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论文  
基于咪唑的荧光传感器对磷酸二氢根离子的高选择性识别

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摘要:

设计并合成了基于咪唑基团的高选择性的荧光传感器, 分别利用荧光和紫外-可见光谱研究了其对阴离子的识别. 结果显示, 该类荧光传感器只在 $\text{H}_2\text{PO}_4^-$ 离子存在下发生显著的荧光猝灭现象, 并且产生一个新的荧光发射峰, 因此可用于乙腈溶液中 $\text{H}_2\text{PO}_4^-$ 的快速有效检测.

关键词: 咪唑; 荧光传感器; 阴离子识别

Imidazolium-based Fluorescent Chemosensor for Highly Selective Recognition of Dihydrogen Phosphate

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Abstract:

Due to the fundamental roles that anions play in a wide range of chemical and biological processes, numerous efforts have been devoted to the design of receptors capable of selectively binding and sensing anions. The development of selective receptors for phosphate anions is of particular interest because they play vital roles in a wide range of life processes, such as energy storage, signal transduction and gene construction. Herein, a new fluorescent chemosensor bearing two imidazolium groups as well as two anthracene groups were designed and synthesized. The anion recognition properties of the compound 1 were studied by the UV-Vis and fluorescent spectra in  $\text{CH}_3\text{CN}$ . The results show that this chemosensor display a highly selective fluorescence quenching effect and a unique excimer peak only with  $\text{H}_2\text{PO}_4^-$ . The fluorescence quenching effect can be ascribed to a photo-induced electron transfer(PET), which can be used to discriminate  $\text{H}_2\text{PO}_4^-$  from the other anions tested.  $^1\text{H}$  NMR analysis revealed that both the imidazolium 2-CH and the amide NH were involved in the hydrogen bonding interactions with the anions.

Keywords: Imidazolium; Fluorescent Chemosensor; Anion recognition

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