Oligofluorenes as Polymeric Model Compounds for Providing Insight into the Triplets of Ketone and Ketylimine Derivatives

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Table of Contents

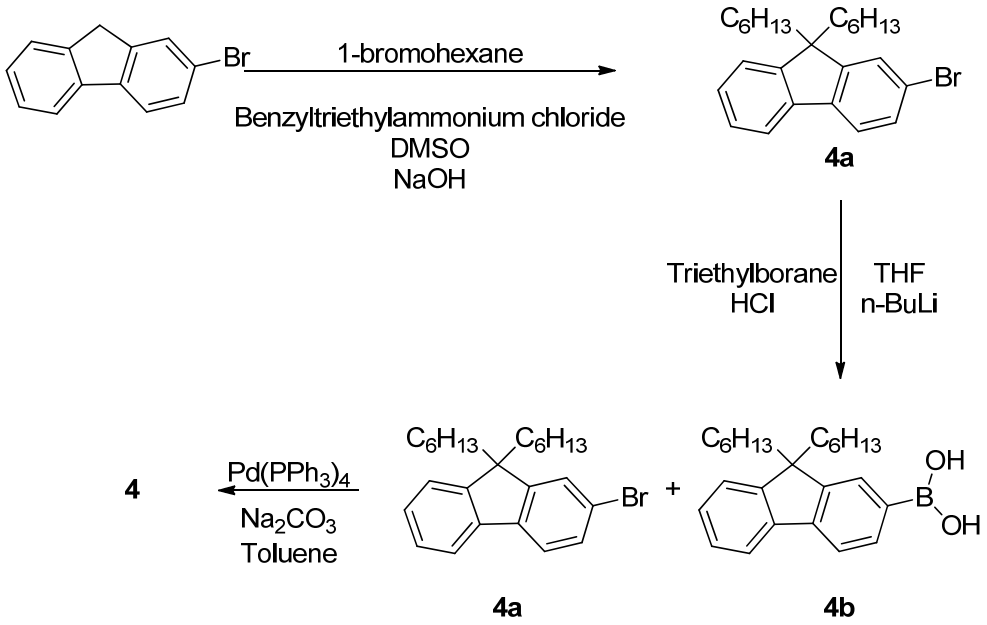

Chart 1. Synthetic pathway for **4.**

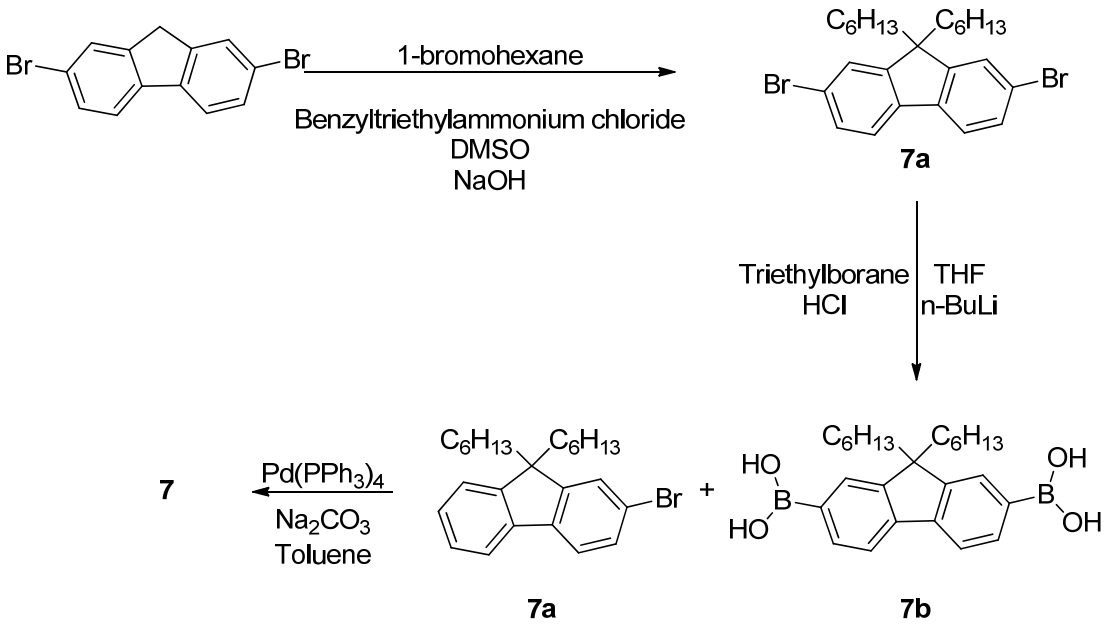

Chart 2. Synthetic pathway for **7.**

NMR of the synthesized compounds.

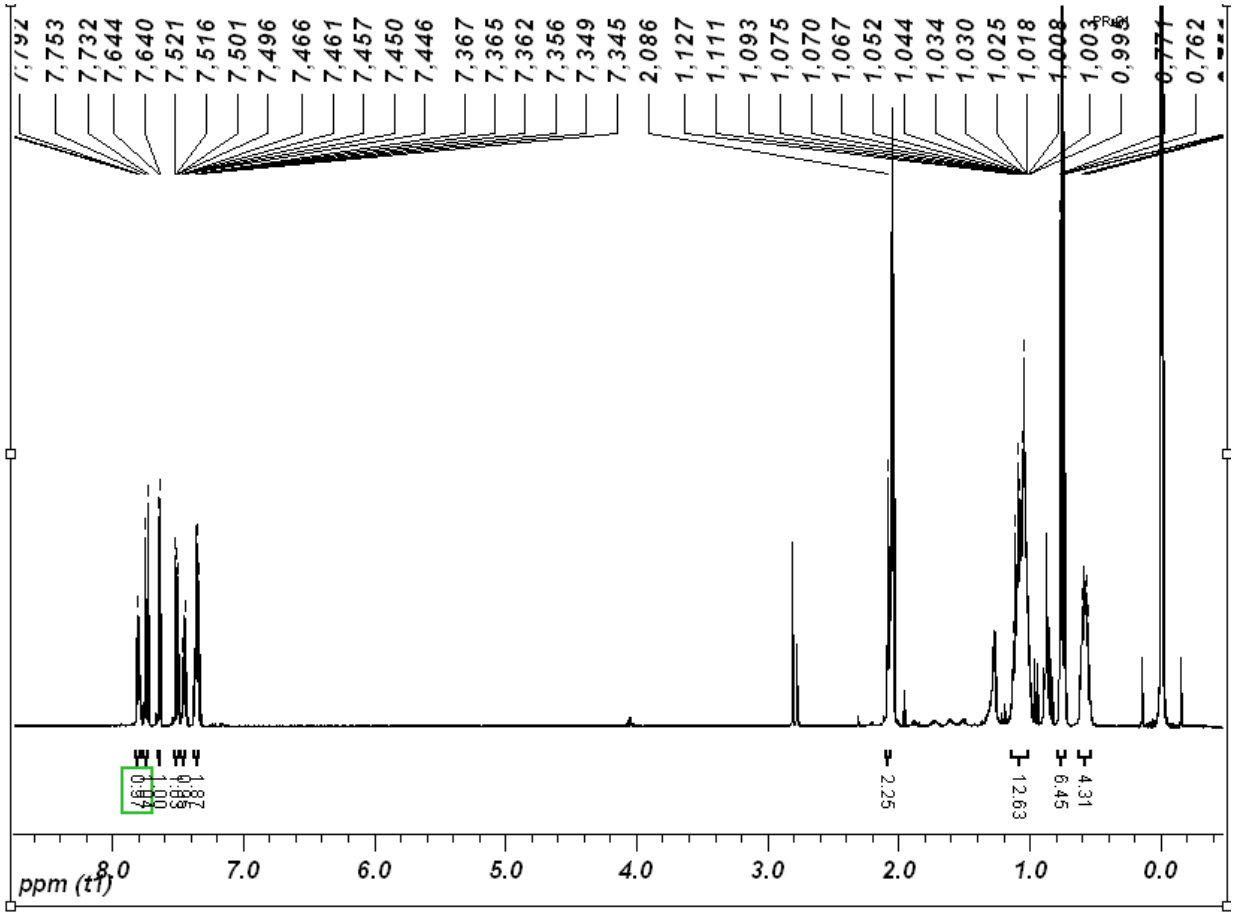

Figure 1. ^{1}H- NMR spectrum of **4a** in acetone-d_6.

