

Electrochemical properties of nickel(II) complexes with 2,2'-bipyridine in the presence of diphenylphosphinic acid

© Alia F. Khusnuriyalova,^{1,2} Leonid E. Kalugin,^{1,2}
Alexey B. Dobrynin,¹ and Dmitry G. Yakhvarov^{1,2}

¹ Department of Coordination Chemistry and Nanomaterials. A.E.Arbutov Institute of Organic and Physical Chemistry of the Russian Academy of Sciences. Arbuzov St., 8. Kazan, 420088. Tatarstan Republic. Russia.

Phone: +7 (843) 273-48-93. E-mail: aliya15071993@mail.ru

² Physical Chemistry Division. A.M. Butlerov Institute of Chemistry. KFU.

Kremlevskaya St., 18. Kazan, 420008. Tatarstan Republic. Russia.

Phone: +7 (843) 233-73-46. E-mail: yakhvar@iopc.ru

*Supervising author; ⁺Corresponding author

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Abstract

The electrochemical properties of nickel(II) / 2,2'-bipyridine complexes of type $[\text{Ni}(\text{bpy})_n]^{2+}$, where $n = 1-3$, in the presence of diphenylphosphinic acid $\text{Ph}_2\text{P}(\text{O})\text{OH}$ have been investigated. It was established that diphenylphosphinic acid $\text{Ph}_2\text{P}(\text{O})\text{OH}$ is more strong ligand in comparison with monophenylphosphinic acid $\text{PhP}(\text{O})(\text{H})\text{OH}$, and can substitute 2,2'-bipyridine in the coordination sphere of nickel forming new octahedral complex $[\text{Ni}(\text{Ph}_2\text{P}(\text{O})\text{O})_2(\text{Ph}_2\text{P}(\text{O})\text{OH})_2(\text{DMF})_2]$. The structure of the new complex was elucidated by X-ray crystal structure analysis. It was found that electrochemical reduction of the obtained new nickel complexes proceeds at more negative potentials than the potential of the electrochemical reduction of nickel(II) / 2,2'-bipyridine system.