Fluorescent anion sensing by N-dansylamide tripods

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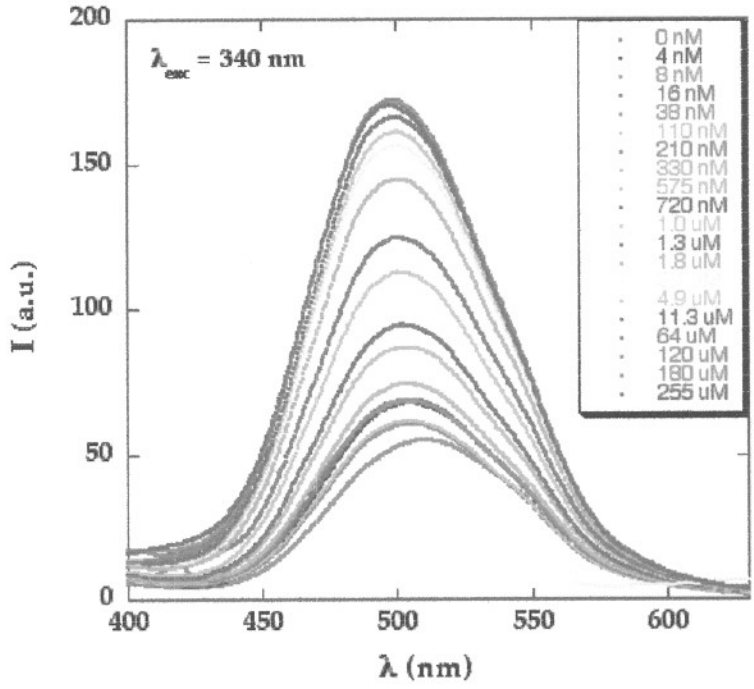
Despite the environmental as well as forensic importance of the nitrate anion and the recent developments in the field of anion supramolecular chemistry, the design of efficient and selective nitrate sensors presents many challenges. Tris-*N*(2-aminoethyl)amine (tren) and 1,3,5-tris(aminomethyl)benzene provide versatile tripodal frameworks capable for hydrogen bonding to the three oxygen atoms of the nitrate anion. Herein we report the anion binding properties of fluorescent dansylamide sensors: The fluorescence intensity of the dansylamide derivative of Tris-*N*(2-aminoethyl)amine (tren) was found to be very sensitive to the addition of tetrabutylammonium nitrate, with fluorescent enhancements observed upon titration, even for nanomolar nitrate concentrations (Figure). The association constants for anion binding were determined by NMR titrations and results for different anions allowed comparisons with previously studied systems.