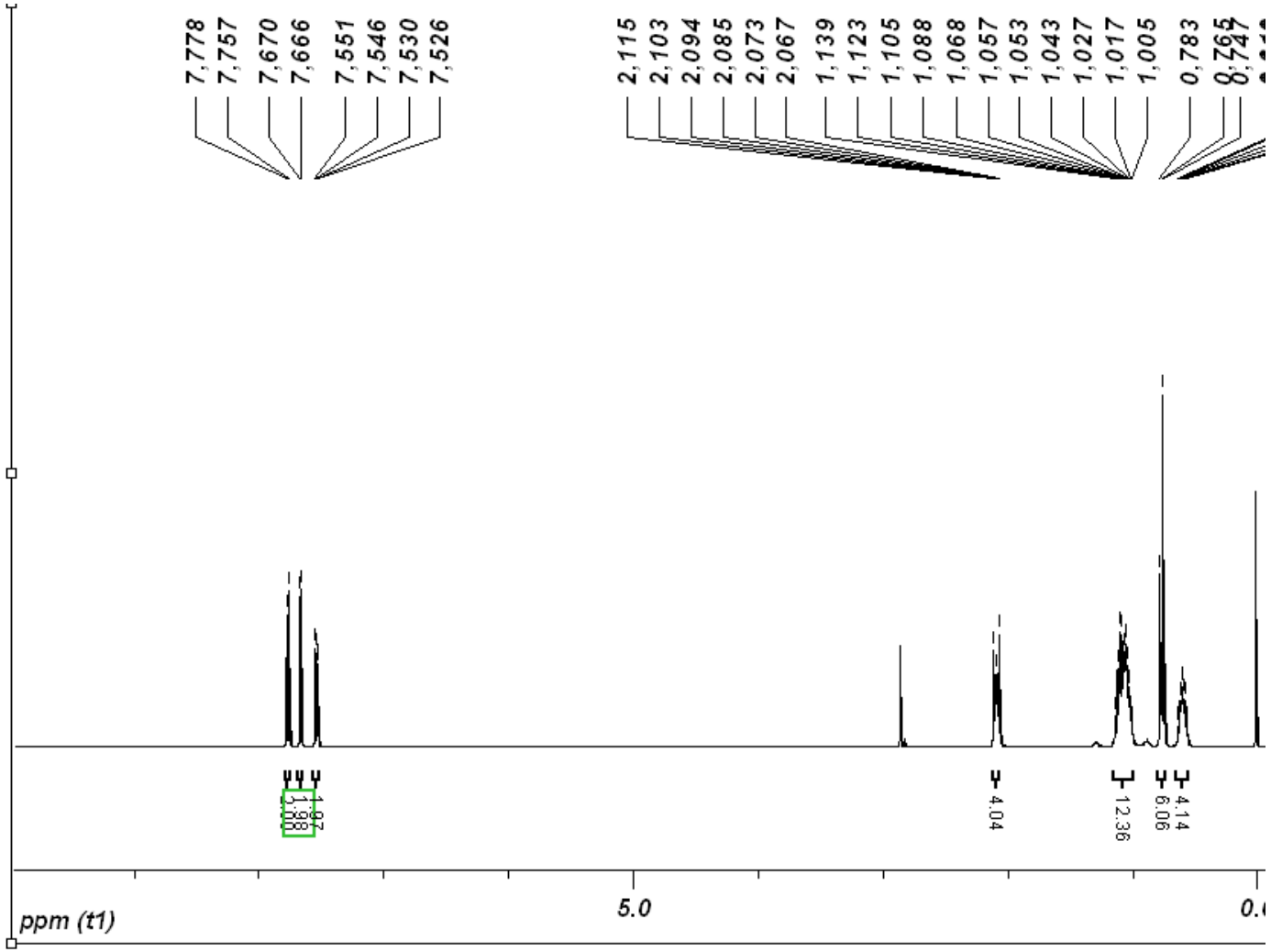

Figure 2. ^{1}H-NMR spectrum of **7a** in acetone-d_6.

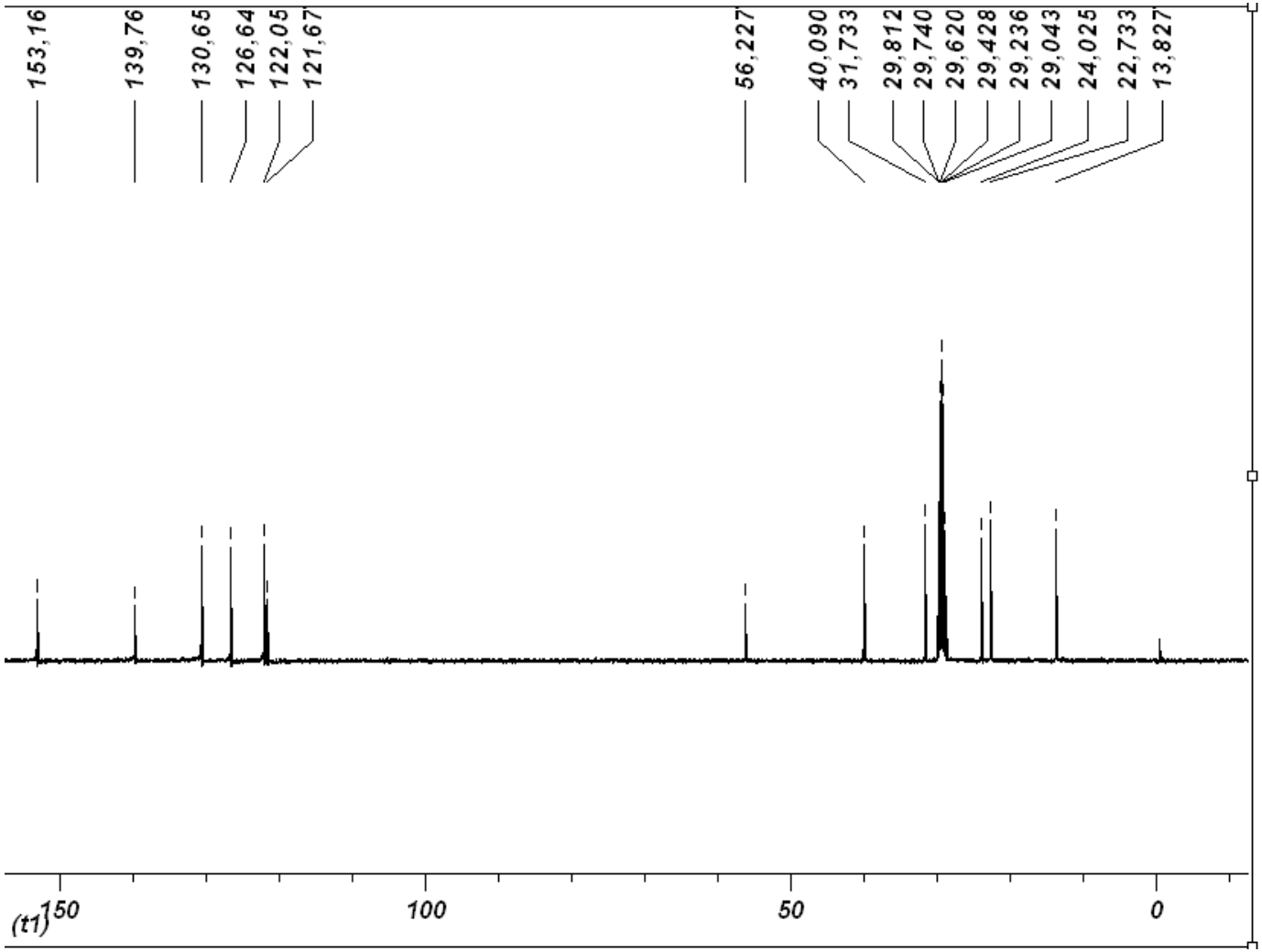

Figure 3. ^{13}C- NMR spectrum of **7a** in acetone-d_6.

