

A New Colorimetric Receptor for Selective Detection of Maleate vs. Fumarate and Ratiometric Detection of F⁻ Ions

Madhuprasad and Darshak R. Trivedi*

*Supramolecular Chemistry Laboratory, Department of Chemistry, National Institute of
Technology Karnataka (NITK), Surathkal, 575025, Karnataka, India*

Tel: +91-824-2474000 Extn No. 3205

Email: darshak_rtrivedi@yahoo.co.in

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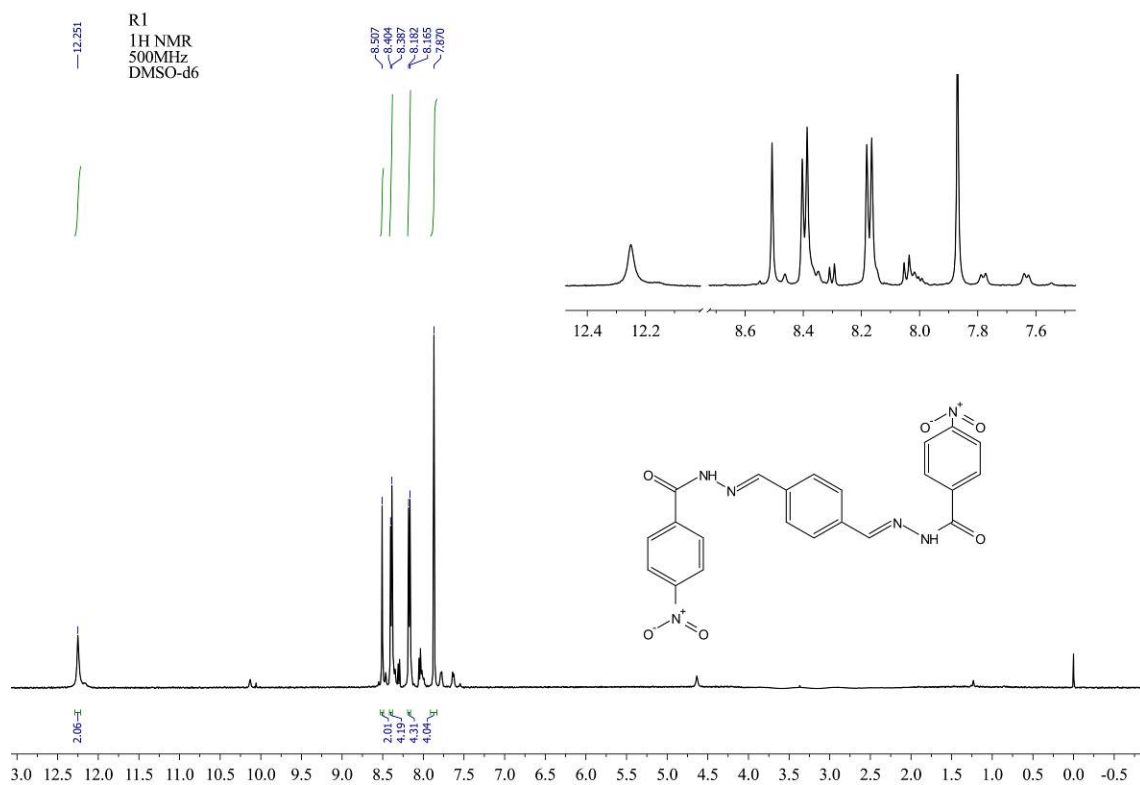


Figure S1. ¹H NMR spectra of R1.

