

Supporting materials

A highly selective fluorescence “turn-on” sensor for Ca²⁺ based on diarylethene with a triazoloyl hydrazine unit

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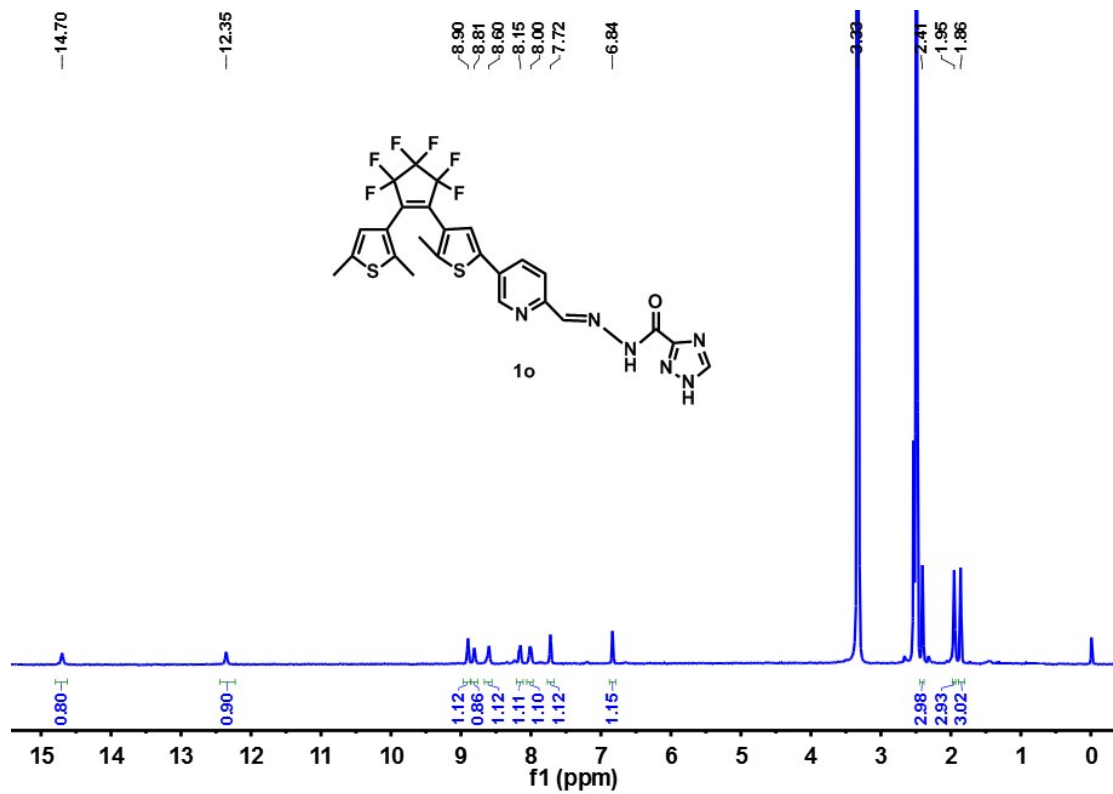


Fig. S1. ^1H NMR of **1o**.