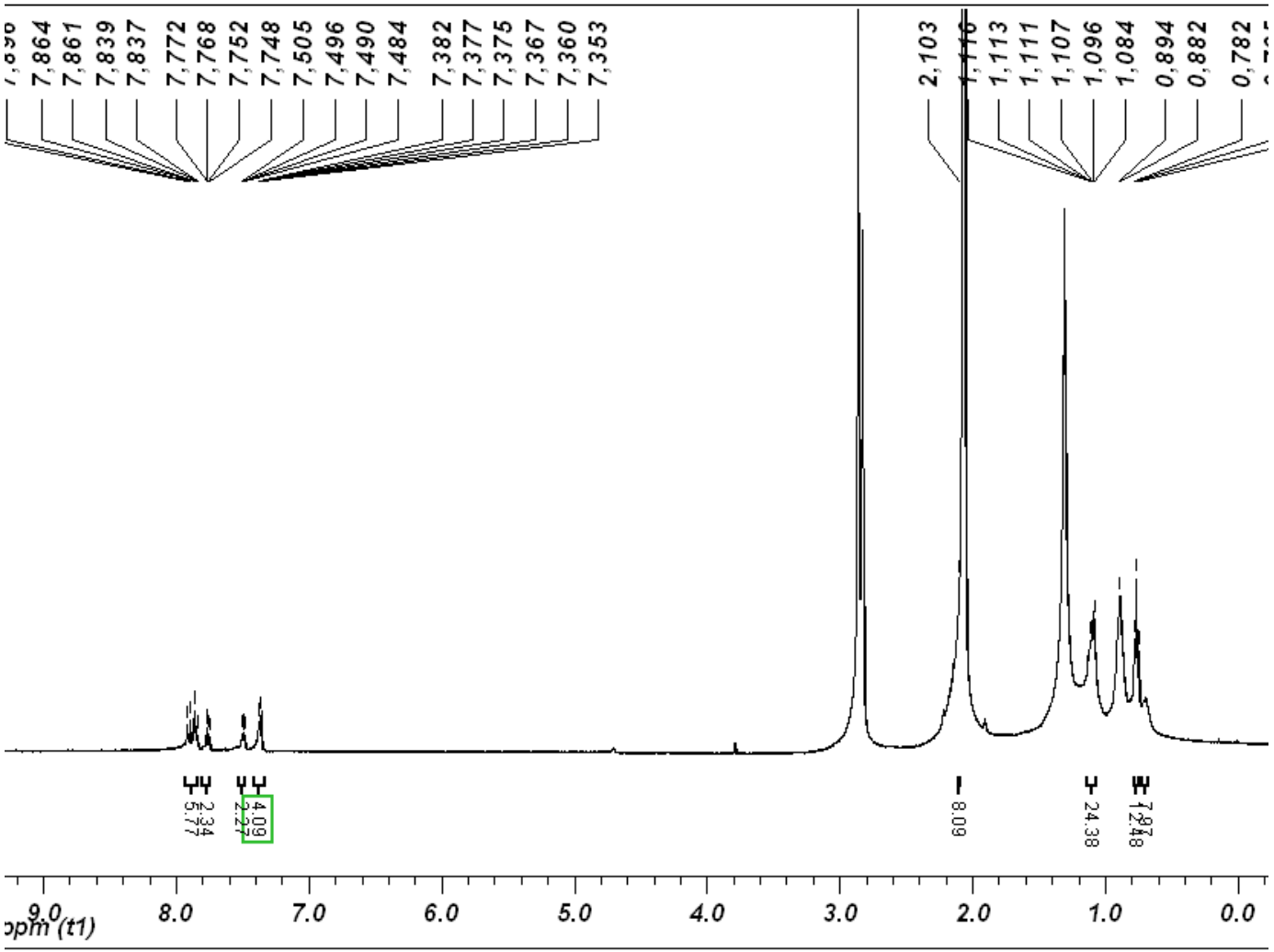

Figure 4. ^{1}H- NMR spectrum of **4** in chloroform-*d*.

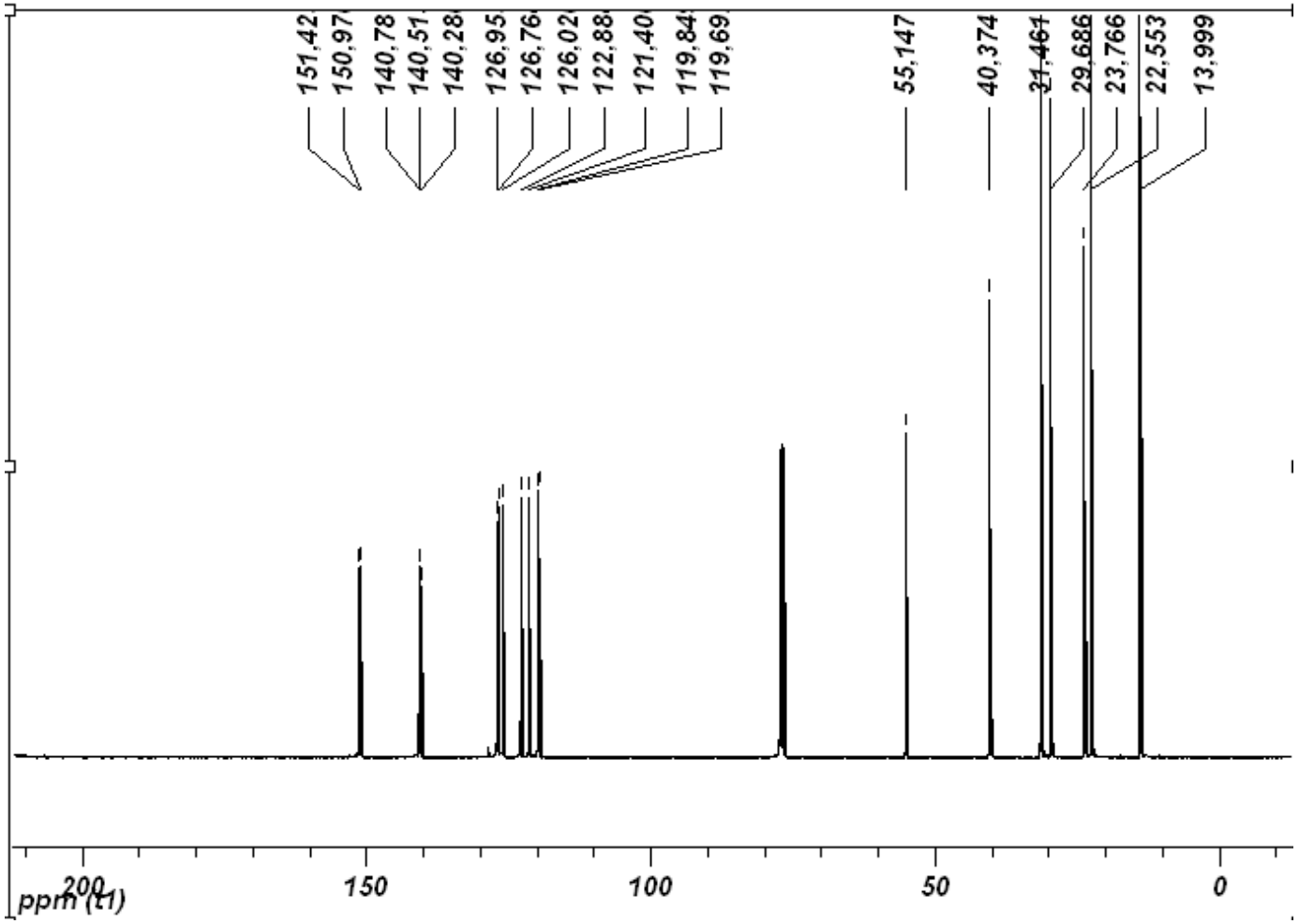

Figure 5. ^{13}C-NMR spectrum of **4** in chloroform-*d*.

