

Electronic Supplementary Information for:

Banana-shaped biphotonic quadrupolar chromophores: from fluorophores to biphotonic photosensitizers

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Table 1S. Photophysical properties of compound **Q1** in different solvents.

| Solvent | λ_{abs} (nm) | λ_{em} (nm) | Stokes shift (cm ⁻¹) | Φ_{f} ^a | τ (ns) | k_{r} ^b (10 ⁹ s ⁻¹) | k_{nr} ^b (10 ⁹ s ⁻¹) | τ_0 ^c (ns) | r ^d |
|-------------------|-----------------------------|----------------------------|----------------------------------|--------------------------------|-------------|--|---|----------------------------|------------------|
| Toluene | 386.5 | 431 | 2670 | 0.82 | 0.75 | 1.09 | 0.24 | 0.91 | 0.24 |
| Bu ₂ O | 383 | 427 | 2690 | 0.86 | 0.75 | 1.16 | 0.19 | 0.86 | 0.25 |
| CHCl ₃ | 389.5 | 465 | 4170 | 0.84 | 1.11 | 0.76 | 0.14 | 1.31 | 0.21 |
| AcOEt | 388 | 488 | 5280 | 0.85 | 1.5 | 0.57 | 0.10 | 1.77 | 0.16 |
| THF | 387 | 496.5 | 5700 | 0.75 | 1.77 | 0.42 | 0.14 | 2.36 | 0.15 |
| DCM | 391 | 495.5 | 5395 | 0.87 | 1.72 | 0.50 | 0.08 | 1.99 | 0.14 |
| Acetone | 390 | 549.5 | 7445 | 0.44 | 1.82 | 0.24 | 0.31 | 4.15 | 0.12 |

^a Fluorescence quantum yield determined relative to quinine in 0.5 M H₂SO₄. ^b Radiative (k_{r}) and non-radiative (k_{nr}) decay rates. ^c Radiative lifetime. ^d Fluorescence anisotropy.

Table 2S. Photophysical properties of compound **Q2** in different solvents.

| Solvent | λ_{abs} (nm) | λ_{em} (nm) | Stokes shift (cm ⁻¹) | Φ_{f} ^a | τ (ns) | k_{r} ^b (10 ⁹ s ⁻¹) | k_{nr} ^b (10 ⁹ s ⁻¹) | τ_0 ^c (ns) | r ^d |
|-------------------|-----------------------------|----------------------------|----------------------------------|--------------------------------|-------------|--|---|----------------------------|------------------|
| Toluene | 410.5 | 461.5 | 2690 | 0.61 | 0.97 | 0.63 | 0.40 | 1.59 | 0.23 |
| Bu ₂ O | 408.5 | 457.5 | 2620 | 0.58 | 0.78 | 0.75 | 0.55 | 1.34 | 0.25 |
| CHCl ₃ | 414 | 496.5 | 4015 | 0.51 | 0.74 | 0.69 | 0.66 | 1.44 | 0.22 |
| AcOEt | 407.5 | 512 | 5010 | 0.65 | 1.12 | 0.58 | 0.31 | 1.72 | 0.18 |
| THF | 412 | 522.5 | 5135 | 0.58 | 1.26 | 0.46 | 0.33 | 2.16 | 0.18 |
| DCM | 420 | 525.5 | 4780 | 0.61 | 1.26 | 0.48 | 0.31 | 2.08 | 0.17 |
| Acetone | 414 | 565.5 | 6470 | 0.37 | 1.13 | 0.33 | 0.56 | 3.04 | 0.16 |

^a Fluorescence quantum yield determined relative to quinine in 0.5 M H₂SO₄. ^b Radiative (k_{r}) and non-radiative (k_{nr}) decay rates. ^c Radiative lifetime. ^d Fluorescence anisotropy.

Table 3S. Photophysical properties of compound **Q'2** in different solvents.

