Organic & Biomolecular Chemistry

Electronic Supplementary Information

The fluorescent biomarkers for lipid droplets with quinolone-coumarin unit

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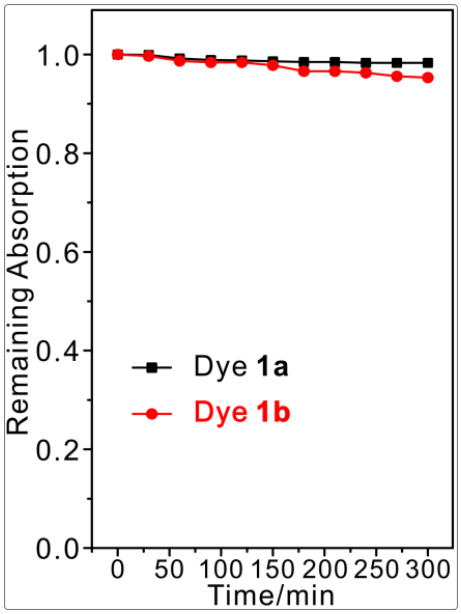

Fig. S1 Photofading behaviors of dyes **1a–b** in acetonitrile.

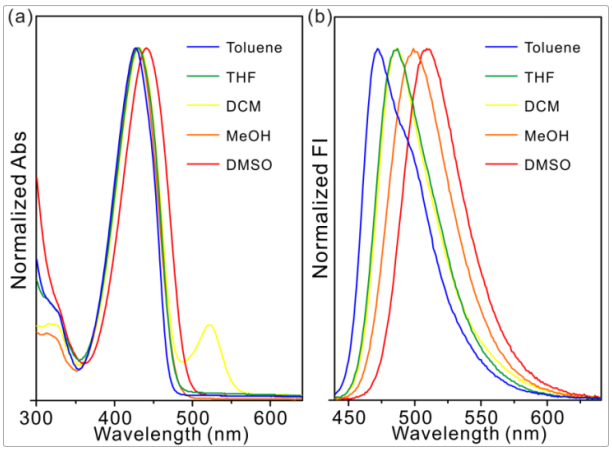

Fig. S2 Normalized absorption spectra (a) and emission spectra (b, excited at 430nm, slit widths: 1.5 nm/1.5 nm) of dye **1b** (10μM) in different solvents.

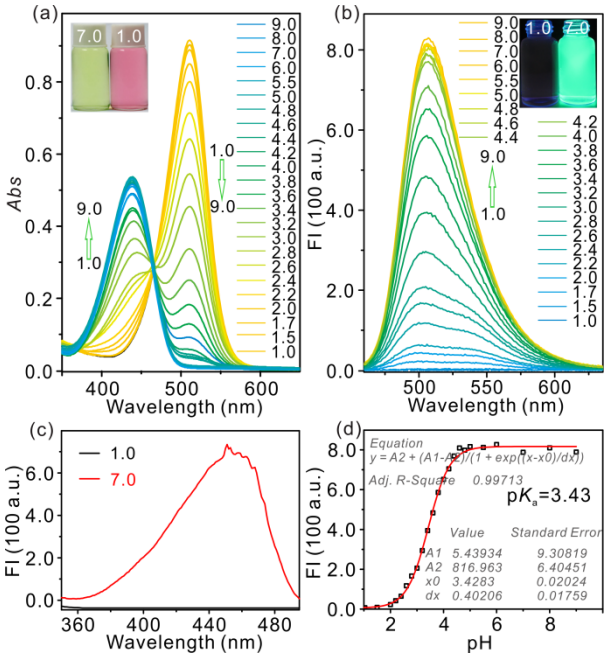

Fig. S3 Optical responses of dye **1b** (10 μM) toward different pH values in B-R buffer solutions contained 40% (v/v) EtOH. (a) Absorption spectra (inset shows photograph of the samples in different pH conditions); (b) emission spectra (λ_{ex} = 450 nm, slit widths: 1.5 nm/1.5 nm, inset shows photographs of the samples under 365 nm); (c) excitation spectra (λ_{em} = 506 nm); (d) fluorescence intensities towards different pHs at 506 nm.

