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## 论文

### 金属次卟啉二甲酯对空气氧化环己烷的催化作用

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#### 摘要:

在无任何外加溶剂及共还原剂的条件下, 将金属次卟啉二甲酯应用于催化空气氧化环己烷的氧化反应. 结果表明, 金属次卟啉二甲酯能够很好地催化环己烷的氧化反应, 与简单的金属四苯基卟啉相比, 金属次卟啉二甲酯催化剂具有更高的催化活性. 进而研究了络合金属对其催化性能的影响.

关键词: 金属次卟啉二甲酯; 环己烷氧化; 仿生催化

### Catalysis of Metallo-deuteroporphyrins for Cyclohexane Oxidation with Air

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#### Abstract:

The efficient and selective oxidation of hydrocarbon catalyzed by metalloporphyrins has attracted much attention from the organic and industrial chemists. During the last decades of years, a huge amount of work has shown that substituted metalloporphyrins are efficient catalysts for the oxidation of hydrocarbons at unprecedented rates under very mild conditions. However, nearly all of the metalloporphyrins used as oxidation catalysts were based on the system of synthetic *meso*-tetraphenylporphyrin(TPP). The high accessibility of deuteroporphyrin together with its excellent stability and close relationship to the naturally occurring heme make it an ideal compound to mimic enzymatic systems based on heme. Therefore, to investigate the catalytic activity of the deuteroporphyrins complex and search more efficient biomimetic catalysts for hydrocarbon oxidation under mild conditions, the metallo-deuteroporphyrin dimethyl esters[M(DPDME)] were used as the catalysts for cyclohexane oxidation by air without any coreductant or solvent. The results indicated that the metallo-deuteroporphyrins could smoothly catalyze the oxidation of cyclohexane under the selected conditions; and they exhibited markedly higher catalytic activity than simple metallo-tetraphenylporphyrins. The effect of central metals was discussed.

Keywords: Metallo-deuteroporphyrin dimethyl ester; Cyclohexane oxidation; Biomimetic catalysis

收稿日期 2009-05-14 修回日期 网络版发布日期

DOI:

基金项目:

江苏省自然科学基金(批准号: 2009386)和南京理工大学科技发展基金(批准号: XKFO9008)资助.

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