| Solvent | λ_{abs} (nm) | λ_{em} (nm) | Stokes shift (cm ⁻¹) | Φ_f^a | τ (ns) | k_r^b (10 ⁹ s ⁻¹) | k_{nr}^b (10 ⁹ s ⁻¹) | τ_o^c (ns) | r^d |
|--------------------|-----------------------------|----------------------------|----------------------------------|------------|-------------|--|---|-----------------|-------|
| Toluene | 407 | 461.5 | 2900 | 0.74 | 0.73 | 1.01 | 0.36 | 0.99 | 0.19 |
| Bu ₂ O | 403 | 461.5 | 3145 | 0.53 | 0.87 | 0.61 | 0.54 | 1.64 | 0.21 |
| CHCl ₃ | 406 | 489.5 | 4200 | 0.63 | 0.97 | 0.65 | 0.38 | 1.54 | 0.18 |
| AcOEt | 405.5 | 513 | 5170 | 0.73 | 1.24 | 0.59 | 0.22 | 1.70 | 0.14 |
| THF | 411 | 518.5 | 5045 | 0.61 | 1.55 | 0.39 | 0.25 | 2.54 | 0.14 |
| DCM | 407 | 515.5 | 5170 | 0.68 | 1.31 | 0.52 | 0.24 | 1.93 | 0.13 |
| Acetone | 409 | 567.5 | 6830 | 0.29 | 1.03 | 0.28 | 0.69 | 3.55 | 0.14 |
| CH ₃ CN | 411.5 | 572 | 6820 | 0.052 | 0.56 | 0.09 | 1.69 | 10.71 | 0.23 |
| DMSO | 416 | 583.5 | 6900 | 0.045 | 0.44 | 0.10 | 2.17 | 9.78 | 0.32 |

^a Fluorescence quantum yield determined relative to quinine in 0.5 M H₂SO₄. ^b Radiative (k_r) and non-radiative (k_{nr}) decay rates. ^c Radiative lifetime. ^d Fluorescence anisotropy.

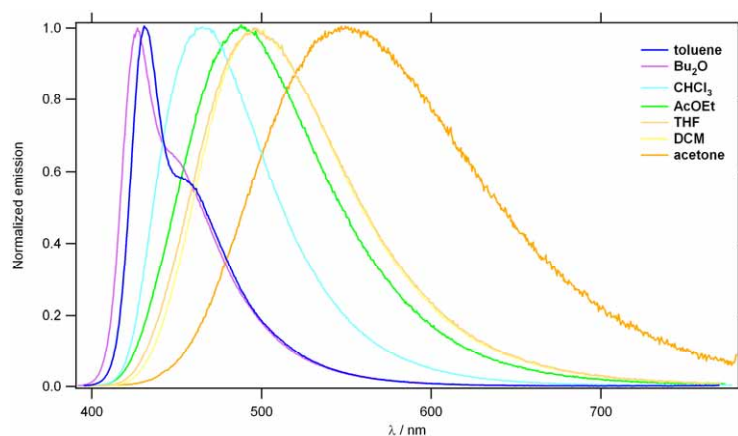


Figure 1S. Normalized emission spectra of fluorophore **Q1** in solvents of increasing polarity.

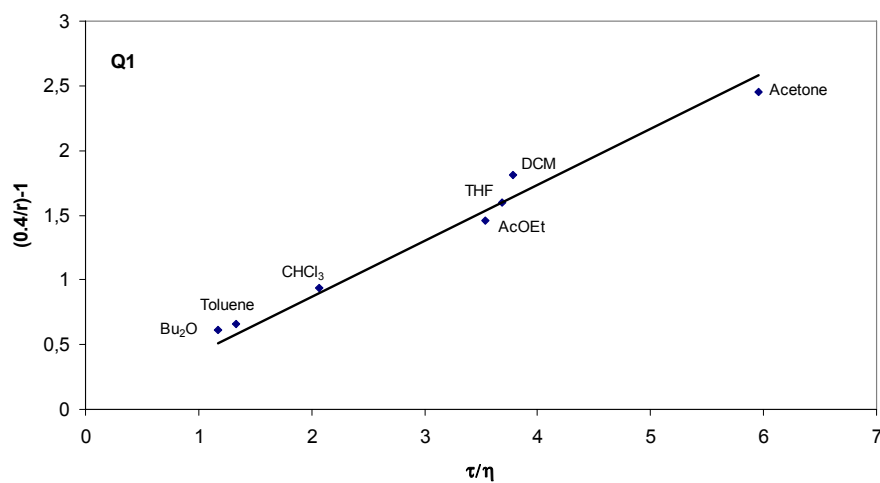


Figure 2S. Perrin plot from the variation of the fluorescence anisotropy of **Q1** in a series of solvents of different viscosity

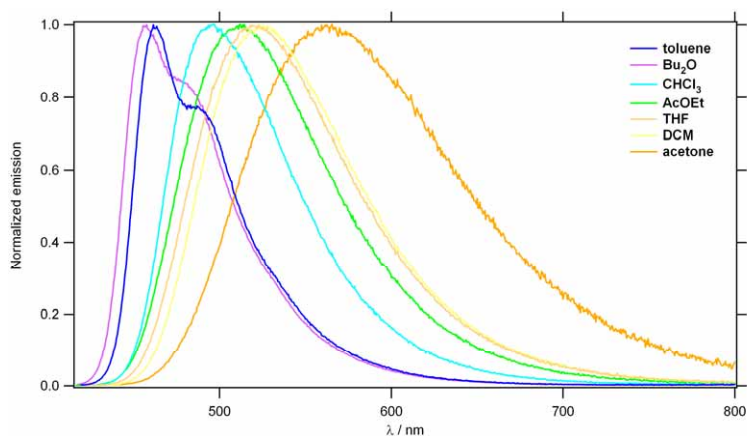


Figure 3S. Normalized emission spectra of fluorophore Q2 in solvents of increasing polarity.