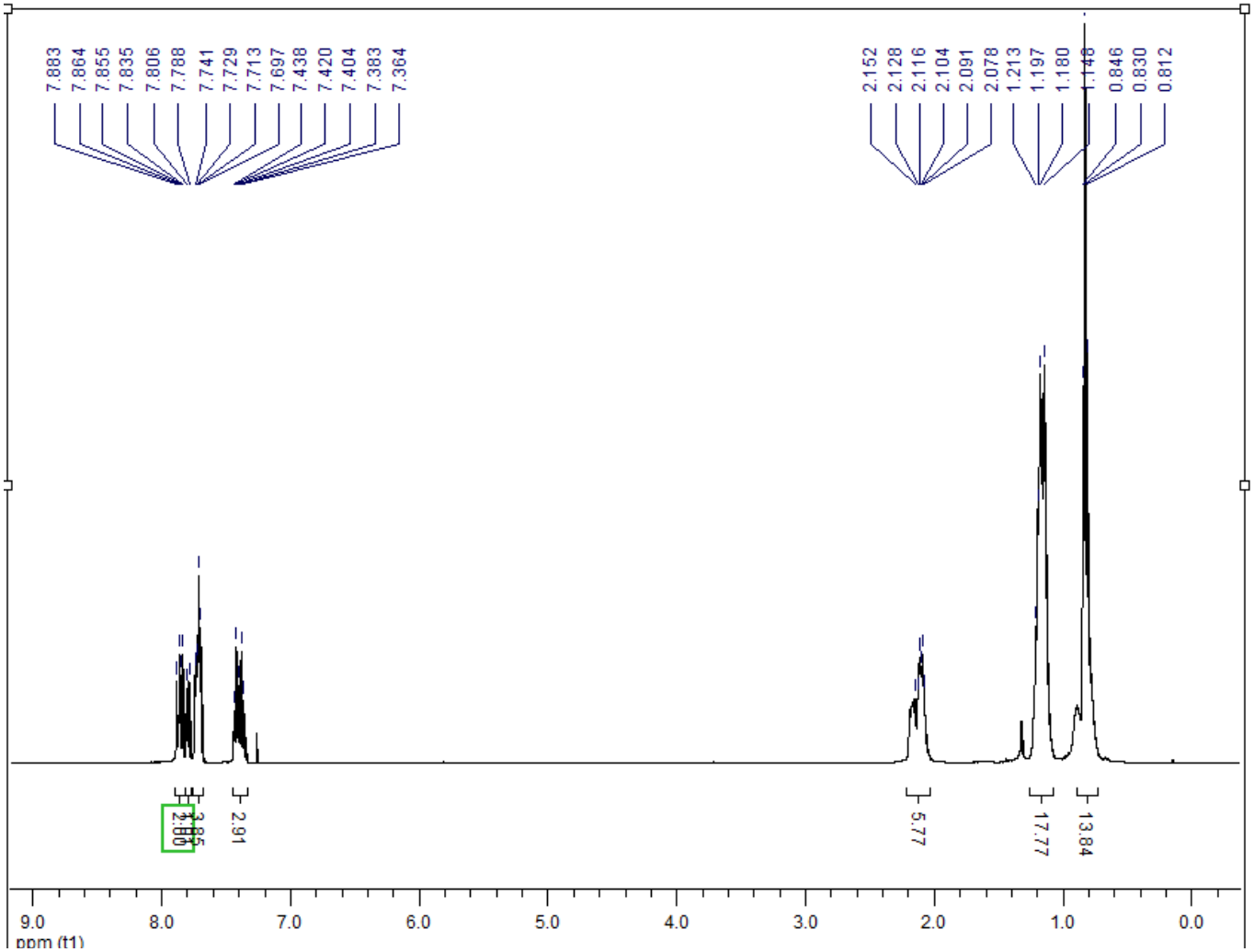

Figure 6. ^{1}H-NMR spectrum of **7** in chloroform-*d*.

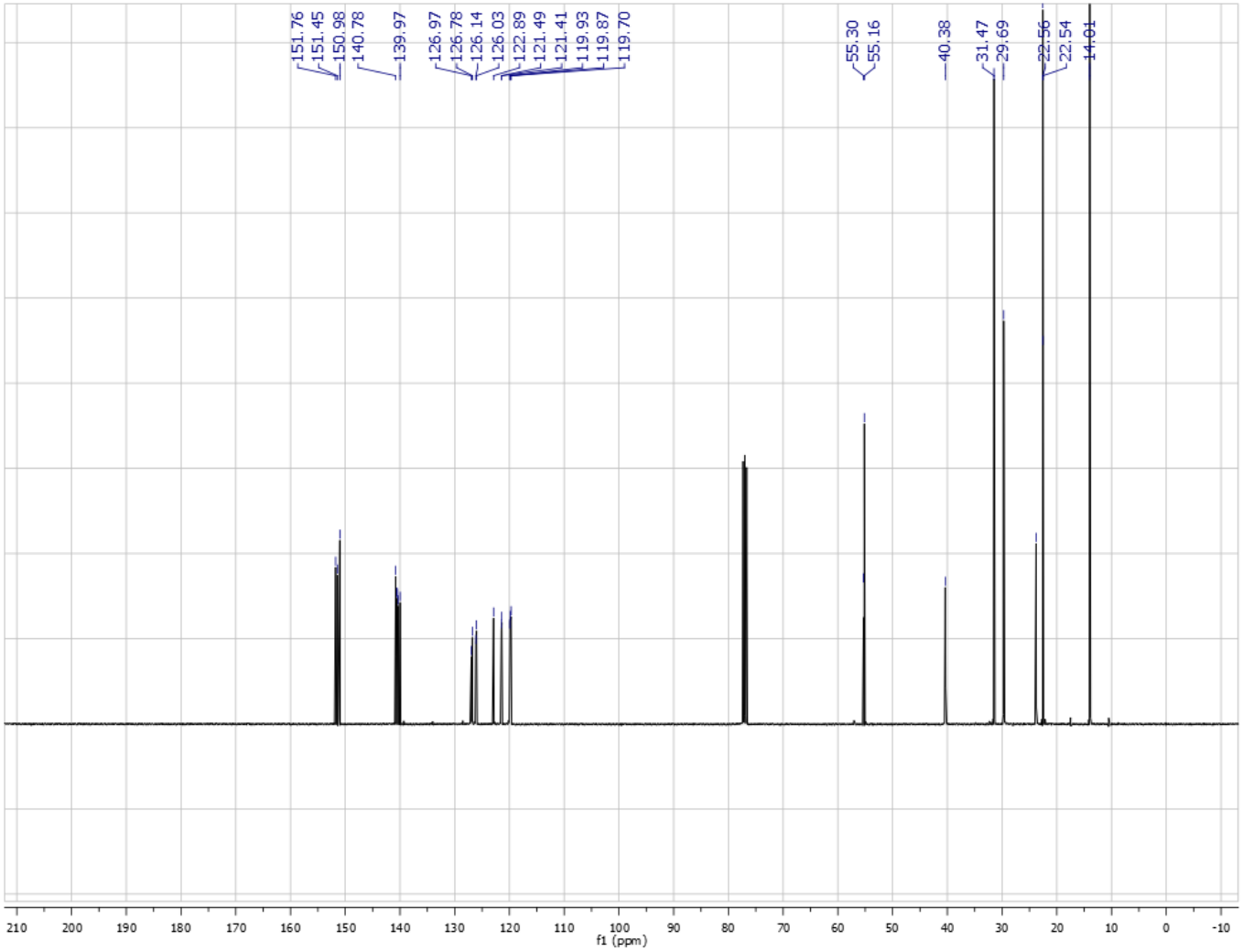

Figure 7. ^{13}C-NMR spectrum of **7** in chloroform-*d*.

Photophysical Characterization of 2

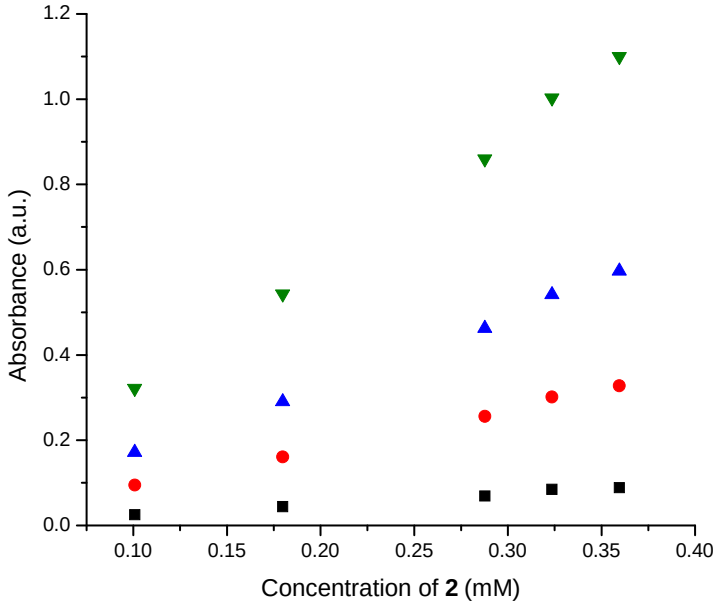

Figure 8. Absorbance of **2** at 378 nm (■), 325nm (●), 309 nm (▲) and 297 nm (▼) in dichloromethane as a function of concentration.

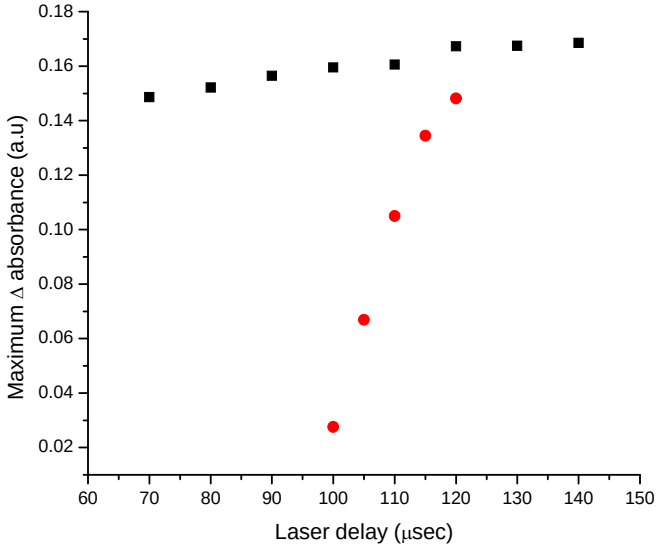

Figure 9. Variation of the maximum Δ absorbance of **2** as a function of laser power at 650 nm (■) and 525 nm (●).