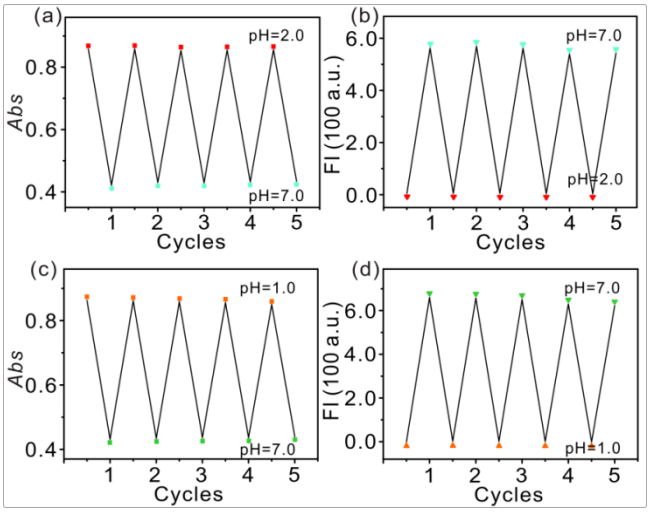

Fig. S4 The reversible absorption (left) and emission (right) responses of dyes **1a–b** with changes between neutral and acidic conditions. (a) absorption spectra of **1a**; (b) emission spectra of **1a**; (c) absorption of **1b**; (d) emission spectra of **1b**.

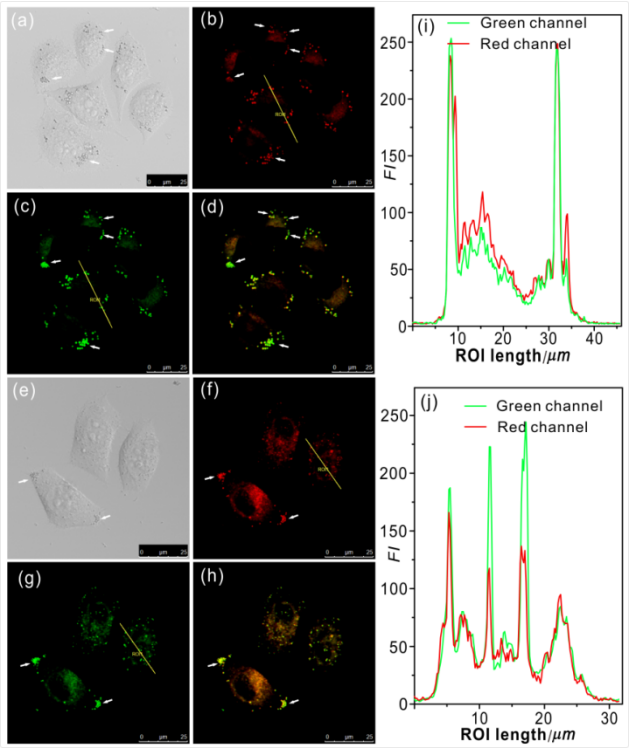

Fig. S5 Fluorescence confocal images of living I929 (a-d) and HeLa (e-h) cells with dye **1b** (2 μM) and their ROIs analysis. (a, e) Bright–field images; (b, f) confocal images (red channel) of cells with Nile red (1 μM); (c, g) confocal images (green channel) of cells with **1b** (2 μM); (d, h) merged images of green and red channels; (i, j) fluorescence intensities of the regions of interest (ROIs) across the cells. Green channel emission was collected in 470−550 nm upon excitation at 458 nm, and red channel emission was collected in 575−700 nm upon excitation at 561 nm. Scale bar: 25 μm.