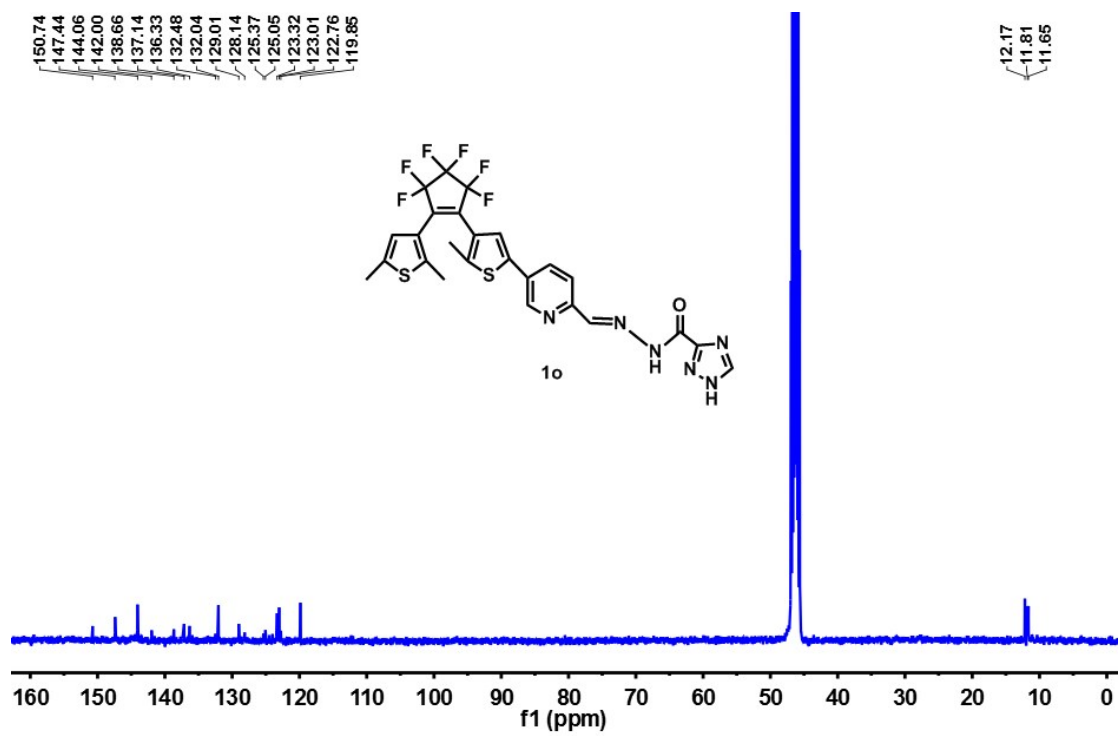


Fig. S2. ^{13}C NMR of **1o**.

