

研究论文

Pt/TiO₂光催化降解苯的磁场效应研究

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摘要 采用连续流动微分反应体系考察了外加磁场对Pt/TiO₂光催化降解苯反应性能的影响,

发现一定强度的外加磁场可提高气相光催化降解苯的反应活性.

结合瞬态光电导法和原位傅立叶变换红外技术研究了外加磁场对光生载流子寿命和反应中间体分布的影响,

结果表明,外加磁场不仅延长了光生载流子的寿命,而且提高了某些中间体的转化率,

从而改善了光催化降解反应的活性.

关键词 [磁场效应](#) [光催化降解](#) [瞬态光电导谱](#) [原位傅立叶变换红外光谱](#) [苯](#)

分类号

Study of Magnetic Field Effect on Photocatalytic Degradation of Benzene over Pt/TiO₂

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Abstract The magnetic field effect on heterogeneous photocatalytic degradation of benzene over Pt/TiO₂ has been observed by on-line GC. Time-resolved photoconductivity and *in-situ* FTIR were used to investigate the influence of magnetic field on the photogenerated charge carrier lifetime and the intermediate distribution, respectively. The results showed that in the presence of magnetic field the effective lifetime of the photogenerated charge carriers was prolonged with the increase of the magnetic field intensity. The results also indicated that the application of the external magnetic field not only favored the conversion of benzene, but also facilitated the transformation from phenol to quinone, resulting in improving the activities of the photocatalytic degradation.

Key words [magnetic field effect](#) [photocatalytic degradation](#) [time-resolved photoconductivity](#) [in-situ FTIR](#) [benzene](#)

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