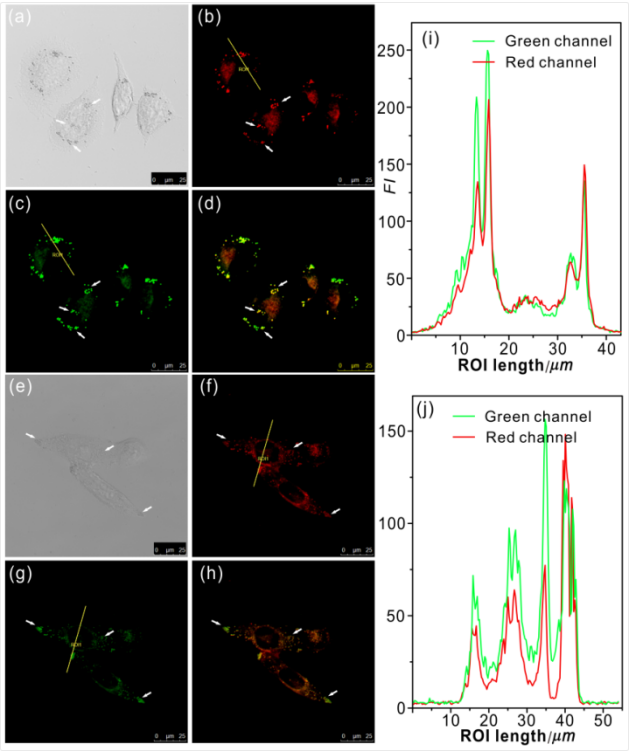

Fig. S6 Fluorescence confocal images of fixed I929 (a-d) and HeLa (e-h) cells with dye **1b** (2 μM) and their ROIs analysis. (a, e) Bright–field images; (b, f) confocal images (red channel) of cells with Nile red (1 μM); (c, g) confocal images (green channel) of cells with **1b** (2 μM); (d, h) merged images of green and red channels; (i, j) fluorescence intensities of the regions of interest (ROIs) across the cells. Green channel emission was collected in 470−550 nm upon excitation at 458 nm, and red channel emission was collected in 575−700 nm upon excitation at 561 nm. Scale bar: 25 μm.

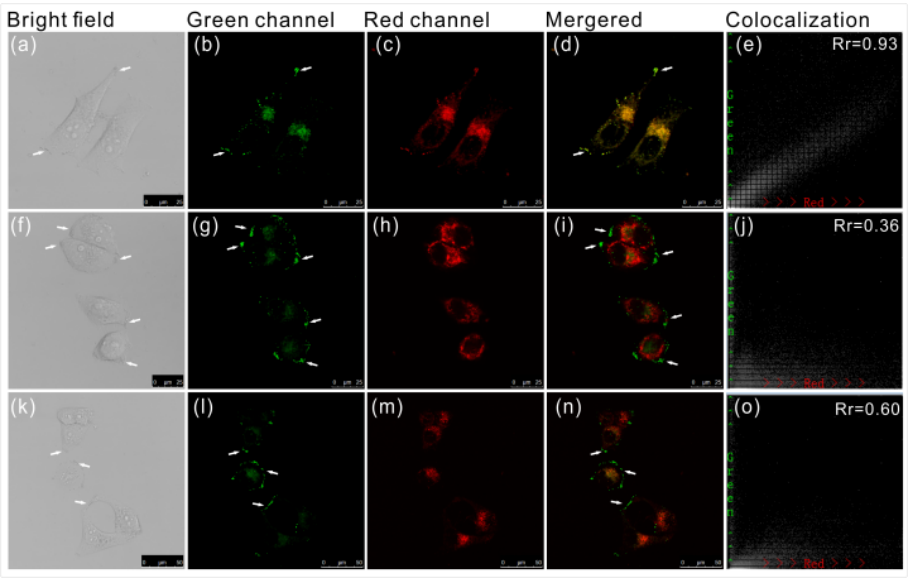

Fig. S7 Fluorescence confocal images of living HeLa cells with dye **1a** (2 μM), Nile red (1 μM), MitoTracker ® Red CMXRos (0.5 μM) or Lyso-Tracker Red (0.5 μM). (a, f, k) Bright–field images; (b, g, l) confocal images (green channels) of cells with dye **1a** (2 μM); (c) confocal images (red channel) of cells with Nile red (1 μM); (d) merged images of (b) and (c); (e) fluorescence intensity correlation plot of (d); (h) confocal images (red channel) of cells with MitoTracker ® Red CMXRos (0.5 μM); (i) merged images of (g) and (h); (j) fluorescence intensity correlation plot of (i); (m) confocal images (red channel) of cells with Lyso-Tracker Red (0.5 μM); (n) merged images of (l) and (m); (n) fluorescence intensity correlation plot of (n); Green channel emission was collected in 470−550 nm upon excitation at 458 nm, and red channel emission was collected in 575−700 nm upon excitation at 561 nm. Scale bar: (a–j) 25 μm, (k–o) 50 μm.