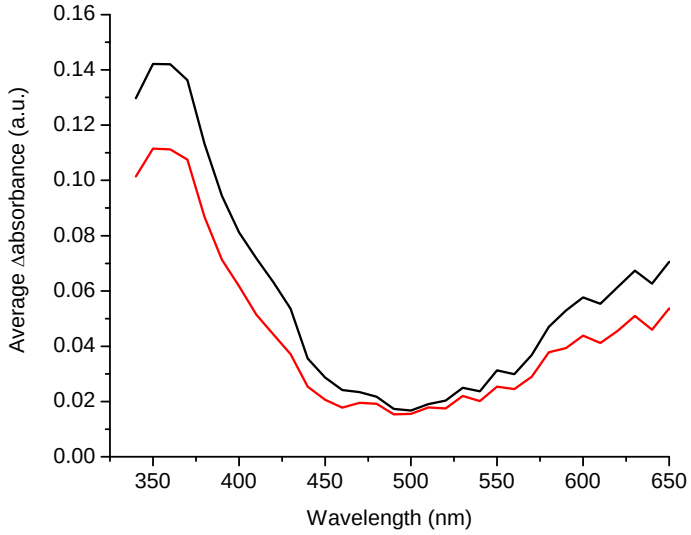

Figure 10. Transient absorbance spectra of **2** measured in dichloromethane 1.04 (▬) and 1.71 (▬) μs after the laser pulse at 355 nm.

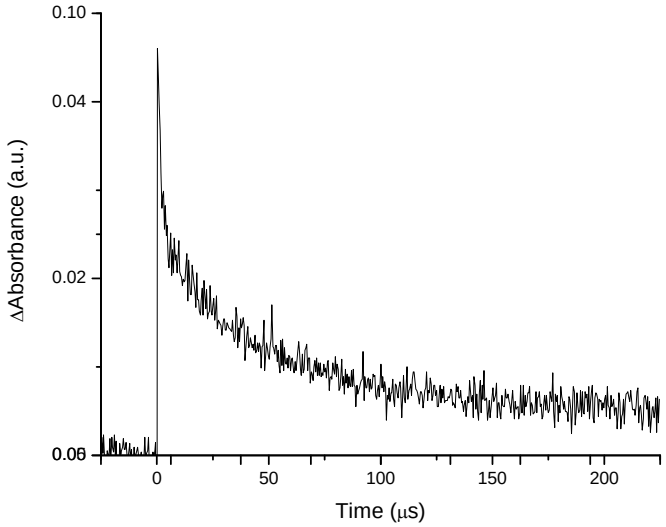

Figure 11. Kinetic decay of **2** measured at 350 nm.

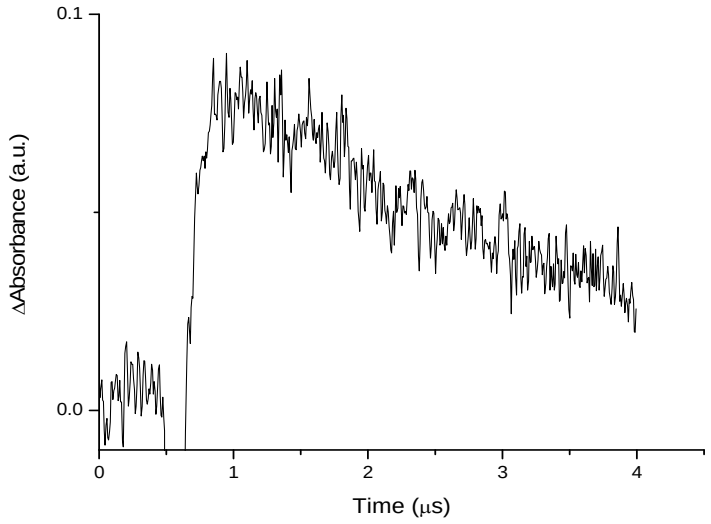

Figure 12. Kinetic decay of **2** measured at 650 nm.

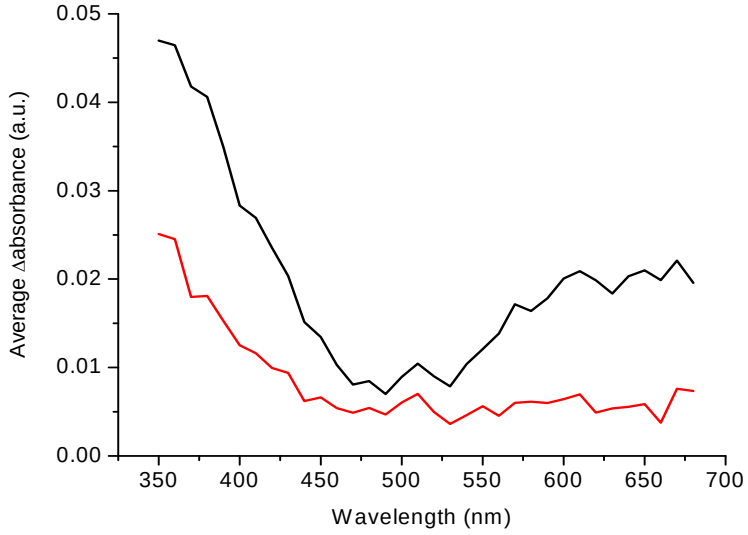

Figure 13. Transient absorbance spectra of **2** in dichloromethane measured 1.04 (▬) and 1.71 (▬) μs after the laser pulse.

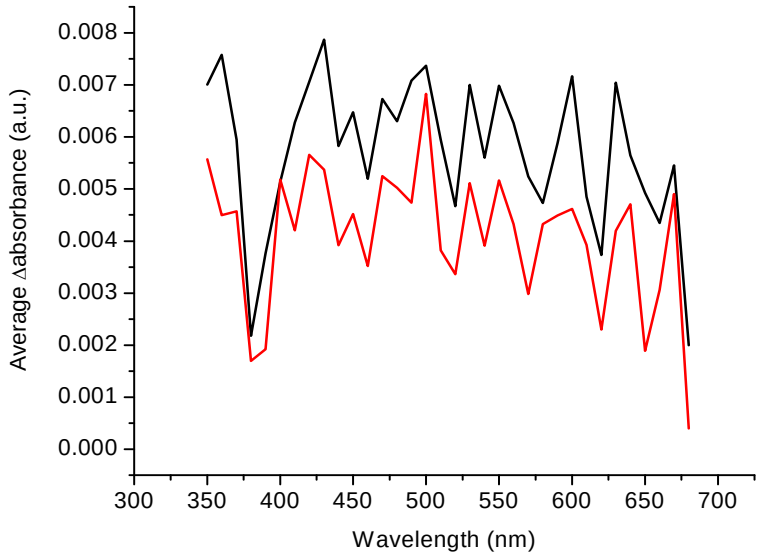

Figure 14. Transient absorbance spectra of **2** measured in dichloromethane in the presence of 1,4-cyclohexadiene 1.04 (—) and 1.71 (—) μs after the laser pulse.

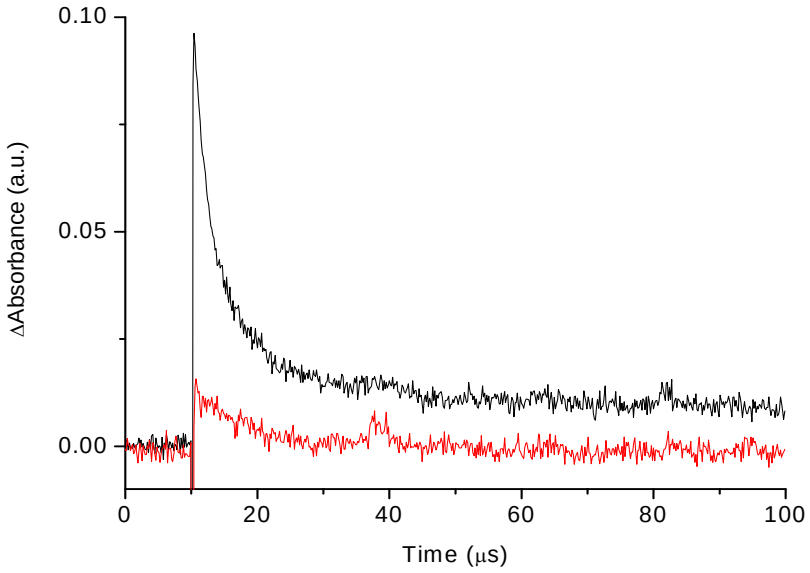

Figure 15. Kinetic decays of **2** measured at 350 nm in the absence (—) and presence (—) of 1,4 cyclohexadiene.

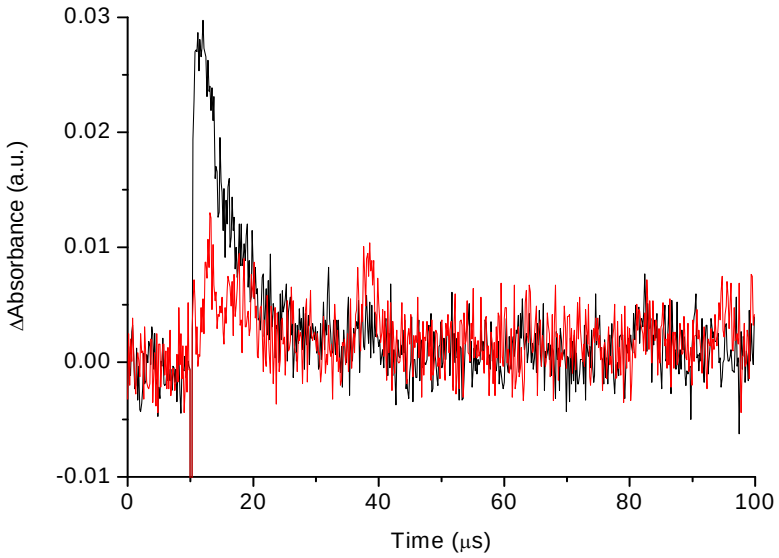

Figure 16. Kinetic decays of **2** measured at 650 nm in the absence (—) and presence (—) of 1,4 cyclohexadiene.

