

水溶液中meso-四(4-磺苯基)卟啉二聚体的形成和伏安行为研究

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收稿日期 修回日期 网络版发布日期 接受日期

摘要 本文研究了水溶液中meso-四(4-磺苯基)卟啉(TPPS)二聚体(Dimer)的各种影响因素和它的电化学性质。提出了二聚体的模型,说明了水溶性金属卟啉(Cu^{2+} , Zn^{2+} , Mn^{2+} -TPPS)循环伏安图上的一对尖峰是二聚体在汞电极上吸附还原和氧化的结果。

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分类号 [0646](#) [0631.2](#)

The formation and voltammetric behavior of meso-tetra (4-sulfophenyl) porphyrin dimer in aqueous solution

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Abstract The dimerization of meso-tetrakis(4-sulfophenyl)porphyrin (TPPS) in aqueous solution was studied by electrochem. methods. In weak acidic solution, TPPS dimerizes easily and its characteristic peaks can be seen in either visible absorption spectra or cyclic voltammogram. With the known dissociation constants K_3 , K_4 and the dimerization formation constant K_D of TPPS the amount of dimer at different pH was calculated, and it reaches its max. at about pH 5. This result agrees with the experimental data in HOAc-NaOAc. Then the model of the dimer is proposed as $\text{H}_3\text{P}^+-\text{H}_2\text{O}-\text{H}_3\text{P}^+$, i.e., 2 monomers are linked together by the hydrogen bond between TPPS and H_2O . The factors influencing the formation of the dimer, including the TPPS concentration, the pH value of the solution, the formation of metal complexes, etc., were studied and explained.

Key words [AQUEOUS SOLUTION](#) [DIMER](#) [ADSORPTION](#) [CHELATION REACTION](#) [CYCLOVOLTAMGRAPH](#) [PORPHYRIN](#) [OXIDATION-REDUCTION POTENTIAL](#) [FUEL CELL](#)

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