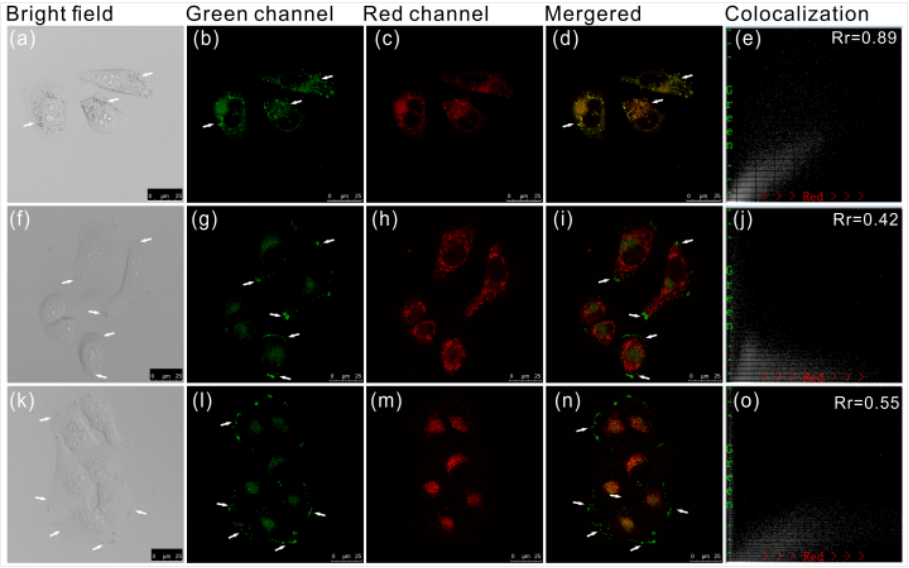

Fig. S8 Fluorescence confocal images of living HeLa cells with dye **1b** (2 μM), Nile red (1 μM), MitoTracker ® Red CMXRos (0.5 μM) or Lyso-Tracker Red (0.5 μM). (a, f, k) Bright–field images; (b, g, l) confocal images (green channels) of cells with dye **1b** (2 μM); (c) confocal images (red channel) of cells with Nile red (1 μM); (d) merged images of (b) and (c); (e) fluorescence intensity correlation plot of (d); (h) confocal images (red channel) of cells with MitoTracker ® Red CMXRos (0.5 μM); (i) merged images of (g) and (h); (j) fluorescence intensity correlation plot of (i); (m) confocal images (red channel) of cells with Lyso-Tracker Red (0.5 μM); (n) merged images of (l) and (m); (n) fluorescence intensity correlation plot of (n); Green channel emission was collected in 470−550 nm upon excitation at 458 nm, and red channel emission was collected in 575−700 nm upon excitation at 561 nm. Scale bar: 25 μm.

