

Full Papers

固定酚红的交联聚乙烯醇光化学pH敏感膜

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收稿日期 2005-3-16 修回日期 2005-11-21 网络版发布日期 接受日期

摘要 采用丙烯酰胺为偶合剂, 首先将酚红与丙烯酰胺反应生成丙烯酰胺-接枝-酚红产品, 然后以 $\text{Fe}^{2+}/\text{H}_2\text{O}_2$ 为引发剂, 并将其通过表面接枝聚合固定于交联聚乙烯醇膜表面, 以共价键固定方式将酚红固定于交联聚乙烯醇薄膜表面上, 制备了一种可用于光化学pH传感器的pH敏感膜。性能测试表明, 该膜具有与酚红水溶液相近的pH响应范围(6.5~8.5)、响应时间快(<20 s)、良好的可逆重复性及稳定性, 制备方法简单的优点。这表明该膜完全可以用于光化学pH传感器。

关键词 [酚红](#), [光导pH传感器](#), [聚乙烯醇](#), [薄膜](#)

分类号

Cross-linked Polyvinyl Alcohol pH Sensitive Membrane Immobilized with Phenol Red for Optical pH Sensors

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Abstract An optical pH sensitive membrane for optical pH sensors has been developed by covalently immobilizing phenol red on optical transparent cross-linked polyvinyl alcohol (PVA) membrane surfaces. The phenol red was first reacted with acrylamide to form a product of acrylamide grafted phenol red (AAGP), then the AAGP was covalently immobilized to the PVA membrane via surface grafting-polymerization using $\text{Fe}^{2+}/\text{H}_2\text{O}_2$ as initiator. The performance of the pH sensitive membrane was investigated and the results showed that the pH sensitive membrane has some features including a linear response scope from pH 6.5 to 8.5 closed with phenol solution, a rapid response time (<20 s), good reproducibility, reversibility, excellent stability and easiness of fabrication. These show that the pH sensitive membrane can be used as a sensitive layer for optical pH sensor.

Key words [phenol red](#), [optical pH sensor](#), [polyvinyl alcohol](#), [membrane](#)

DOI:

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