

Supplementary materials

Synthesis. The probe used in the work (d114) was obtained in three successive stages from rhodamine 6G as shown in Fig S1.

1 stage. A 300 mg, (6.3×10^{-4} mol) of rhodamine 6G and hydrazine monohydrate (1.0 mL, 1.9×10^{-2} mol) were dissolved in 20 ml of ethanol (95%). The mixture was refluxed for 12 h. The solvent was removed under reduced pressure. Chloroform (30 ml), water (10 ml) and 1N NaOH (10ml) were added to the residue. The organic layer was washed with water (3x30 ml) and dried overnight using anhydrous sodium sulfate. The solvent was removed under reduced pressure and the crude product was purified by flash column chromatography on a silica gel with dichloromethane/ethylacetate ($v/v = 4/1$) as the eluent to afford the product as a crystal powder (220mg, 80%). ¹H NMR (400 MHz, CDCl₃, ppm, δ): 7.96 (m, 1H), 7.45 (m, 2H), 7.06 (m, 1H), 6.39 (s, 2H), 6.26 (s, 2H), 3.58 (s, 2H), 3.54 (br.s, 2H), 3.22 (q, 4H), 1.92 (s, 6H), 1.32 (t, 6H); ¹³C NMR (100 MHz, CDCl₃, ppm, δ): 14.38, 16.34, 37.97, 65.66, 96.42, 104.47, 117.60, 122.65, 123.42, 127.31, 127.75, 129.45, 132.22, 147.15, 151.35, 151.83, 165.82; ESI-MS (m/z , +ve mode) 529.63 [M + H]⁺, calc. for C₂₆H₂₉N₄O₂⁺ is 529.22; Elemental Analysis data: Calc. C, 72.87; H, 6.59; N, 13.07; Expt. C, 72.97; H, 6.66; N, 12.89.

2 stage. A 300 mg (7×10^{-4} mol) of rhodamine 6G hydrazide and 220 mg (1.4×10^{-3} mol) of 4-(dimethylamino)benzaldehyde were dissolved in 15 ml of ethanol (95%). The mixture was refluxed for 6 h. The solvent was removed under reduced pressure and the crude product was purified by flash column chromatography on a silica gel with hexane/ethylacetate ($v/v = 2/1$) as the eluent to afford the product as a crystal powder (290 mg, 74%). ¹H NMR (400 MHz, CDCl₃, ppm, δ): 8.33 (s, 1H, H(24)), 8.03-8.04 (m, 1H, H(12)), 7.06-7.08 (m, 1H, H(9)), 7.45 (s, 1H, H(18)), 7.47 (s, 1H, H(19)), 7.61 (s, 1H, H(15)), 7.59 (s, 1H, H(22)), 7.47-7.49 (m, 2H, H(10), H(11)), 6.42 (br. s, 2H, H(26), H(30)), 6.40 (br. s, 2H, H(27), H(29)), 3.50 (br.s, 2H, H(33), H(36)), 3.21-3.26 (q, 4H, H(34), H(37)), 2.96 (s, 6H, H(41), H(42)), 1.89 (s, 6H, H(32), H(39)), 1.34-1.36 (t, 6H, H(35), H(38)); ¹³C NMR (100 MHz, CDCl₃, ppm, δ): 14.77, 16.68, 22.70, 29.70, 31.94, 38.37, 40.23, 59.19, 65.72, 76.70, 77.03, 77.34, 96.78, 106.63, 111.51, 117.94, 123.21, 123.51, 127.76, 128.98, 133.00, 147.44, 151.17, 152.40, 164.83; ESI-MS (m/z , +ve mode) 560.81 [M + H]⁺, calc. for C₃₅H₃₈N₅O₂⁺ is 560.30; Elemental Analysis data: Calc. C, 75.11; H, 6.66; N, 12.51; Expt. C, 75.43; H, 6.70; N, 12.42.

