

论文

一种在ATRP反应体系中常用引发组分——1-溴乙基苯的荧光光谱研究

岳玲, 张晓宏, 吴世康

中国科学院理化技术研究所; 中国科学院理化技术研究所 北京

收稿日期 2003-11-24 修回日期 2004-1-19 网络版发布日期 接受日期

摘要 采用荧光光谱和吸收光谱方法对ATRP聚合体系的常用引发组分——1-溴乙基苯与几种常用配体间的相互作用问题进行了研究. 发现当以联吡啶为络合物配体时, 无论荧光和吸收光谱中均出现反常的新峰, 这和 1-溴乙基苯与吡啶间发生了成盐反应有关. 在以长链脂肪胺为络合物配体时, 特别当金属离子与配体的摩尔比为 1/4时, 荧光光谱中可清晰的观察到激基复合物发光. 所观察到的这些现象, 特别是 1-溴乙基苯与联吡啶间的成盐反应, 对 ATRP过程会产生不良影响. 而脂肪胺体系生成的激基复合物由于发生于激发态, 因此它就不像联吡啶的成盐反应哪样, 会严重影响反应进行, 导致ATRP效率的降低.

关键词 [原子转移自由基聚合 \(ATRP\)](#) [荧光发射光谱](#) [激基复合物](#) [成盐反应](#)

分类号

A STUDY ON FLUORESCENCE SPECTRUM OF 1-BROMOETHYL BENZENE — A COMMON INITIATION COMPONENT IN ATRP

YUE Ling, ZHANG Xiaohong, WU Shikang

Technical Institute of Physics and Chemistry; Chinese Academy of Sciences; Beijing 100101

Abstract The fluorescence and absorption spectra were applied for studying the interaction of 1-bromo ethyl benzene—a component in initiation systems of ATRP and some amino ligands which were used for the copper(I) complex formation. It was found that when the 2,2'-bipyridyl was used as a ligand for metal complex formation, an abnormal new peak was observed obviously whether in fluorescence or absorption spectrum. It indicated that a new species was formed owing to the reaction between them. However, when the aliphatic amines such as tetra methylethylene-diamine and pentamethyldiethylene-tfamine were used, especially the molar ratio of metal/ligand of complex is 1/4, an evident exciplex emission can be observed in the spectrum. All of these phenomena, especially the chemical reaction occurred in the bipyridyl system will result in unfavorable effects for the ATRP process. And the exciplex formation which was occurred in excited state in aliphatic amine systems will not affect the ATRP process as serious as salt formation in the system of bipyridyl.

Key words [Atomic transfer radical polymerization \(ATRP\)](#) [Fluorescence emission spectrum](#)
[Exciplex](#) [Amino-ligand](#)

DOI:

通讯作者 张晓宏; 吴世康

扩展功能

本文信息

▶ [Supporting info](#)

▶ [PDF\(260KB\)](#)

▶ [\[HTML全文\]\(0KB\)](#)

▶ [参考文献](#)

服务与反馈

▶ [把本文推荐给朋友](#)

▶ [加入我的书架](#)

▶ [加入引用管理器](#)

▶ [复制索引](#)

▶ [Email Alert](#)

▶ [文章反馈](#)

▶ [浏览反馈信息](#)

相关信息

▶ [本刊中 包含“原子转移自由基聚合 \(ATRP\)” 的相关文章](#)

▶ 本文作者相关文章

- [岳玲](#)
- [张晓宏](#)
- [吴世康](#)