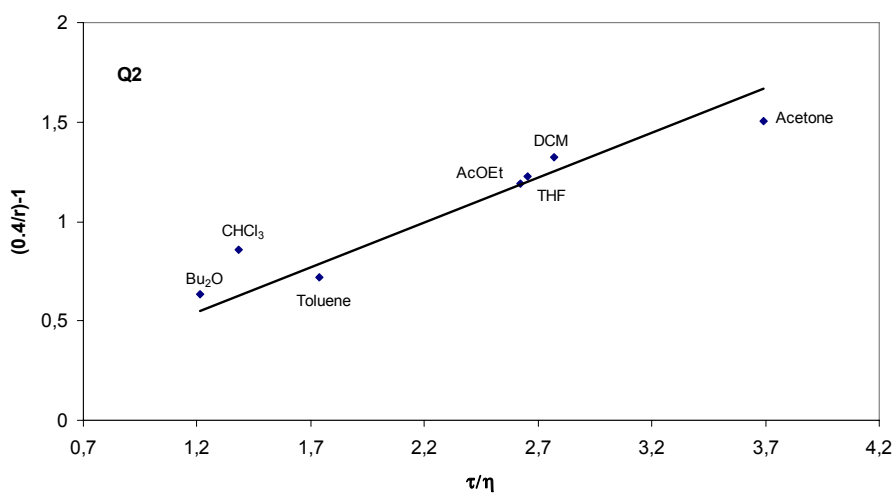


Figure 4S. Perrin plot from the variation of the fluorescence anisotropy of Q2 in a series of solvents of different viscosity

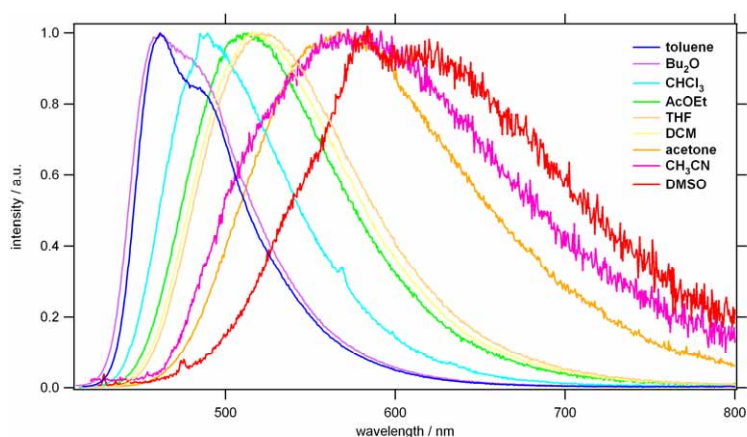


Figure 5S. Normalized emission spectra of fluorophore Q'2 solvents of increasing polarity.

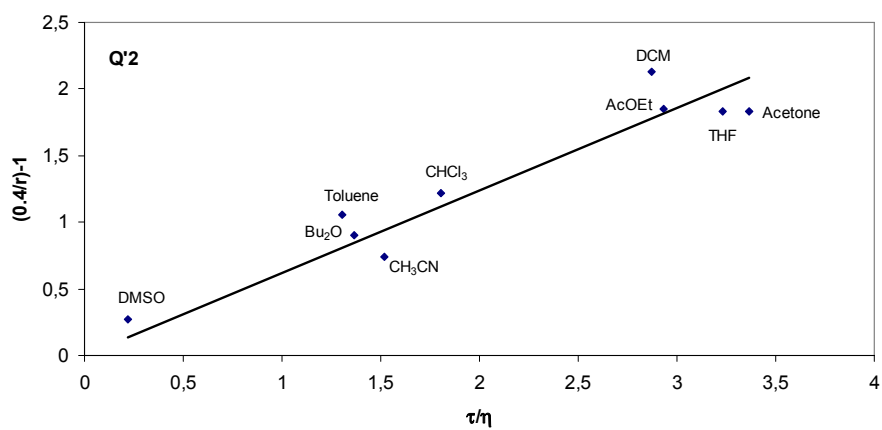


Figure 6S. Perrin plot from the variation of the fluorescence anisotropy of **Q2** in a series of solvents of different viscosity