

四磺酸酞菁镍-表面活性剂薄膜电极催化性能研究

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摘要 四磺酸酞菁镍阴离子(NiPcTS⁻⁴)

在水溶液中可借助离子交换进入阳离子表面活性剂双十二烷基二甲基溴化铵(DDAB)薄膜电极,从而形成NiPcTS⁻⁴-DDAB薄膜电极。循环伏安实验表明,在KBr溶液中,该薄膜电极有一对良好的还原氧化峰,阴阳极峰电位分别为-0.83V和-0.74V(vs.SCE)。本文探讨了该薄膜电极的电化学行为,测定了该体系的电化学参数如电荷传递扩散系数D_{ct}和非均相电极反应速率常数k^o等。可将NiPcTS⁻⁴-DDAB薄膜电极应用于催化各种卤代乙酸的电还原,估计并比较了它们的表观催化反应速率常数。

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Studies on catalytic properties of nickel phthalocyanine tetrasulfonate-surfactant film electrode

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Abstract Nickel phthalocyanine tetrasulfonate anion (NiPcTS⁻⁴) in aqueous solution could enter the film of cationic surfactant didodecyldimethylammonium bromide (DDAB) by ion exchange and form NiPcTS⁻⁴-DDAB film electrode. Cyclic voltammetric experiments showed that, in KBr solution, the film electrode had a pair of well-defined reduction and oxidation peaks. The cathodic and anodic peak potentials were -0.83V and -0.74V(vs.SCE), respectively. The electrochemical parameters, such as charge transport diffusion coefficient, D_{ct}, and heterogeneous electrode reaction rate constant, k^o, were determined. The NiPcTS⁻⁴-DDAB film electrode could be used to catalyze electrochemical reduction of various halogenated acetic acids. Apparent catalytic reduction rate constants of these systems were also estimated.

Key words [SURFACTANTS](#) [REACTION RATE CONSTANT](#) [ELECTRO-CATALYSIS](#) [THIN FILM ANODES](#) [QUATERNARY AMMONIUM COMPOUNDS](#) [CYCLOVOLTAMGRAPH](#)

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