

**Exploring Time-Dependent and Wavelength-Guided Tunable binary & Ternary Logic
Behaviour of a Charge-Transfer Probe**

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1. EXPERIMENTAL SECTION

1.1. Materials and Methods: The chemicals and solvents used in the present work, were purchased from best-known local suppliers, such as Sigma Aldrich, Alfa Acer, and used without further purification. ^1H and ^{13}C NMR spectra were recorded in Bruker Advance DRX 400 spectrometers operating at 400 and 100 MHz, respectively. A Perkin Elmer FT-IR spectrometer BX was used to record FT-IR spectrum. High-resolution HRMS studies were conducted using Q-TOF YA263 devices manufactured by Waters Corporation.

1.2. Spectroscopic Studies: All the spectroscopic studies were performed by adding 10 μL of a DMSO solution of **1** [from a stock of 1 mM] into THF solution to reach a final volume of 1 mL. The interaction with anions (F^- and CN^-) in THF medium was investigated under similar condition (1.5 equiv.). Thus, the DMSO concentration in final solutions remained below 1%. To observe the time-dependent response, the solutions of **1** + F^- and **1** + CN^- were incubated for 15 min. The reversibility of anion binding was tested in the presence of H_2O . The UV-vis and fluorescence spectroscopy were recorded on a Shimadzu model 2100 spectrometer and Cary Eclipse spectrofluorometer respectively. The slit-width for the fluorescence experiment was kept at 5 nm (excitation) and 5 nm (emission) and the excitation wavelength was set at 490 nm.

ADDITIONAL SPECTROSCOPIC DATA

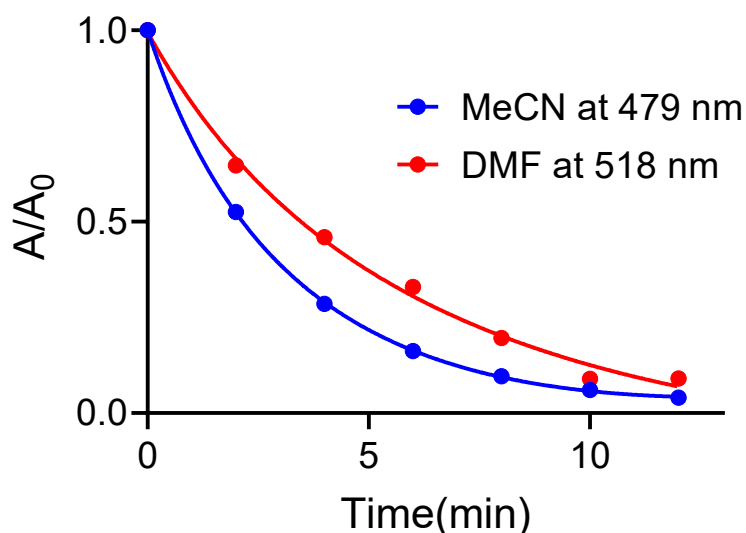


Figure S1. Time-dependent changes in absorbance of **1** (10 μM) at 479 nm and 518 nm upon addition of CN^- in MeCN and DMF medium respectively.