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具有不同芳氧基取代酞菁钯聚集行为研究

谢文委,徐海涛,潘忠孝,阎天堂,彭必先

中国科学技术大学化学系;中国科学院理化技术研究所

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摘要 为了研究具有不同芳氧基取代酞菁的聚集行为，合成了5种酞菁如 1,8,15,22- 四(2,4-二氯芳氧基)酞菁钯(Pel);1,8,15,22-四芳氧基酞菁钯(Pc2);1,8,15,22-四 (2,4-二特丁基芳氧基)酞菁钯(Pc3);1,8,15,22-四(2.5-二特丁基芳氧基)酞菁钯 (Pc4)和1,8,15,22-四(2,6-二溴-4-甲基芳氧基)酞菁钯(Pc5).酞菁的聚集行为由芳氧基的性质不同决定。在四氢呋喃(THF)溶液中浓度在10~(-6)-10~(-5)mol·dm~(- 3)范围内，计算 得到5种酞菁的聚集常数分别为1.61*10~(-5)mol~(-1)·dm~3, 3. 87*10~(-5)mol~(-1)·dm~3, 2.60*10~(-5)mol~(-1)·dm~3, 1.21*10~(-5)mol~(- 1)·dm~3, 2.57*10~(-5)mol~(-1)·dm~3. 除了Pc1外，其余酞菁的单体和二聚体吸收行为类似。在薄膜状态下，不同取代基对酞菁的吸收性质影响较大。成膜后5种酞菁的吸收光谱都发生了改变，其中Pc1的吸收开关改变量大，而Pc5的吸收位置 改变最大。

关键词 酞菁 聚集体 吸收光谱法 四氢呋喃

分类号 0621

Study on Aggregation Behavior of Tetraphenoxyphthalocyaninatopallidi um with Different Phenoxy-substituents

Xie Wenwei,Xu Haitao,Pan Zhongxiao,Yan Tiantang,Peng Bixian

Department of Chemistry, University of Science & Technology of China;Technique Institute of Physics and Chemistry, Chinese Academy of Sciences

Abstract In order to study the aggregation behavior of phthalocyanines with different phenoxy-substituents, five tetraphenoxyphthalocyaninatopalli dium with different phenoxy substituents (e.g. 2, 4- dichlorophenoxy, Pel; phenoxy, Pc2; 2, 4-dibutylphenoxy, Pc3; 2, 5- dibutylphenoxy, Pc4; 2,6-dibromo-4-methylphenoxy, Pc5) were synthesized. The aggregation degree is dependent on the properties of the phenoxy-substituents. The dimerization constants of Pel ~ 5 in THF with concentration of 10~(-6) ～ 10~(-5) mol·L~(-1) were obtained by calculation, giving 1.61 * 10~5 mol~(-1) ·dm~3, 3.87 * 10~5 mol~(-1) ·dm~3, 2.60 * 10~5 mol~(-1)·dm~3, 1.21 * 10~5 mol~(-1)·dm~3 and 2.57 * 10~5 mol~(-1) ·dm~3, respectively. There are similar absorption spectra of the monomer and the corresponding dimmer for all the compounds except Pel. The effect of substituents on the absorption spectra of the thin solid film is diversity with respect to the different substituents. By comparing the absorption spectra in the solution with those in the solid film, large differences can be observed in which spectrum shape is mostly changed for Pcl and λ_(max) was mostly shifted for Pc5.

Key words PHTHALOCYANINE AGGREGALES ABSORPTION SPECTROMETRY TETRAHYDROFURAN

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通讯作者