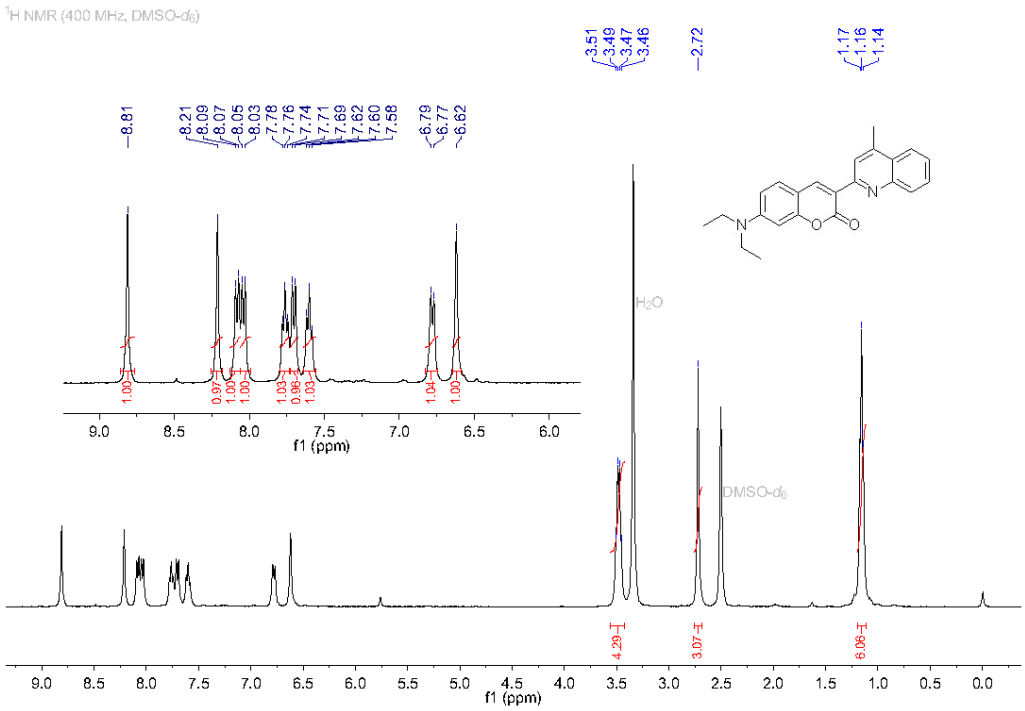

Fig. S9 ^{1}H NMR of dye **1a**.

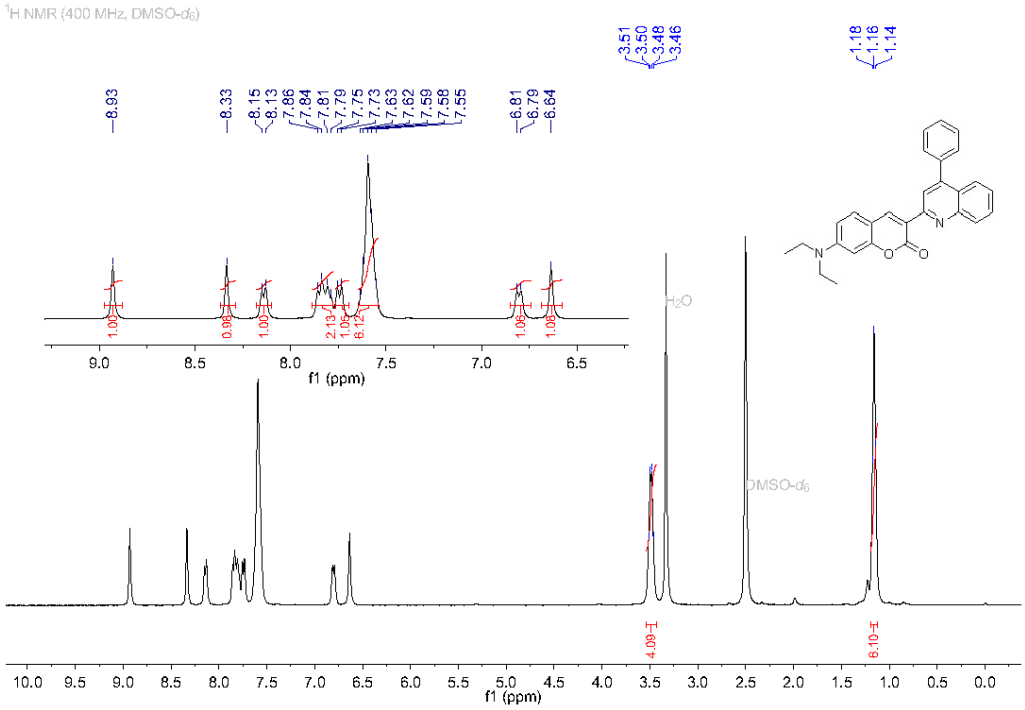

Fig. S10 ^{1}H NMR of dye **1b**.