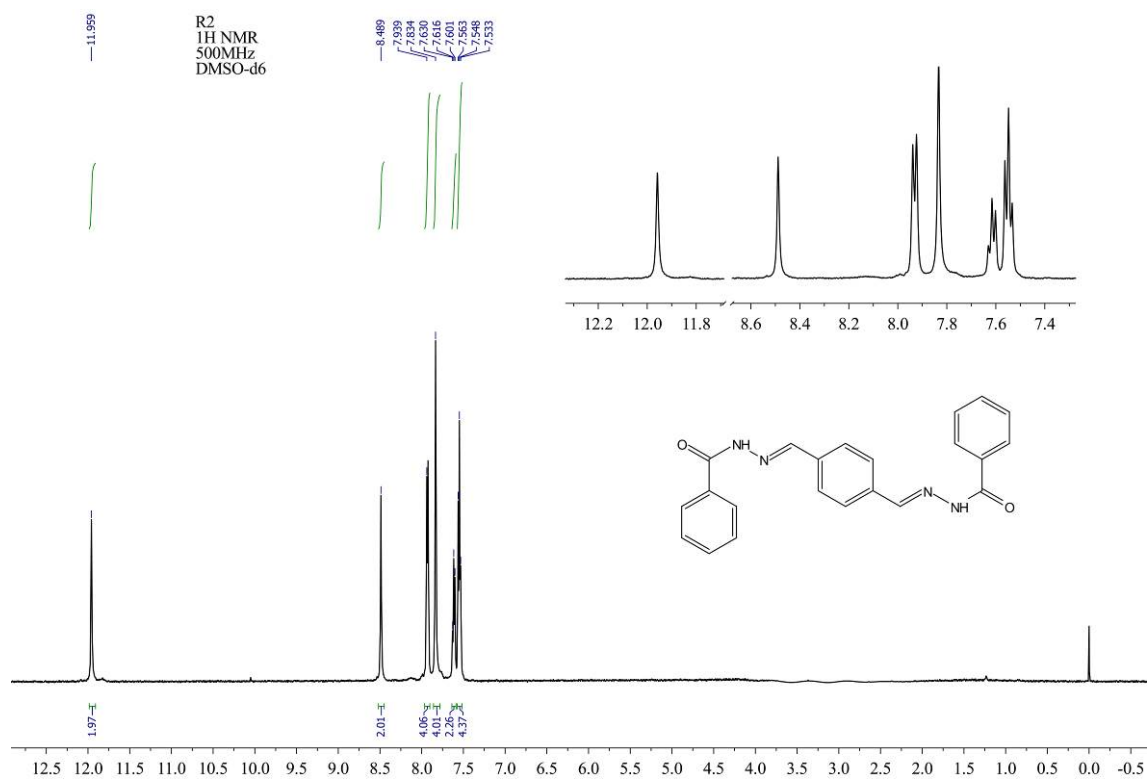


Figure S2. ¹H NMR spectra of R2.

