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A dual analyte fluorescent chemosensor based on a furan-pyrene
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Abstract

A simple chalcone based dual analyte fluorescent probe **FPC** for Al^{3+} and HSO_3^- ions was developed. **FPC** detects both the analytes through a “turn off-on” approach and by the PET and ICT mechanism. **FPC** showed high selectivity and sensitivity for Al^{3+} and HSO_3^- ions detection over other interfering and competing metal ions. In addition, the LOD of **FPC** for sensing Al^{3+} and HSO_3^- ions was found to be 1.60×10^{-7} M and 0.17×10^{-6} M respectively. An electrochemical desalination technique was employed for the complete removal of Al^{3+} ions from the environmental water samples by using the probe **FPC**.

Key words

Chalcone, pyrene, chemosensor, fluorescence, aluminium, bisulfite

Introduction

Aluminium is the third most abundant (8.3 % by weight) element in the earth's crust (after the oxygen and silicon) and has variety of application in our day today life such as food additives, cooking utensils, paper and packing materials, colors, pharmaceutical drugs and water treatment [1-7]. Over exposed aluminium, even though it is a non-essential element in the living system causes osteomalacia in adults, improper bone mineralization in children, metabolic alkalosis and bowel obstructions [8]. Doctors call Al^{3+} as the silent killer in the human body because of the feasible link towards brain which causes neurodegenerative diseases such as dementia, myopathy, cancers, dialysis encephalopathy, Alzheimer and Parkinson diseases [9-12]. Industry workers over exposed to aluminium dust mainly affect

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