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Rapid detection of HSO_4^- in water: Novel immobilized azo-azomethine colorimetric anion receptors on solid supports

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Abstract

The immobilized azo-azomethine receptors on amorphous SiO_2 , **S-B**, SiO_2 nanoparticles, **S-NPs**, and NaY zeolite, **S-ZY**, have been prepared and applied as solid phase sensors for detection of HSO_4^- , over other interfering anions, in 100% aqueous media. Remarkably, **S-B** and **S-ZY** show unique and rapid sensitivity towards HSO_4^- , which could be easily visualized through naked eye detection even at $5 \times 10^{-4} \text{ mol L}^{-1}$ and $4 \times 10^{-4} \text{ mol L}^{-1}$, respectively. The fabricated solid phase sensors were characterized using powder XRD diffraction, TGA-DTA, FE-SEM and also FT-IR techniques. Moreover, the related molecular anion receptor, **HL**, has been prepared and used for naked eye detection of F^- and AcO^- , in dry DMSO. The anions recognition ability of **HL** was also evaluated using UV-Vis and ^1H NMR spectroscopic methods.

Keywords: Azo-Azomethine; Bisulfate detection; Colorimetric sensor; Schiff base; NaY zeolite.

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