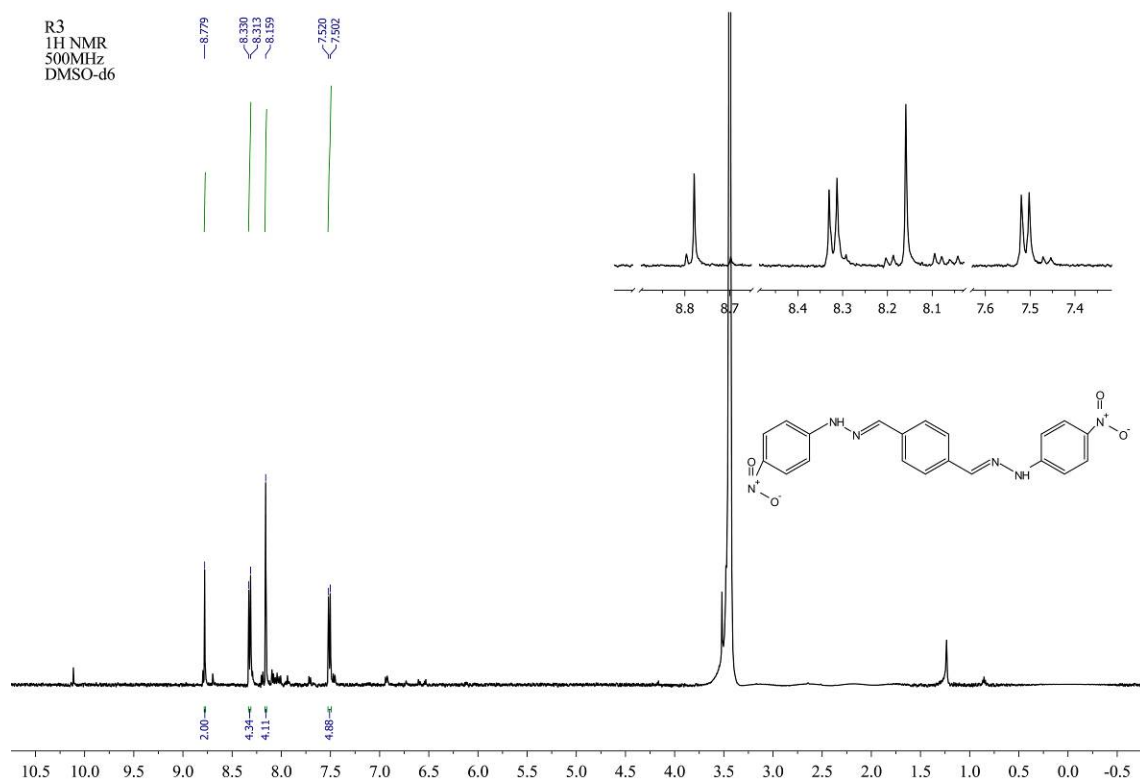


Figure S3. ¹H NMR spectra of R3.

Photographs:

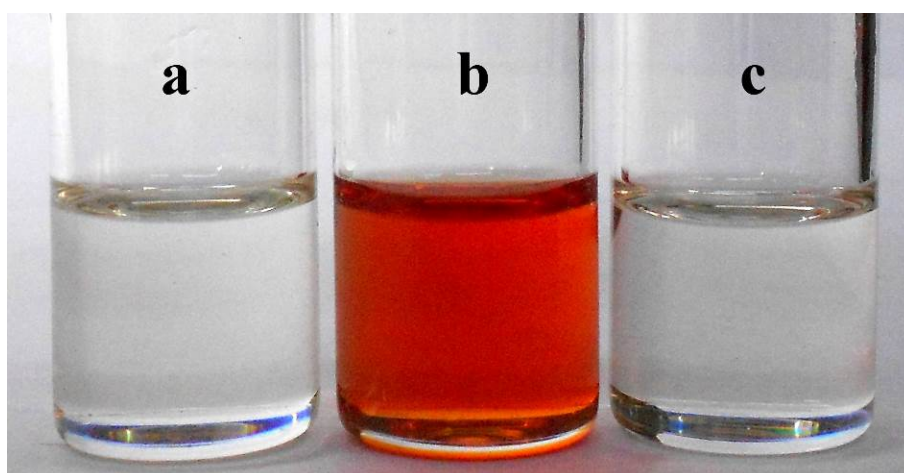


Figure S4. Change in color on addition 1 equiv. of anions in the form of TBA salt. (a) Free receptor R1 (5×10^{-5} M), (b) R1+ 1 equiv. maleate ions and (c) R1+ 1 equiv. fumarate ions.

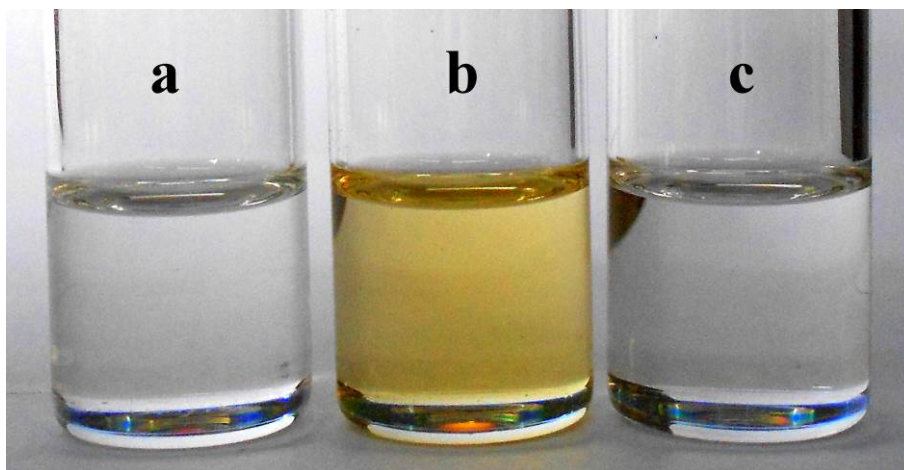


Figure S5. Change in color on addition 1 equiv. of anions in the form of TBA salt. (a) Free receptor R2 (5×10^{-5} M), (b) R2+ 1 equiv. maleate ions and (c) R2+ 1 equiv. fumarate ions

