Rhodamine scaffold as real time chemosensor for selective detection of bisulphite in aqueous medium

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Fig S1.: High resolution mass spectrum of L¹.
Fig.S2: $^1$H-NMR spectra of L$^1$ in CDCl$_3$. 
Fig. S3: $^1$H-NMR spectra of RAHN in DMSO-$d_6$. 
Fig.S4: $^{13}$C-NMR spectra of RAHN in DMSO-d$_6$.

Fig.S5: IR spectra of RAHN (a) and its corresponding bisulfite adduct (b).
**Fig.S6**: High resolution mass spectrum of RAHN.
Fig.S7: Absorption spectra of RAHN (40 µM) in water-methanol (9:1 v/v) in the presence of bisulphite and others competing ions of 10 eqv.
**Fig.S8**: Emission spectra of RAHN (40 μM) in water-methanol (9:1 v/v) in the presence of bisulphite and others competing ions of 10 eqv.
**Fig. S9:** Emission spectra of RAHN in the presence of bisulfite and others competing metal ions of 10 eqv.
Fig. S10: Time resolved fluorescence decay profile of RAHN in presence of 3 equivalent bisulfite ion ($\lambda_{em} = 556$ nm) with residual plot.
**FigS11:** Effect of $P^H$ on fluorescence intensity of RAHN (40 µM) in water-methanol (9:1 v/v) and RAHN-HSO$_3^-$ adduct system. Fluorescence intensity in absence of bisulfite (black) and in presence of 6 equivalent of bisulfite (red).

**Fig.S12:** Plot of Fluorescence Intensity vs [HSO$_3^-$].
Binding constant of RAHN and HSO$_3^-$ adduct was calculated using the following equation\textsuperscript{1} and it has been included in the revised version of the article. Plot Fluorescence Intensity versus [HSO$_3^-$] gives an linear curve up to 760 $\mu$M and then becomes gradually saturated. The linear part was fitted by using the following the equation

$$y = \frac{(a + b \times c \times x^n)}{(1 + c \times x^n)}$$

where $a = \text{FI of RAHN}$, $b = \text{FI of the RAHN in the presence of excess of HSO}_3^-$, $c = \text{Binding constant, } K_f$, with the assumption that $1 \gg c \times x$ and $n = 1$. The slope of the curve gives $b \times c$, which ultimately gives $c = K_f = (1.34 \pm 0.5) \times 10^3$ M$^{-1}$ (taking $b = 2.78 \times 10^2$ from the fit).

**Table S1.** Determination of [HSO$_3^-$] in white wine

<table>
<thead>
<tr>
<th>Sample</th>
<th>Spiked (µM)</th>
<th>Found (µM)</th>
<th>Recovery (%)</th>
<th>RSD$^b$</th>
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</thead>
<tbody>
<tr>
<td>White wine</td>
<td>0</td>
<td>ND$^a$</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>19.41</td>
<td>97.05</td>
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<td>40</td>
<td>38.95</td>
<td>97.3</td>
<td>1.58</td>
</tr>
</tbody>
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$^a$ND: Not detectable; $^b$RSD: Relative standard deviation

**References**