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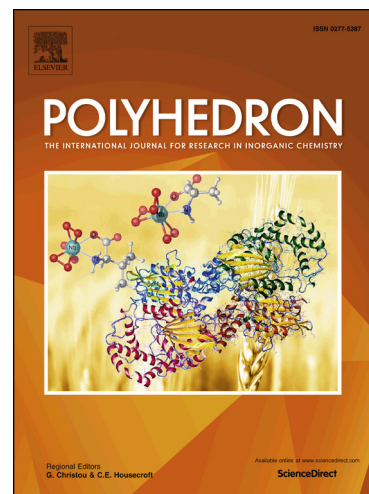
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Post-synthetically modified metal-organic framework as a scaffold for selective bisulphite recognition in water

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Abstract- A metal-organic framework (MOF) based luminescent probe was strategically designed for selective recognition of bisulfite anion (HSO_3^-) in water medium. The chemically stable MOF, $\text{NH}_2\text{-MIL-68(In)}$ was decorated with specific recognition site via post synthetic modification. The post synthetically modified MOF showed a selective turn on response towards bisulfite anion retaining its structural integrity. This selective recognition is also persistent even in presence of competing anions.

Keywords- Metal-organic framework; post-synthetic modification; sensing; bisulfite ion.

1. Introduction

The versatile role played by anions both in biological and environmental aspects makes anion recognition an important area of scientific interest. Hence anion recognition chemistry has seen tremendous development over the past few decades. [1] Sulphur dioxide (SO_2), a known major air pollutant further on hydrolysis produces its oxo-anion namely bisulfite (HSO_3^-). [2-3] Bisulfite anion plays a crucial role in regulation of different cardiovascular processes in our body at low concentration. [4] Also it is used extensively in food, beverage and pharmaceutical industries as an antioxidant and antimicrobial agent. [5] However, at high concentration it is well established to have marked adverse effects. [6] This includes attack in the cells and tissues of human respiratory system leading to asthmatic and allergic tendencies. [7] Further it is also found that bisulfite anion affects the human cardiovascular and alimentary systems leading to abdominal pain, diarrhea, dermatitis, hypertension as well as other biological disorders. [8] Based on all these fact some countries have imposed serious restrictions on usage of bisulfite in food

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