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A novel colorimetric and fluorescent probe for simultaneous detection of $\text{SO}_3^{2-}/\text{HSO}_3^-$ and HSO_4^- by different emission channels and its bioimaging in living cells

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Abstract

A novel fluorescent probe (*E*)-3-ethyl-2-(4-hydroxystyryl)-1,1-di-methyl-1*H*-benzo-
[*e*]indolium iodide (probe EDB) based on benzo[*e*]indolium was synthesized, which
provided the simultaneous detection of $\text{SO}_3^{2-}/\text{HSO}_3^-$ and HSO_4^- ion with different
emission channels. Based on the principle of ion-induced rotation-displaced
H-aggregates, when treated with NaHSO_4 , a fluorescence enhancement at 580 nm was
observed with the excitation wavelength at 420 nm. While, in the advantage of the
nucleophilic addition of SO_3^{2-} to the vinyl group, strong fluorescence was obtained at
455 nm when treated with Na_2SO_3 with the excitation wavelength at 320 nm, along

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