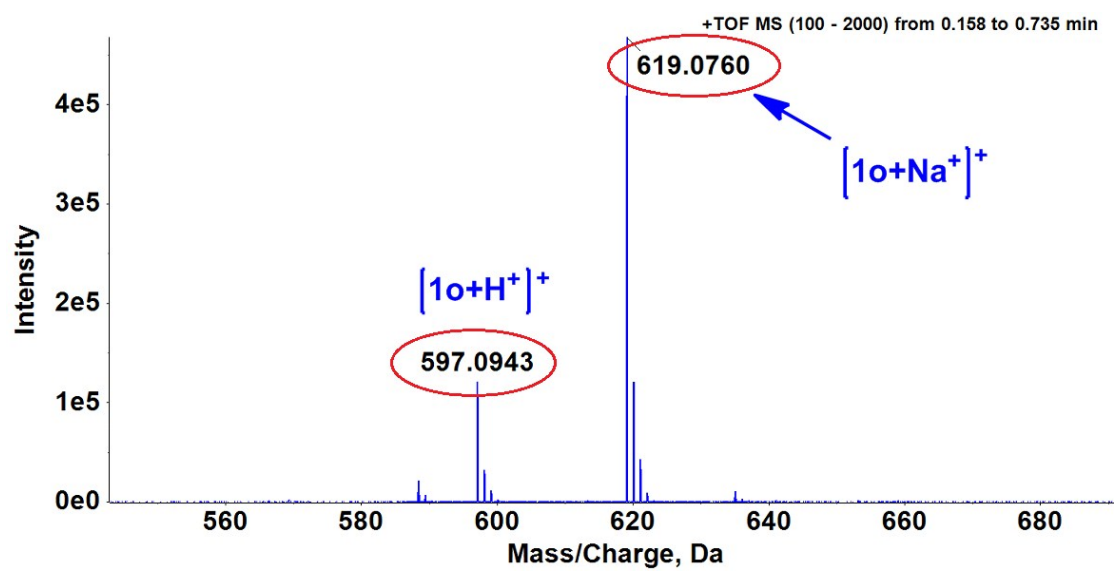
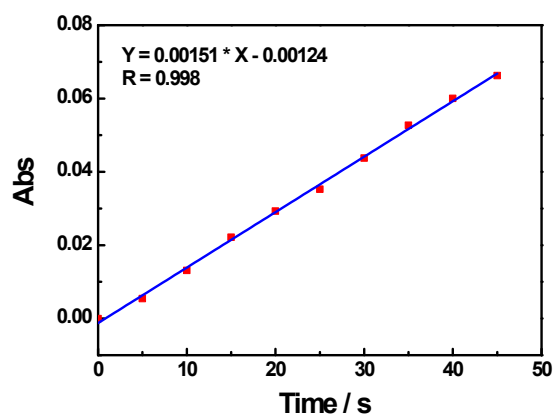
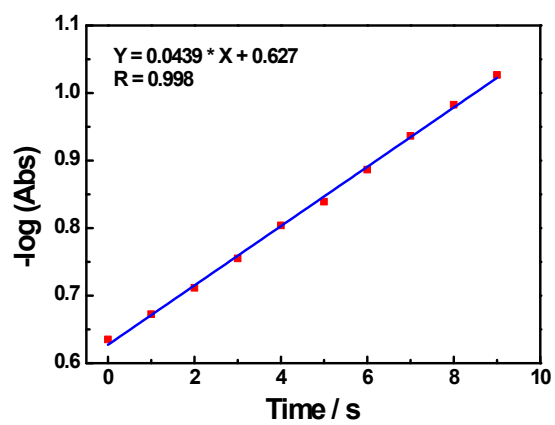


Fig. S3. HRMS spectra of **1o**.



(A)



(B)

Fig. S4. Cyclization kinetics of **1o** (A), and cycloreversion kinetics of **1c** (B) in acetonitrile solution ($2.0 \times 10^{-5} \text{ mol L}^{-1}$) at room temperature.

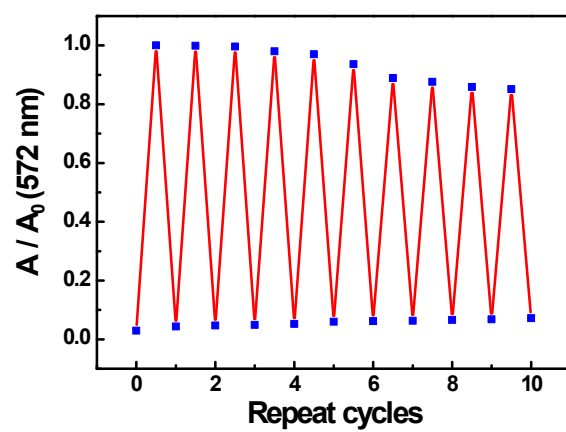


Fig. S5. Fatigue resistance of **1o**.

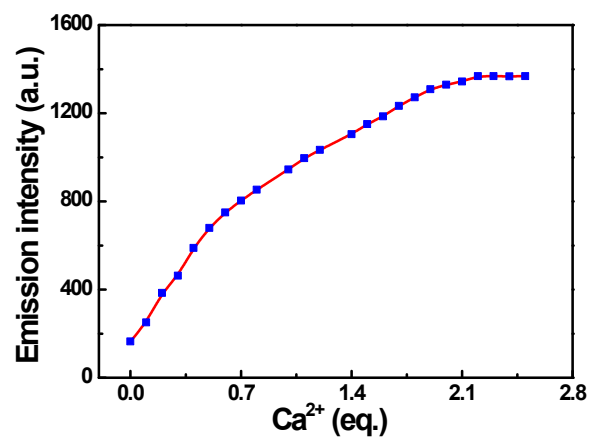


Fig. S6. The emission intensity at 482 nm gradually increased until the amount of Ca²⁺ reached 2.2 equiv. ($\lambda_{\text{ex}} = 340 \text{ nm}$).

