

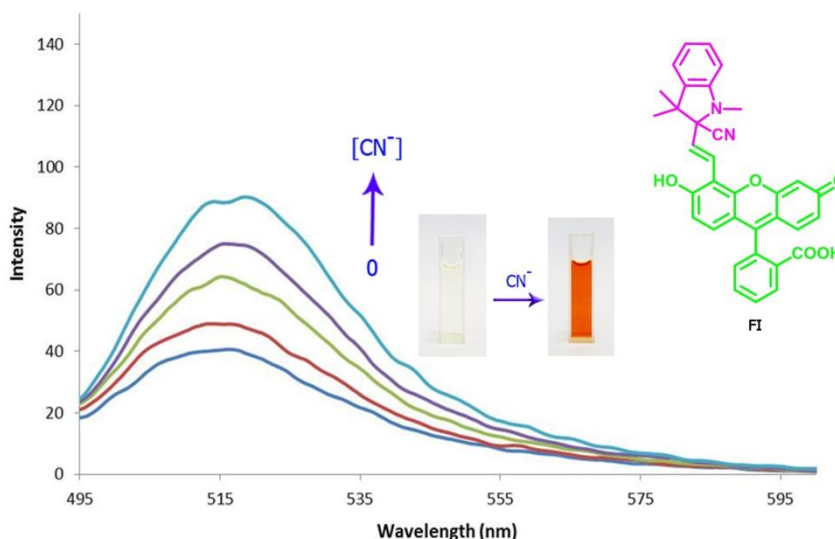
Fluorescence derivative as a fluorescence sensor for cyanide detection in aqueous samples

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Cyanide ions from wastewater are dangerous for environment and life. Monitoring of cyanide concentrations in biological and environmental samples is, therefore, a field of prime importance. Herein, a new fluorescence sensor was designed and synthesized for the detection of cyanide ion. Fluorescein indolium (**FI**) was expediently prepared via the condensation of fluorescein aldehyde with 1-methyl-2,3,3-trimethyl-3H-indolium in methanol. The sensor provided sensitive OFF–ON fluorescence enhancement with excitation wavelength 484 nm and emission wavelength 515 nm as well as chromogenic changes from light yellow to orange upon binding of cyanide ion, which could serve as a “visual-eye” indicator in the DMSO aqueous solution. The working range of cyanide ion is 0.52 – 5 ppm. The results indicated that the sensing mechanism was based on nucleophilic addition reaction of cyanide ion to the C=N bond of the indolium group of sensor **FI**.



Fluorescence spectra of FI (3 μM) in the presence of various concentrations of CN⁻ (0 – 50 μM) in DMSO aqueous solution.

Keywords: Cyanide ion; Fluorescence sensor; Fluorescein