A dual channel naphthyl-BODIPY probe for the detection of cations in mixed aqueous solution

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The development of chemosensors for the sensing of metal ions is one of the most active research fields with great potential for environmental, physiological and medicinal applications, especially in the case of Pd^{2+}, Hg^{2+} and the trivalent cations Fe^{3+} and Al^{3+}. For example, mercury is one of the most toxic metal ions, even at very low concentrations. Accumulation of mercury over time in humans leads to cognitive and motion disorders and Minamata disease [1-2]. On the other hand, trivalent metal cations such as Fe^{3+} and Al^{3+} play crucial roles in physiological processes and its abnormal levels in human tissues and cells could induce anemia, diabetes, Alzheimer´s and Parkinson's diseases [3-4]. Therefore, the efficient detection of these cations is a timeless topic in several areas of investigation.

Taking into account the above mentioned facts as well as our research interest in BODIPY derivatives as optical chemosensors [5-6], we report herein the chromo-fluorogenic behavior toward metal cations of a new BODIPY probe bearing a 4-*N,N*-dimethylnaphthyl group attached to the *meso* position of the BODIPY core and a formyl group in position 2. This receptor is a dual channel probe that can be used for the chromogenic and fluorogenic detection, in mixed aqueous solutions, of trivalent ($Fe^{3+}$and Al^{3+}) and divalent cations ($Hg^{2+}$and Pd^{2+}) with biological and medicinal relevance.

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