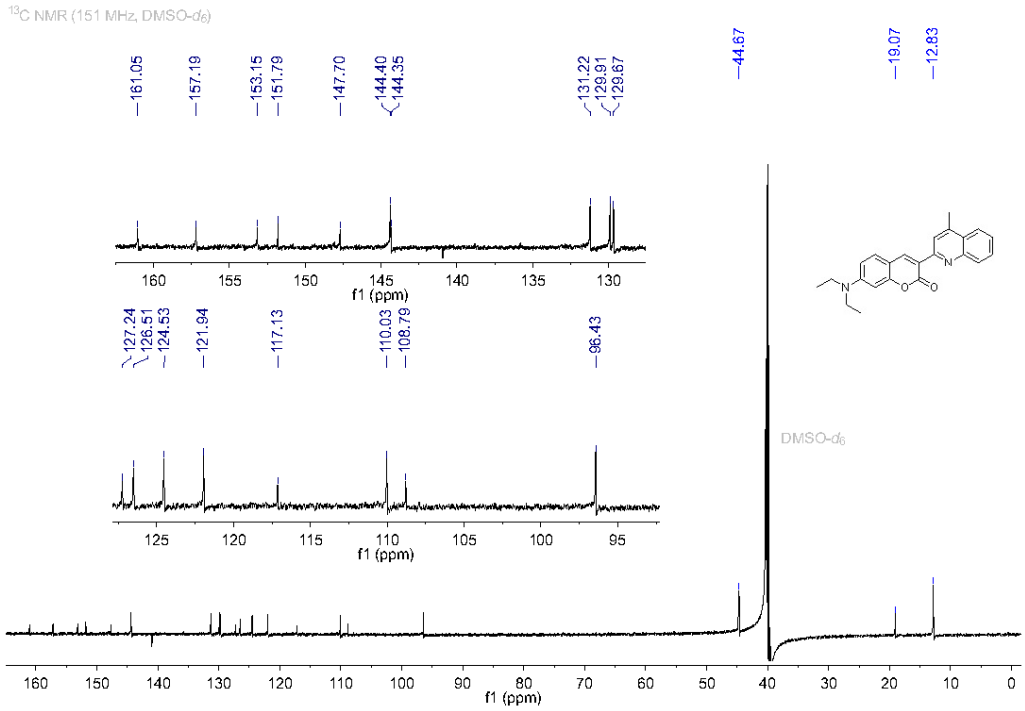

Fig. S11 ^{13}C NMR of dye **1a**.

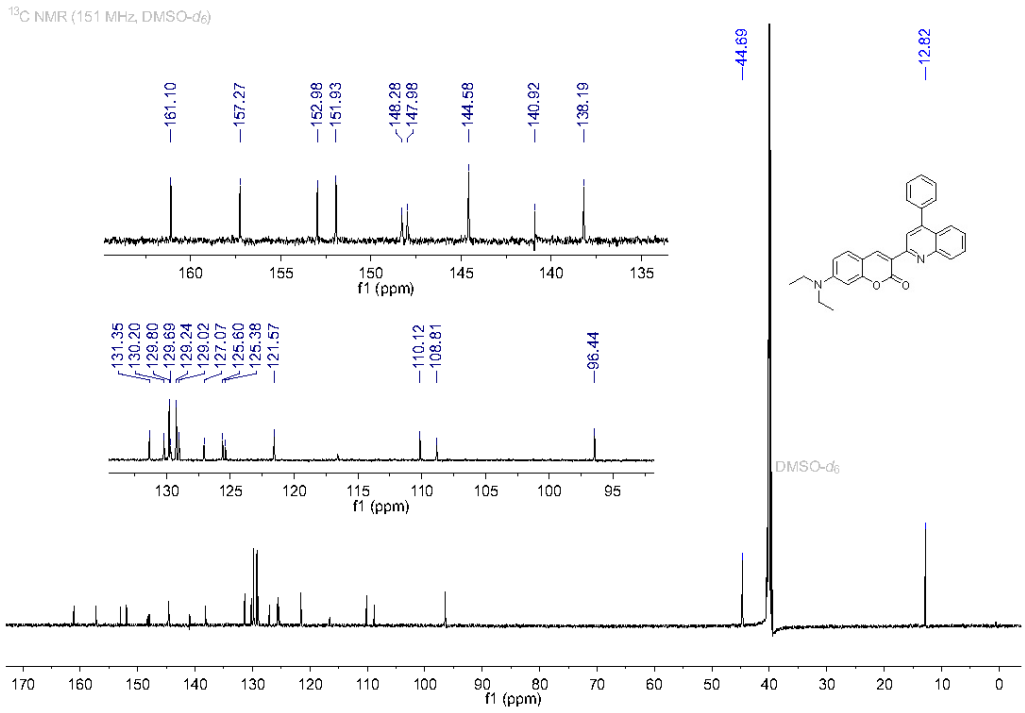

Fig. S12 ^{13}C NMR of dye **1b**.