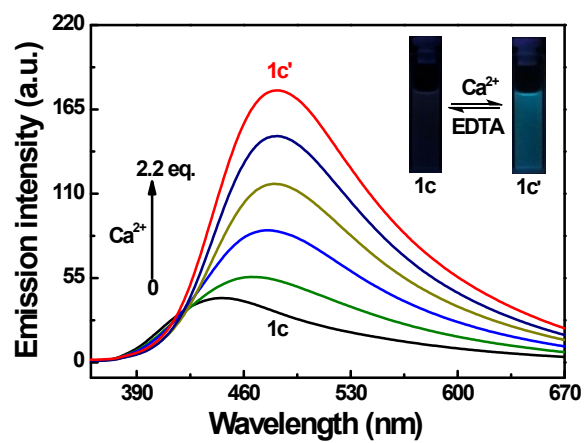


Fig. S7. Fluorescence spectra ($\lambda_{\text{ex}} = 340 \text{ nm}$) changes of **1c** ($2.0 \times 10^{-5} \text{ mol L}^{-1}$ in acetonitrile) induced by Ca^{2+} (0-2.2 equiv.).

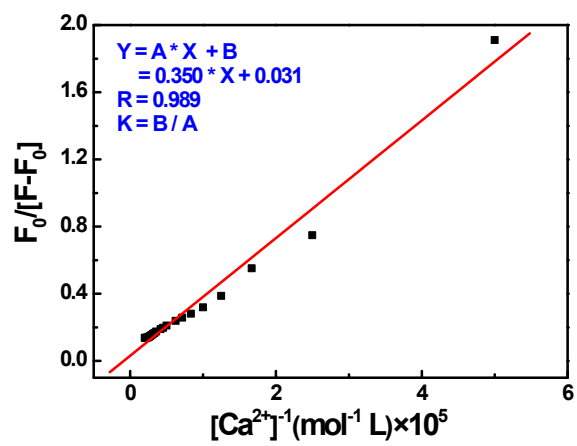


Fig. S8. The binding constant of **1o** with Ca^{2+} was calculated to be $8.86 \times 10^3 \text{ L} \cdot \text{mol}^{-1}$.

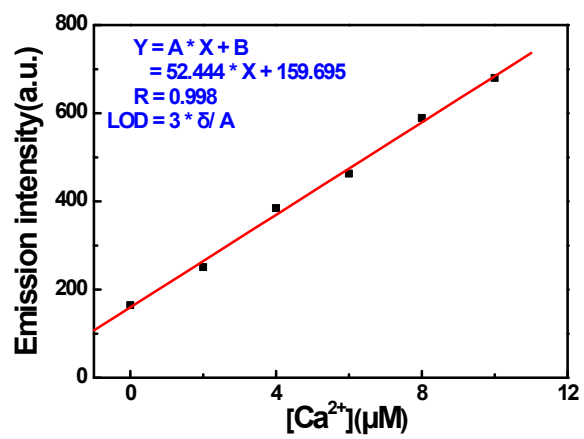


Fig. S9. The limit of detection (LOD) for Ca²⁺ is 2.49×10^{-8} mol L⁻¹.

