

Coumarin-based fluorescent chemodosimeter for selective sensing of hydrazine in semi-aqueous medium

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Abstract: A chemodosimeter based on 2,3,5,6-tetrafluoro benzoyl ester of 7-hydroxy-4-(trifluoromethyl)coumarin has been designed and synthesized for selective detection of hydrazine in semi-aqueous medium. The structure of the probe was confirmed by conventional spectroscopic techniques and single crystal X-ray analysis. The sensory system was found to be capable of sensing hydrazine in CH₃CN/H₂O (70:30, v/v) by showing turn-on type sensing behaviour accompanying distinct naked-eye colour change from colourless to greenish yellow in visible light as well as colourless to bright green under illumination of UV light. In the presence of hydrazine, 2,3,5,6-tetrafluoro benzoyl ester function gets cleaved resulting in the formation of highly fluorescent coumarin moiety. The sensing behaviour was followed by various spectroscopic techniques such UV-visible, fluorescence, mass spectroscopy etc.

keywords: chemodosimeter, coumarin, fluorescence sensing, hydrazine sensor.