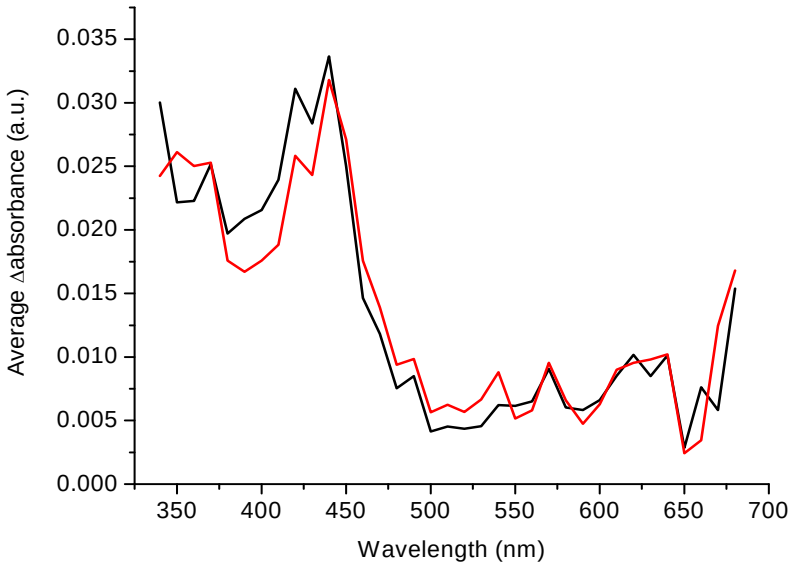

Figure 17. Transient absorbance spectra of **2** in 1:1 methanol: dichloromethane measured 1.04 (—) and 1.71 (—) μs after the laser pulse.

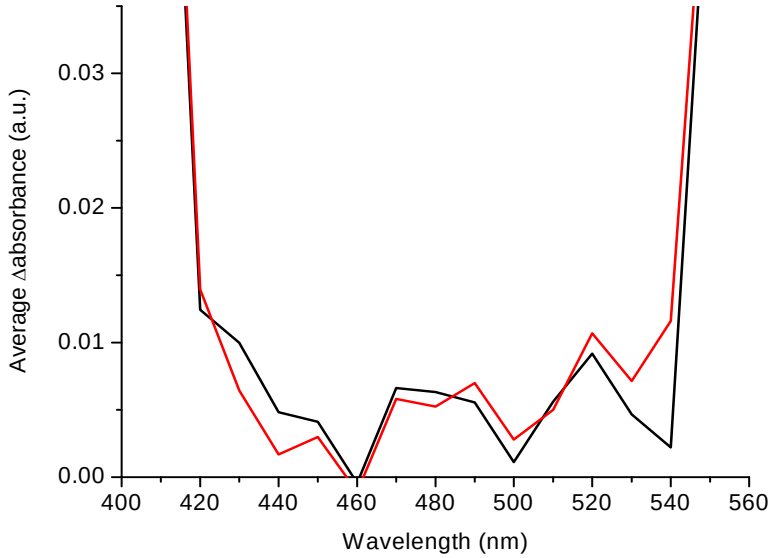

Figure 18. Transient absorbance spectra of **2** measured in 1:1 methanol: dichloromethane in the presence of methylviologen 1.04 (—) and 1.71 (—) μs after the laser pulse.

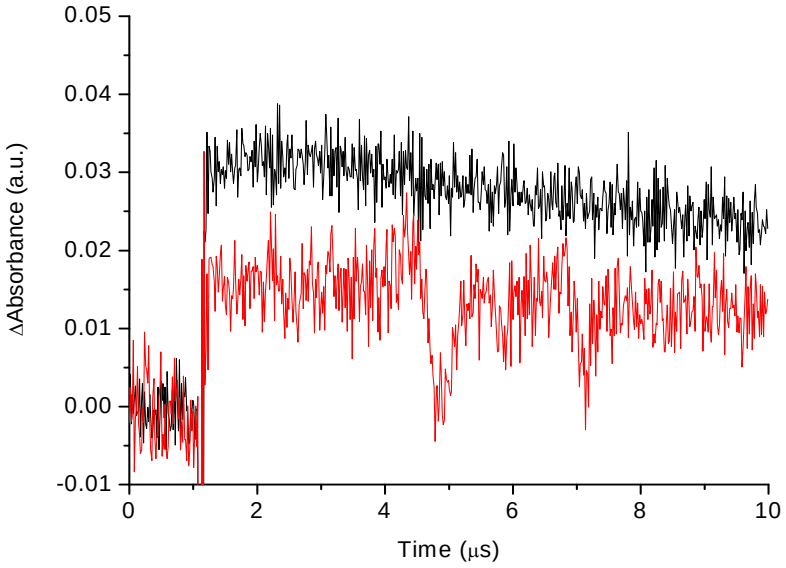

Figure 19. Kinetic decays of **2** measured at 440 nm in the absence (—) and presence (—) of methylviologen.

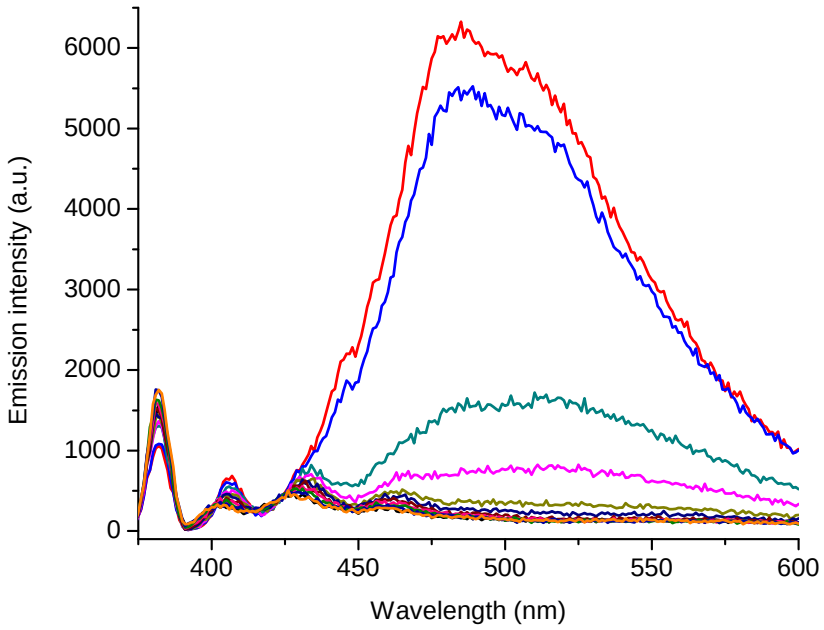

Figure 20. Fluorescence of **2** from 300 K (—) to 90 K (—) in deaerated 4:1 ethanol:methanol mixture.

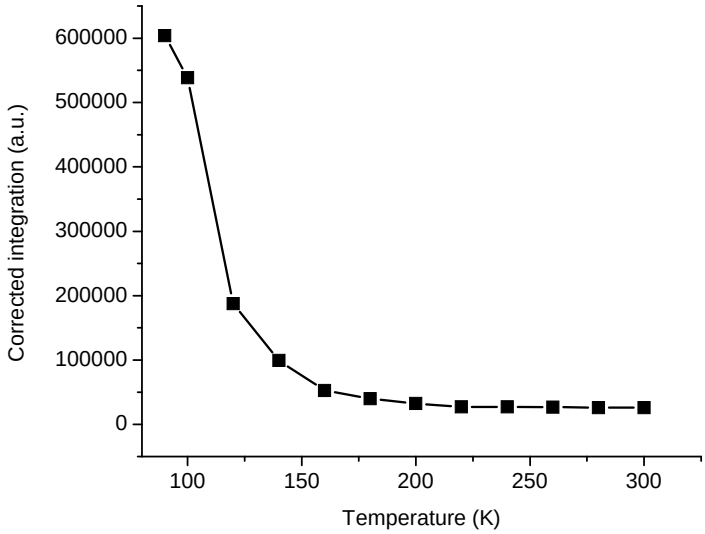

Figure 21. Corrected emission integration between 425 and 600 nm of **2** as a function of temperature.

