

论文

化学气相沉积聚合制备羧基取代聚对亚苯基二亚甲基及其性能研究

浦鸿汀, 孙霞容

同济大学材料学院功能高分子研究所; 同济大学材料学院功能高分子研究所 上海

收稿日期 2005-2-7 修回日期 2005-5-19 网络版发布日期 接受日期

摘要 用化学气相沉积(CVD)聚合法制备了羧基取代聚对亚苯基二亚甲基(PPX-carb)膜,采用FTIR和元素分析的方法证实了其化学结构.对膜溶解性和抗化学氧化性能的研究表明PPX-carb膜仍具有优异的耐溶剂性和抗化学氧化性能.对PPX-carb膜热性能的研究表明羧基的引入使得膜的玻璃化转变温度降低,室温柔性增强,动态力学阻尼性能增大,与聚对亚苯基二亚甲基(PPX)相比引入了羧基的PPX-carb热稳定性有所下降,热降解起始温度比PPX低,但主链降解温度比PPX反而高出约80℃.此外,羧基的引入使得膜的亲水性能大幅度提高,水汽渗透性能也有所提高.

关键词 [化学气相沉积聚合](#) [聚对亚苯基二亚甲基](#) [羧基](#) [亲水性](#) [水汽渗透性](#)

分类号

CHEMICAL VAPOR DEPOSITION POLYMERIZATION AND PROPERTIES OF POLY(CARBOXYL-*p*-XYLYLENE-*co*-*p*-XYLYLENE)

PU Hongting,SUN Xiarong

Institute of Functional Polymer Materials; School of Materials Science & Engineering; Tongji University; Shanghai 200092

Abstract Poly(*p*-xylylene)(PPX)prepared by chemical vapor deposition(CVD)polymerization shows promising features like absolute conformation to substrate topology,pinhole-free coverage even in ultrathin films,the ability to penetrate and cover complex geometries,and extraordinarily high chemical inertness and purity compared to common polymer coatings. However,the exploitation of[2, 2]paracyclophanes for generating functionalized surfaces is interesting. The functional groups may be useful for further modifications. Poly(carboxyl-*P*-xylylene-*co*-*p*-xylylene) (PPX-carb) was prepared by CVD polymerization in present work. The chemical structure of the resulted polymer was confirmed by FTIR and elemental analysis. It is indicated that PPX-carb membrane has good solvent resistant and high chemical oxidation resistant. Thermogravimetric analysis(TGA),differential scanning calorimetry (DSC),and dynamic mechanical analysis(DMA)were used to study the thermal properties of PPX-carb membranes. It is found that the initial degradation temperature and T_g of PPX-carb membranes are reduced with the introduction of carboxyl group as side groups,while the degradation temperature of the main chain of PPX-carb is higher than that of PPX. With the introduction of carboxyl,the polymer becomes amorphous,and the softness as well as the dynamic mechanical damping pmporties of PPX-carb are improved. The hydrophilicity and vapor permeability of PPX-carb membranes are also improved.

Key words [Chemical vapor deposition polymerization](#) [Poly \(*p*-xylylene\)](#) [Carboxyl](#) [Hydrophilic](#) [Vapor permeability](#)

DOI:

通讯作者 浦鸿汀

扩展功能

本文信息

- ▶ [Supporting info](#)
- ▶ [PDF\(313KB\)](#)
- ▶ [\[HTML全文\]\(0KB\)](#)
- ▶ [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“化学气相沉积聚合”的相关文章](#)
- ▶ [本文作者相关文章](#)

- [浦鸿汀](#)
- [孙霞容](#)