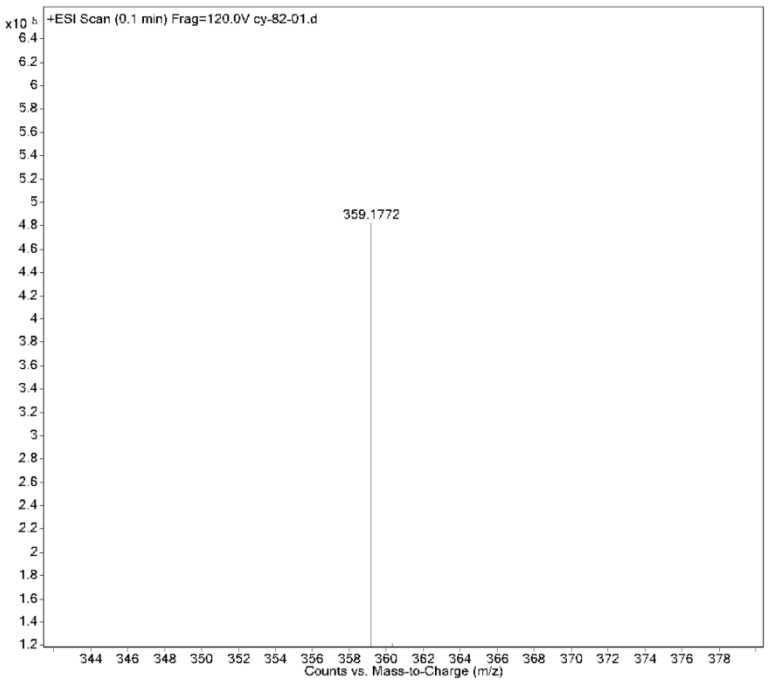

Fig. S13 HRMS(ESI$^+$) of dye **1a**.

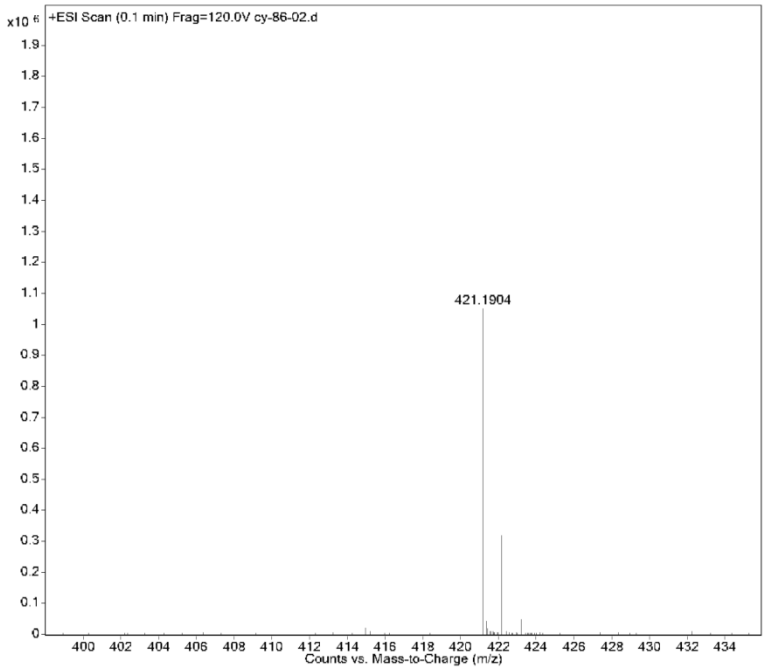

Fig. S14 HRMS(ESI$^+$) of dye **1b**.