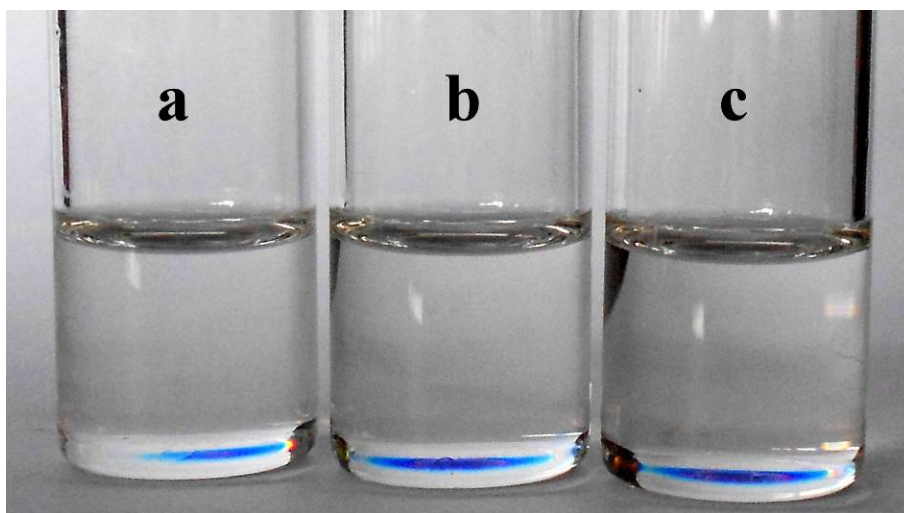


Figure S6. Change in color on addition 1 equiv. of anions in the form of TBA salt. (a) Free receptor R3 (5×10^{-5} M), (b) R3+ 1 equiv. maleate ions and (c) R3+ 1 equiv. fumarate ions.

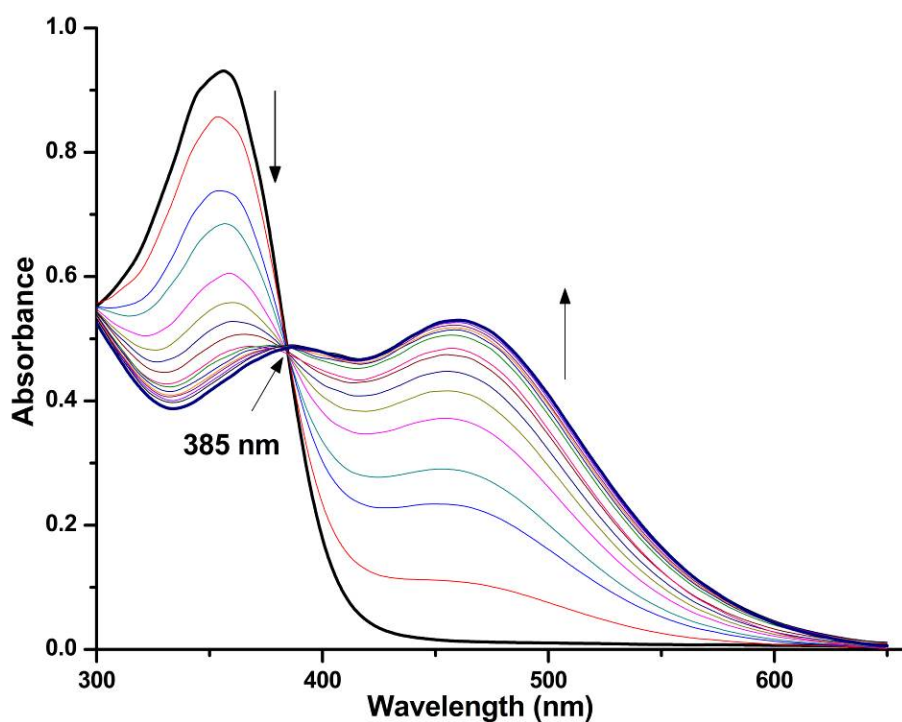


Figure S7: UV-Vis titration of receptor R1 (5×10^{-5} M) in DMSO with standard solution of maleate ions (0 – 15 equiv.).