3 stage. A 30 mg (5.37×10^{-4} mol) of 1 and 22 mg (5.37×10^{-4} mol) of Lawesson reagent were mixed in 15 ml of absolute toluene. The mixture was refluxed for 1 h. Then another portion of Lawesson reagent (11 mg, 2.69×10^{-4} mol) was added to reaction mixture, then the mixture was refluxed for 1 h. The solvent was removed under reduced pressure and the crude product was purified by flash column chromatography on a silica gel with hexane/ethyl acetate ($v/v = 1/1$) as the eluent to afford the product as a red powder (17.7 mg, 57%). ¹H NMR (400 MHz, CDCl₃, ppm, δ): 8.53 (s, 1H, H(24)), 8.12-8.14 (m, 1H, H(12)), 7.05-7.07 (m, 1H, H(9)), 7.37 (s, 1H, H(18)), 7.40 (s, 1H, H(19)), 7.66 (s, 1H, H(15)), 7.69 (s, 1H, H(22)), 7.40 (m, 2H, H(10), H(11)), 6.30 (br. s, 2H, H(26), H(30)), 6.62 (br. s, 2H, H(27), H(29)), 3.50 (br.s, 2H, H(33), H(36)), 3.20-3.21 (q, 4H, H(34), H(37)), 3.01 (s, 6H, H(41), H(42)), 1.92 (s, 6H, H(32), H(39)), 1.29-1.33 (t, 6H, H(35), H(38)); ¹³C NMR (100 MHz, CDCl₃, ppm, δ): 14.36, 14.92, 17.02, 22.92, 29.93, 32.15, 38.78, 40.38, 96.75, 111.76, 118.32, 122.32, 127.29, 127.91, 130.39, 130.64, 132.12, 150.20, 152.39, 155.67, 159.72; ESI-MS (m/z , +ve mode) 576.34 [M + H]⁺, calc. for C₃₅H₃₈N₅O₂⁺ is 576.28; Elemental Analysis data: Calc. C, 73.01; H, 6.48; N, 12.16; S, 5.57; Expt. C, 73.33; H, 6.54; N, 12.18; S, 5.41. Mp: 208–210 °C (with decomposition).

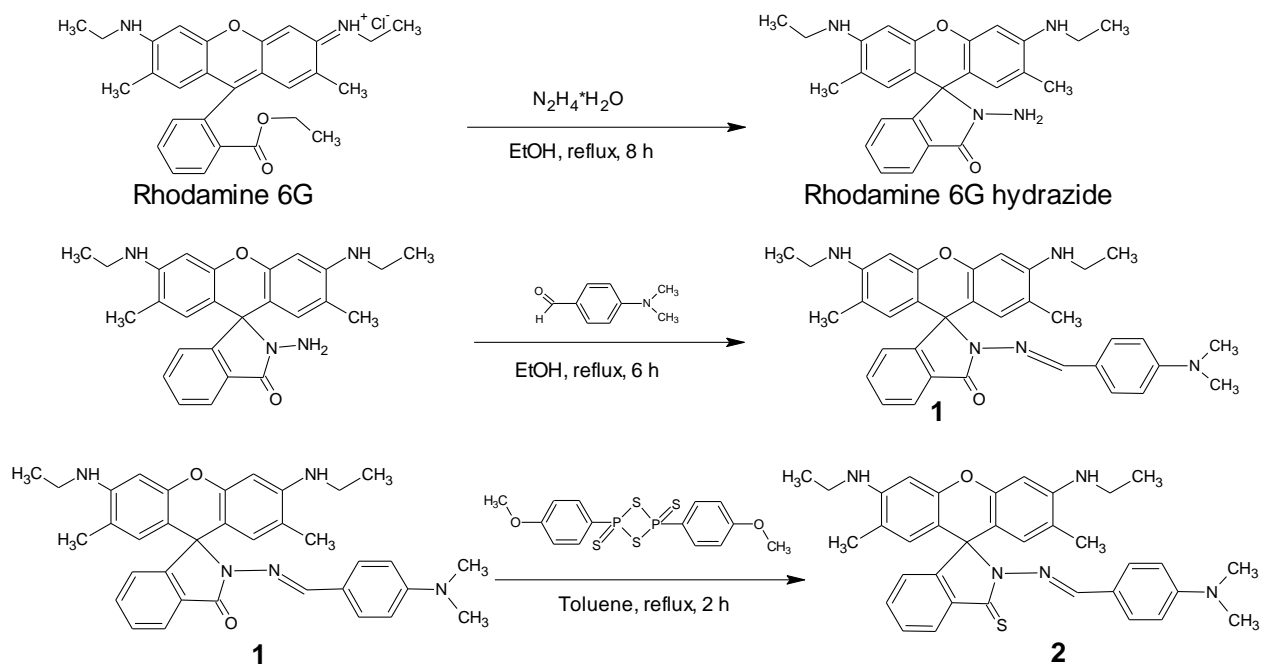


Figure S1. The synthesis route of d114 (compound 2).