Photophysical Characterization of 3

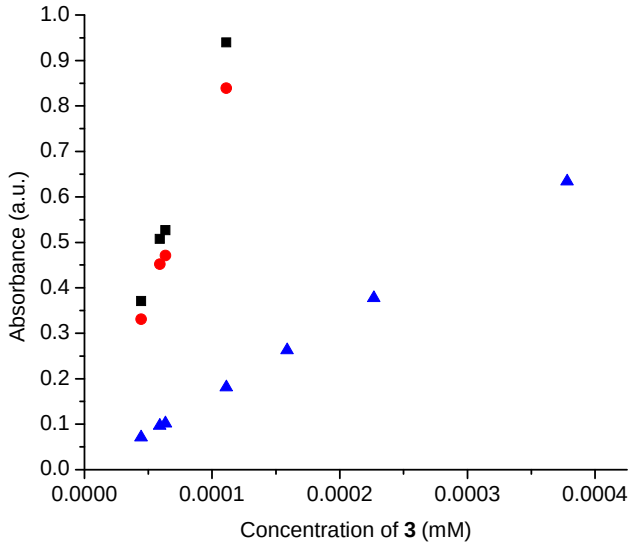

Figure 22. Absorbance of **3** at 300 nm (■), 288 nm (●) and 388 nm (▲) in dichloromethane as a function of concentration.

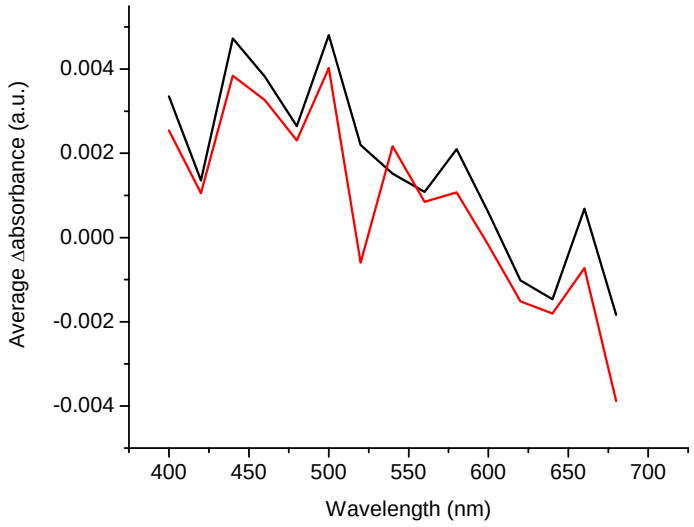

Figure 23. Transient absorbance spectra of **3** measured in dichloromethane 101.4 (—) and 161.3 (—) μs after the laser pulse at 355 nm.

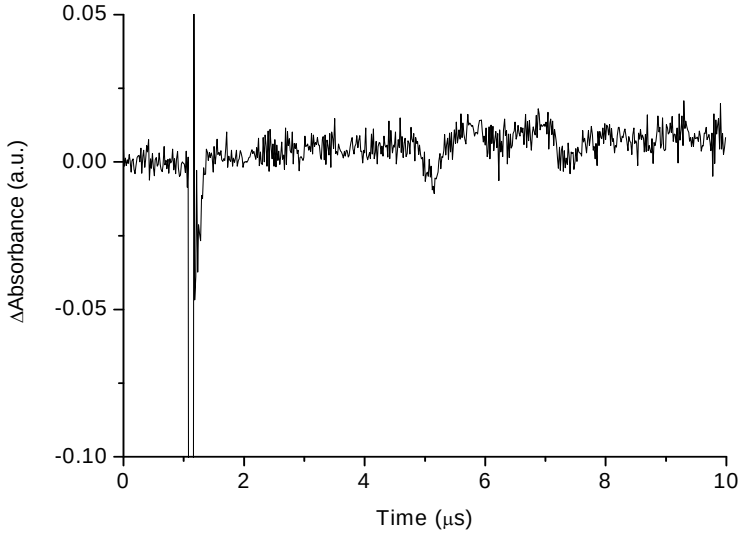

Figure 24. Kinetic decay of **3** measured at 530 nm.

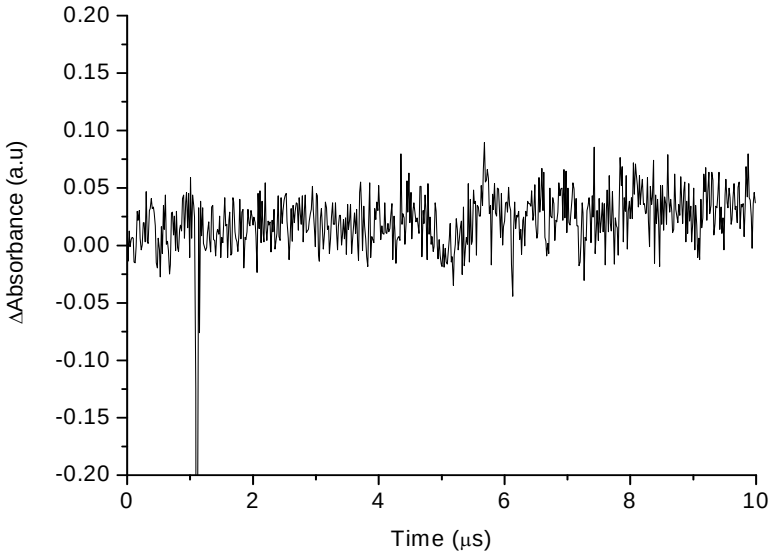

Figure 25. Kinetic decay of **3** measured at 700 nm.

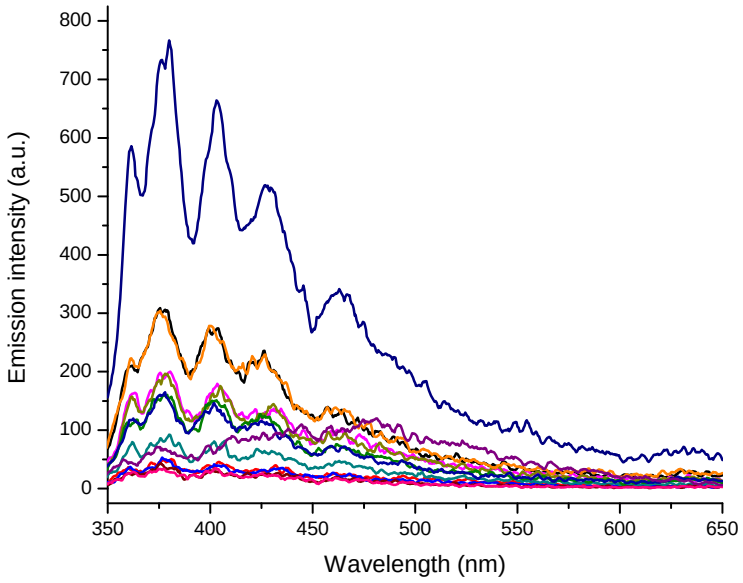

Figure 26. Fluorescence of **3** from 300 K (▬) to 90 K (▬) in deaerated 4:1 ethanol:methanol mixture.

Photophysical Characterization of 4

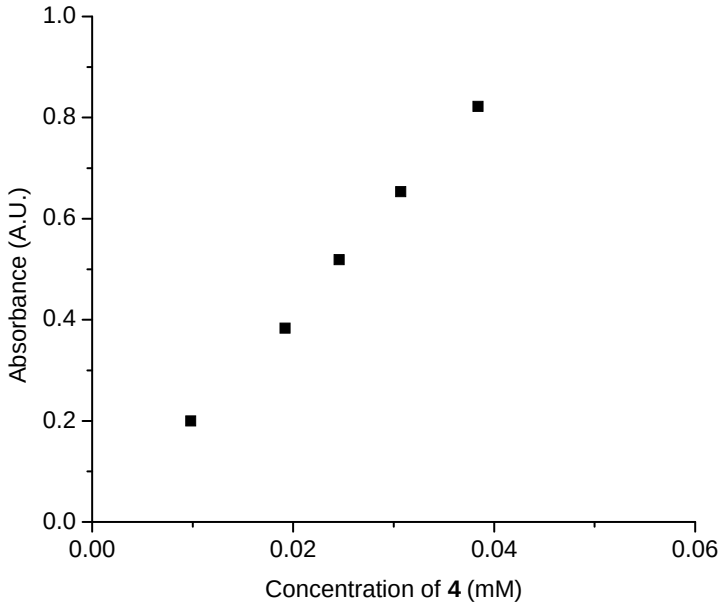

Figure 27. Absorbance of **4** at 330 nm (■) in dichloromethane as a function of concentration.

