Tuning the physicochemical properties of fluorescent sensors

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The design of fluorescent sensors with fine-tuned physicochemical properties to respond with high selectivity and fast response to various analytes is of paramount importance in several fields namely in biotechnology, medicinal chemistry and environmental sciences.[1]

Aiming to prepare fine-tuned fluorescent sensors to interact mainly with metal ions, we designed several fluorophore-chelator conjugates by combining different classes of fluorescent molecules with diverse structural features (like size, solubility, lipophilicity and fluorescence quantum yield) with selected chelating units (including pyridyl, catechol and 3-hydroxy-4-pyridinone) that present high affinity for M(II) and M(III) but distinct pK_a values. [2,3] The immobilization of fluorescent sensors in a polymeric support or matrix is also an important goal aiming to create hybrid materials with suitable mechanical properties and as a strategy to reduce the tendency of most fluorescent molecules to aggregate, providing an ideal environment for the analyte detection.[4]

An overview of the undergoing work will be given.

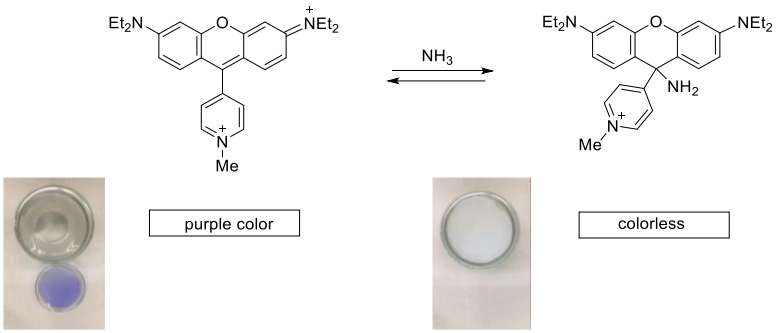

Figure 1: Fluorescent hybrid material for NH_3 sensing.

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