznova**, **Kirill V. Kholin**, **Marsil K. Kadirov**,
Yulia H. Budnikova,*+ and **Oleg G. Sinyashin**
A.E. Arbuzov Institute of Organic and Physical Chemistry, Kazan Scientific Center
of Russian Academy of Sciences. Arbuzov St., 8. Kazan, 420088. Russia.
Fax: +7 (8432) 75-22-53. E-mail: yulia@iopc.ru

*Supervising author; +Corresponding author

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Abstract

ESR monitoring of the electrochemical reduction process in some nickel complexes with 'non-innocent' ligands such as α-diimines (bpy = 2,2'-bipyridine, tpy = 2,2':6',2''-terpyridine and pybox = (*S,S*)-2,6-bis(4-phenyl-2-oxazolin-2-yl)-pyridine), including sigma-organic nickel complexes, has shown initial heterogeneous electron transfer (first reduction peak) on nickel atom with Ni(I)L formation and gradual appearance of radical anion complex $\mathrm{NiL}^{\overline{\bullet}}$ in time. The transition from metal-centered to ligand-centered electron transfer is discovered. Previously unknown g-factors were calculated for a number of nickel(I) complexes of selected ligands.