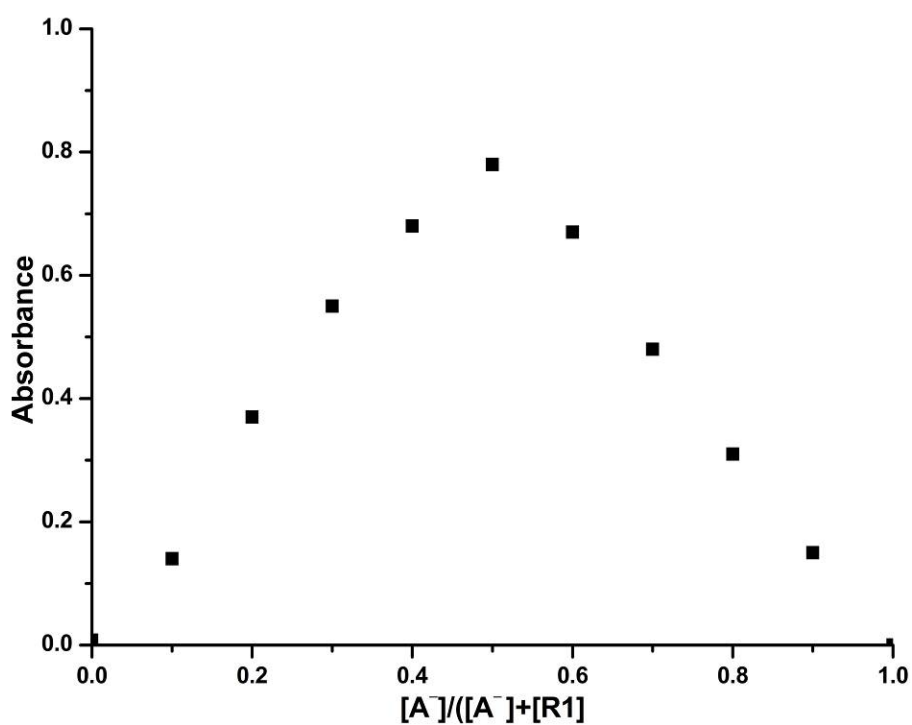


Figure S8: Jobs plot at 460 nm which indicates 1:1 complexation ratio between R1 and maleate ion.

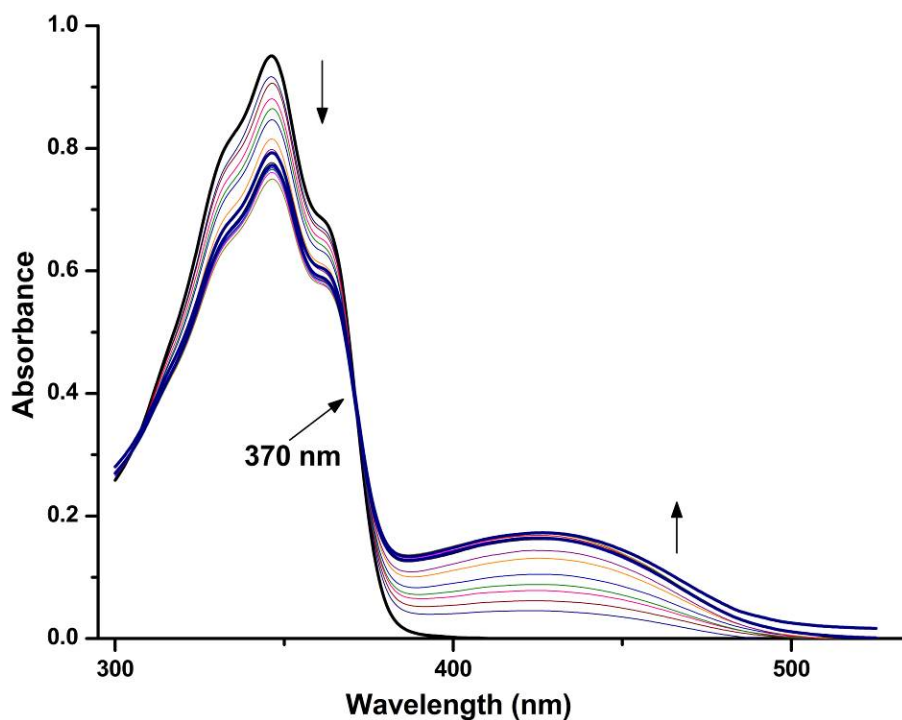


Figure S9: UV-Vis titration of receptor R2 (5×10^{-5} M) in DMSO with standard solution of maleate ions (0 – 15 equiv.).