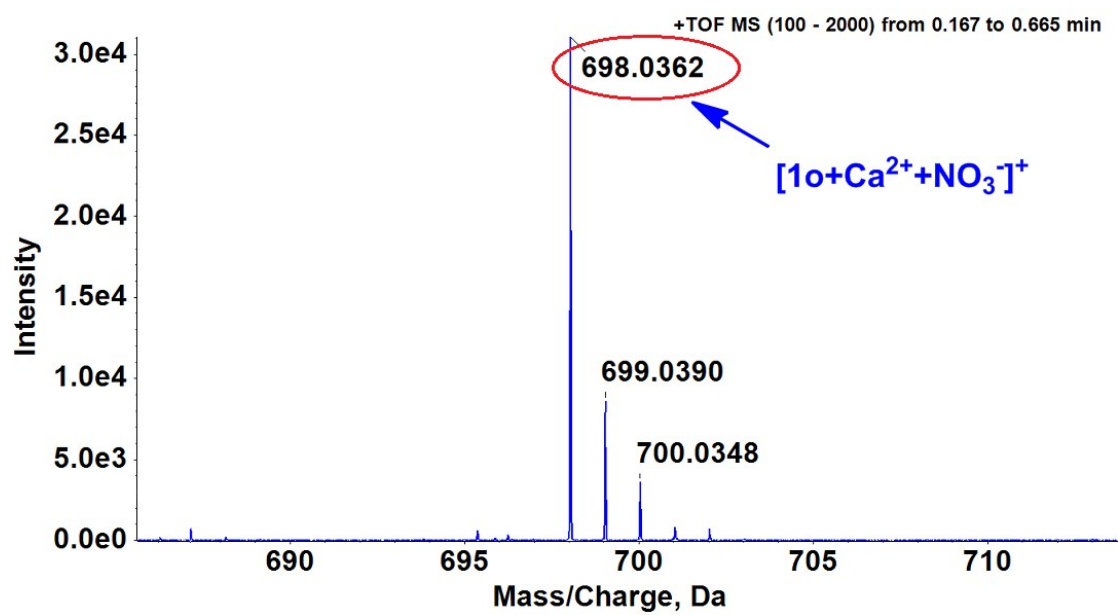
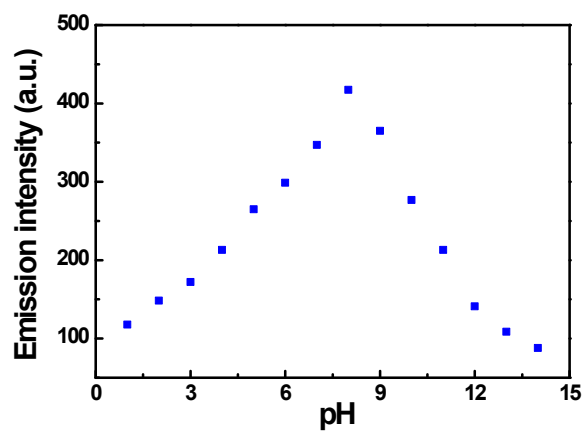
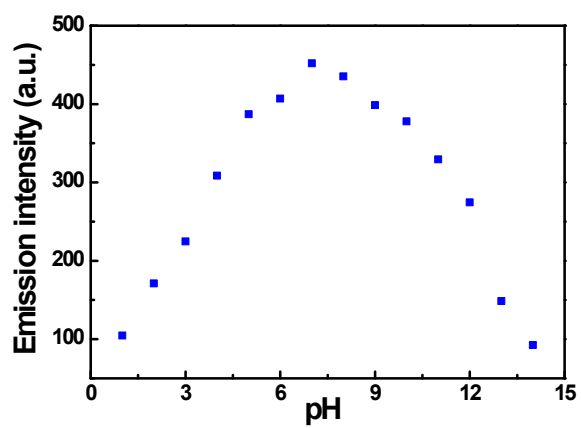


Fig. S10. HRMS spectra of **1o'** in acetonitrile.



(A)



(B)

Fig. S11. Fluorescence emission intensity ($\lambda_{\text{ex}} = 340 \text{ nm}$) of **1o** (A), and **1o'** (B) over different pH values in $\text{CH}_3\text{CN}:\text{H}_2\text{O}$ (9:1, v/v).