1H NMR (400 MHz, $CDCl_3$, ppm, δ): 8.53 (s, 1H, H(24)), 8.12-8.14 (m, 1H, H(12)), 7.05-7.07 (m, 1H, H(9)), 7.37 (s, 1H, H(18)), 7.40 (s, 1H, H(19)), 7.66 (s, 1H, H(15)), 7.69 (s, 1H, H(22)), 7.40 (m, 2H, H(10), H(11)), 6.30 (br. s, 2H, H(26), H(30)), 6.62 (br. s, 2H, H(27), H(29)), 3.50 (br. s, 2H, H(33), H(36)), 3.20-3.21 (q, 4H, H(34), H(37)), 3.01 (s, 6H, H(41), H(42)), 1.92 (s, 6H, H(32), H(39)), 1.29-1.33 (t, 6H, H(35), H(38)); ^{13}C NMR (100 MHz, $CDCl_3$, ppm, δ): 14.36, 14.92, 17.02, 22.92, 29.93, 32.15, 38.78, 40.38, 96.75, 111.76, 118.32, 122.32, 127.29, 127.91, 130.39, 130.64, 132.12, 150.20, 152.39, 155.67, 159.72; ESI-MS (m/z , +ve mode) 576.34 [$M + H$] $^+$, calc. for $C_{35}H_{38}N_5OS$ is 576.28; Elemental Analysis data: Calc. C, 73.01; H, 6.48; N, 12.16; S, 5.57; Expt. C, 73.33; H, 6.54; N, 12.18; S, 5.41. Mp: 208–210 $^{\circ}C$ (with decomposition).

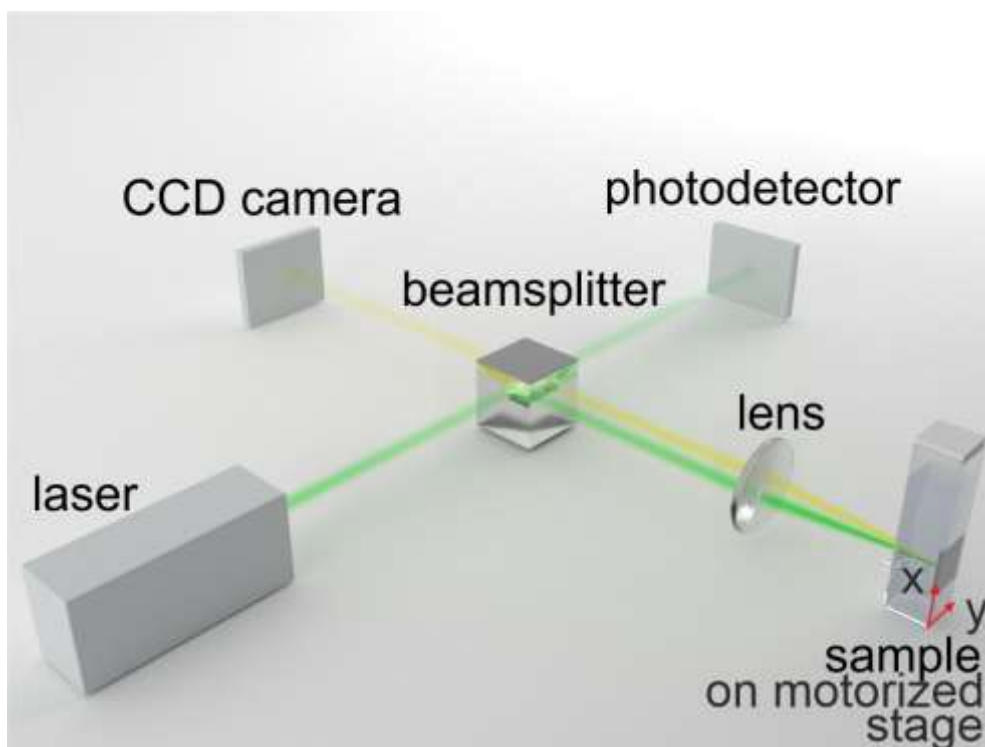


Figure S2. Schematic of the experimental setup for laser assisted fabrication of SEPL sensor.