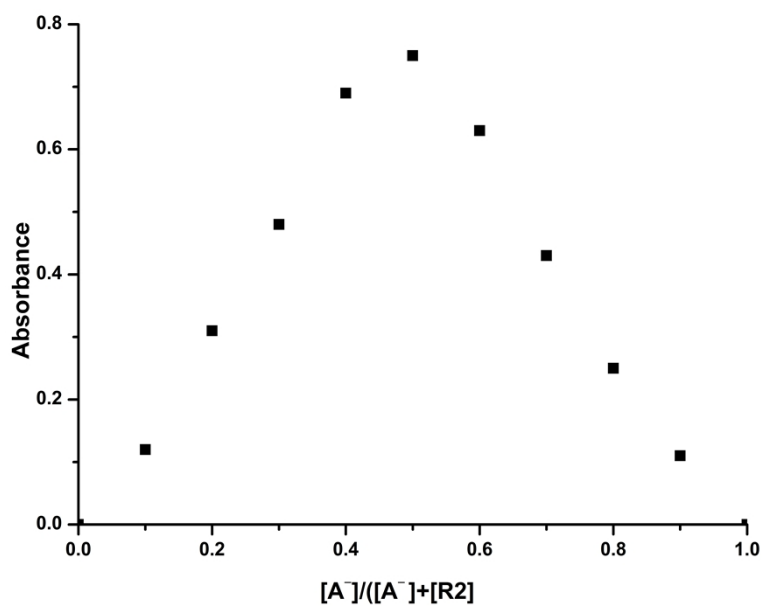


Figure S10: Jobs plot at 427 nm which indicates 1:1 complexation ratio between R2 and maleate ion.

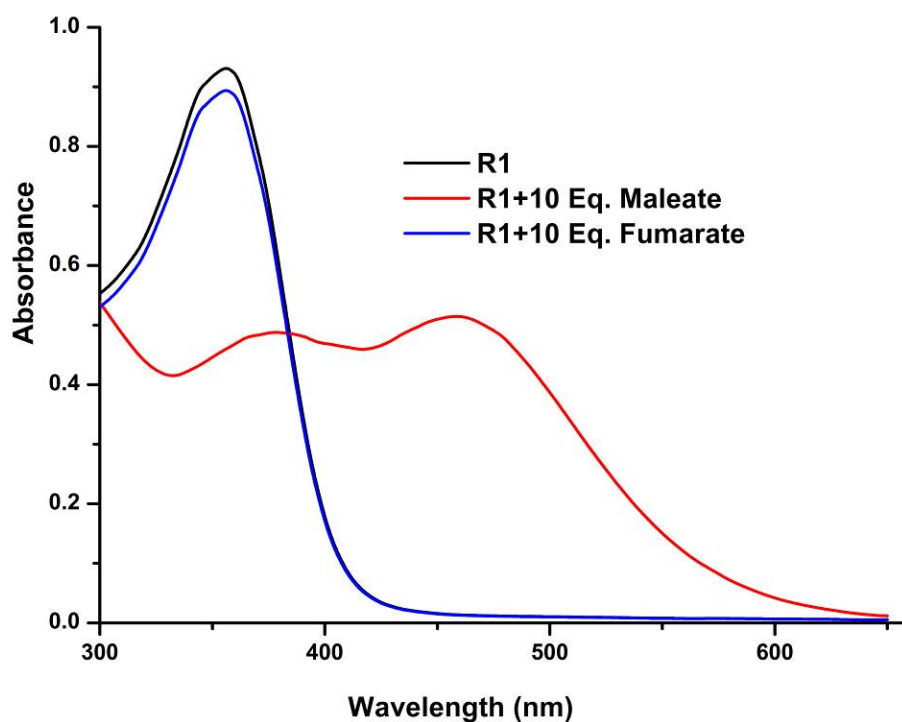


Figure S11: UV–Vis spectral changes of R1 (5×10^{-5} M) in DMSO after addition of 10 equiv. of maleate and fumarate in the form of TBA salts.

