

技术及应用

聚醚砜微孔膜电子辐照接枝改性及过滤性能研究

王永霞^{1, 2}; 孟凡霞^{1, 2}; 韩兆磊^{1, 2}; 王 荣^{1, 2, 3, *}

1. 北京师范大学 射线束技术与材料改性教育部重点实验室, 北京 100875 2. 核科学与技术学院, 北京 3. 北京市辐射中心, 北京

收稿日期 修回日期 网络版发布日期:

摘要 利用电子束辐照技术对聚醚砜(PES)微孔膜进行接枝丙烯酸(AA)改性。用称重法测量接枝率,分析辐照剂量及气氛对膜接枝率的影响规律,用红外光谱分析膜接枝后官能团的变化,用扫描电镜观察样品的表面形貌;并分析了接枝率对水通量及牛血清白蛋白(BSA)溶液通量的影响。研究表明,对浓度为1 mol/L的单体丙烯酸,在氮气或空气的氛围下辐照,接枝率随辐照剂量的增加先增大而后降低,并在整个辐照剂量范围内,氮气氛围下辐照的接枝率均高于空气氛围的接枝率。当接枝率较小时,水通量及BSA溶液通量均随接枝率的增大而增大,并当接枝率为11%时,二者同时达到最大值,随着接枝率的进一步增大,其值反而降低。

关键词 聚醚砜 丙烯酸 电子束辐照 接枝率 过滤

分类号

Modification of Polyethersulfone Membranes With Electronbeam Irradiation-induced Graft Polymerization

WANG Yong-xia^{1, 2}; MENG Fan-xia^{1, 2}; HAN Zhao-lei^{1, 2}; WANG Rong^{1, 2, 3, *}

1. Key Laboratory of Beam Technology and Materials Modification of Ministry of Education, Beijing Normal University, Beijing 100875, China; 2. College of Nuclear Sciences and Technology, Beijing Normal University, Beijing 100875, China; 3. Beijing Radiation Center, Beijing 100875, China

Abstract Graft polymerization of acrylic acid (AA) onto polyethersulfone (PES) membranes was studied by simultaneous irradiation method, using electron beam. The change of grafting yield with irradiation dose and atmosphere was investigated. The grafting of AA on the PES membranes was confirmed by FT-IR, and the surface of PES membranes were observed by SEM. The effects of grafting yield on the fluxes of water and BSA permeation were also studied. It is found that grafting yield first increases and then decreases with the increase of irradiation dose in the atmosphere of nitrogen gas and air. Significant difference of the surface morphologies for original PES, grafted PES (grafting yield is about 11%) and fouled membrane is observed. The results show the change of water flux and BSA permeation flux initially increase and then decrease simultaneously with grafting yield increasing.

Key words polyethersulfone acrylic acid electron beam irradiation grafting yield filtration properties

DOI

通讯作者

扩展功能

本文信息

▶ [Supporting info](#)

▶ [\[PDF全文\]\(515KB\)](#)

▶ [\[HTML全文\]\(0KB\)](#)

▶ [参考文献](#)

服务与反馈

▶ [把本文推荐给朋友](#)

相关信息

▶ [本刊中 包含“聚醚砜”的相关文章](#)

▶ [本文作者相关文章](#)

· [王永霞](#)

· [孟凡霞](#)

· [韩兆磊](#)

· [王nbsp](#)

· [nbsp](#)

· [荣](#)