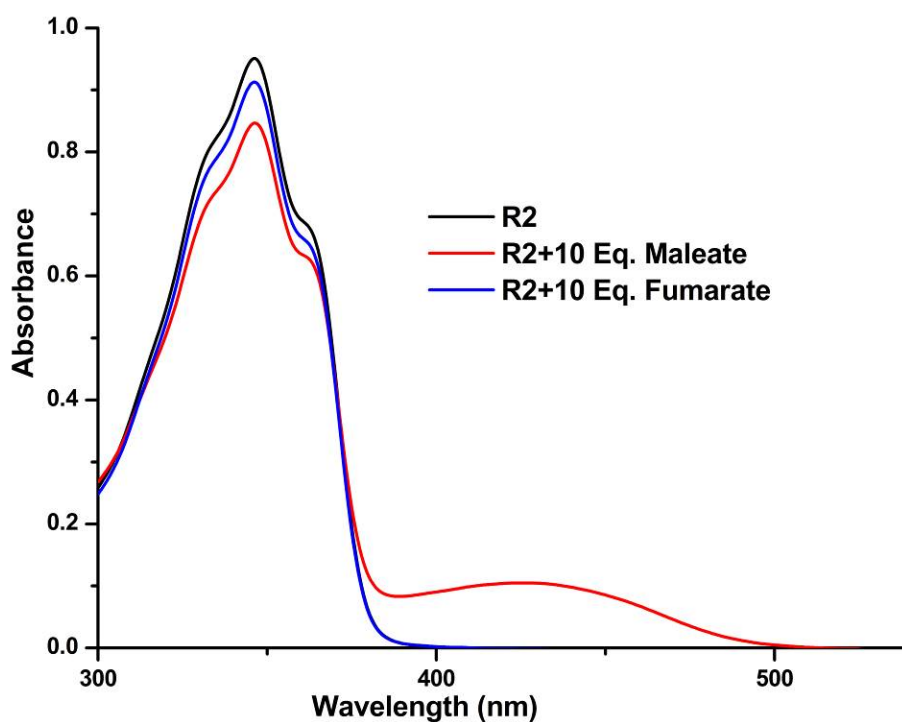


Figure S12: UV–Vis spectral changes of R2 (5×10^{-5} M) in DMSO after addition of 10 equiv. of maleate and fumarate in the form of TBA salts.

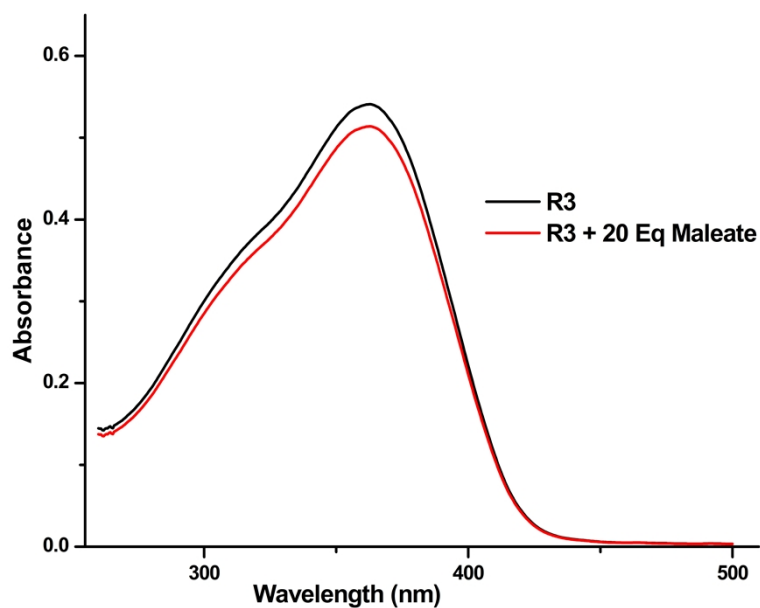


Figure S13: UV–Vis spectral changes of R3 ($5 \times 10^{-5}\text{M}$) in DMSO after addition of 20 equiv. of maleate ions in the form of TBA salts.

Binding constant:

Binding constant was calculated using equation (1).

$$\frac{1}{(A - A_0)} = \frac{1}{(A_{max} - A_0)} + \frac{1}{K[F^-]^n(A_{max} - A_0)} \dots\dots\dots(1)$$

Where, A_0 , A , A_{max} are the absorption considered in the absence of F^- , at an intermediate, and at a concentration of saturation. K is binding constant, $[F^-]$ is concentration of F^- ion and n is the stoichiometric ratio.