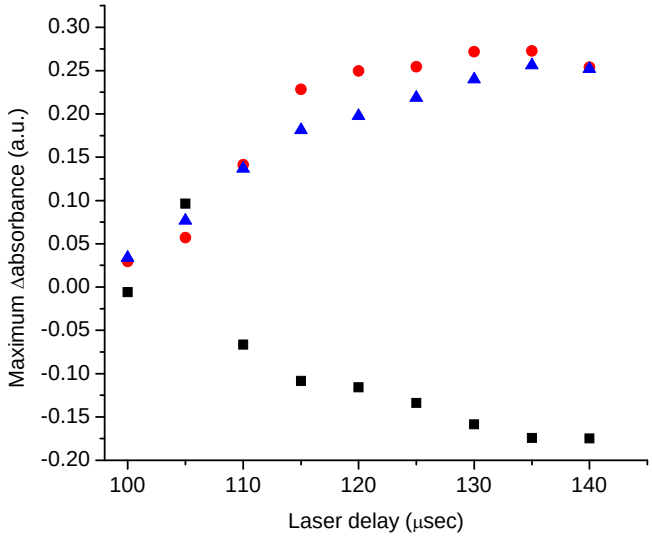

Figure 28. Variation of the maximum Δ absorbance of **2** as a function of laser power at 330 nm (■), 520 nm (●) and 525 nm (▲).

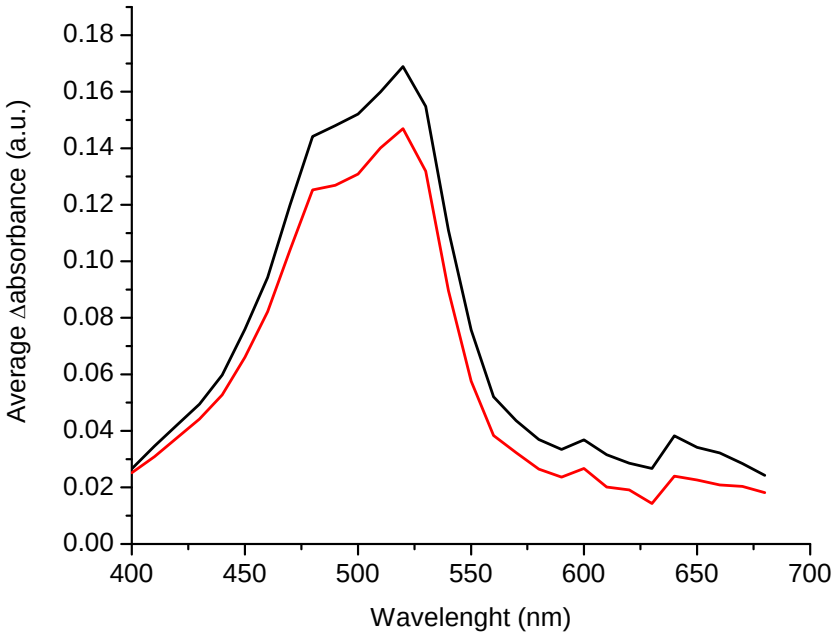

Figure 29. Transient absorbance spectra of **4** measured in dichloromethane 5.31 (▬) and 8.16 (▬) μs after the laser pulse at 355 nm.

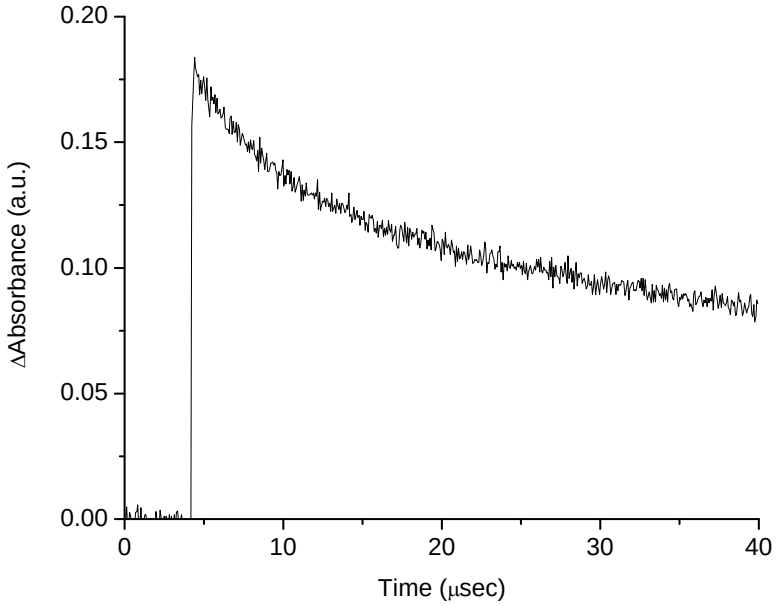

Figure 30. Kinetic decay of **4** measured at 520 nm.

Photophysical Characterization of 5.

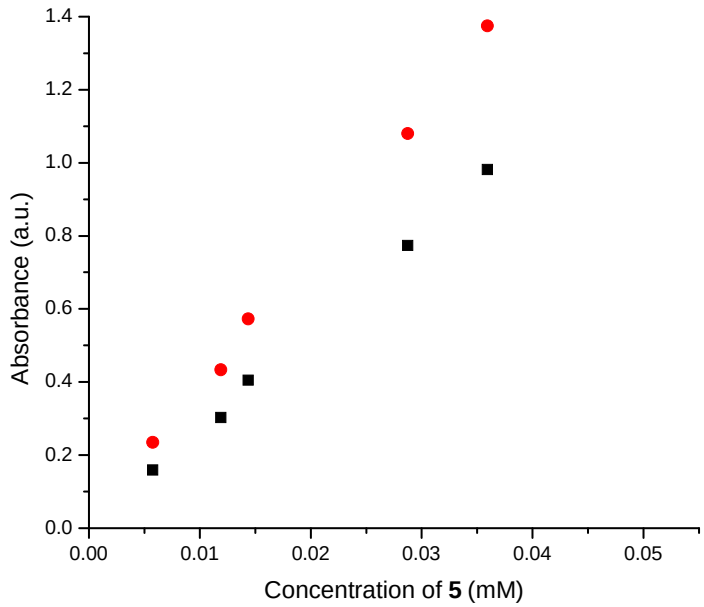

Figure 31. Absorbance of **5** at 330 nm (■) and 295 nm (●) in dichloromethane as a function of concentration.

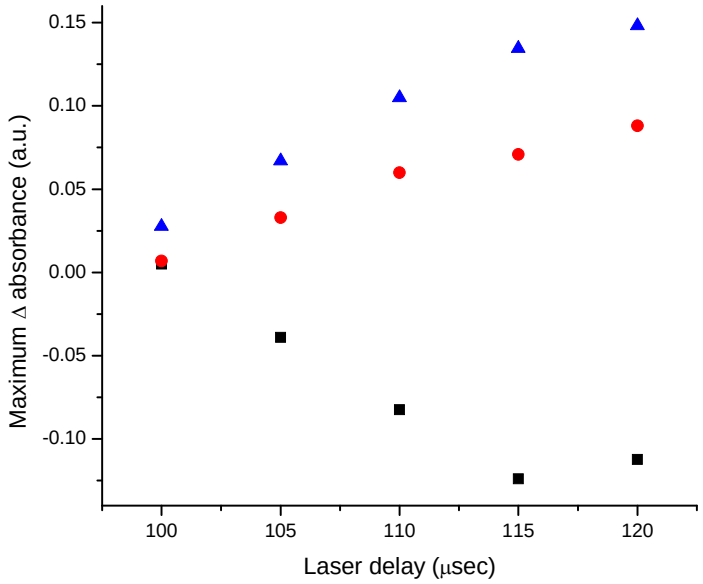

Figure 32. Variation of the maximum Δ absorbance of **5** as a function of laser power at 295 nm (■), 410 nm (●) and 525 nm (▲).

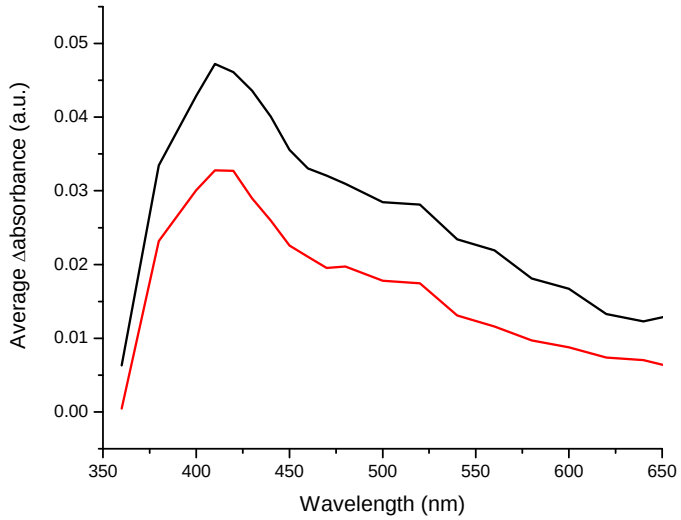

Figure 33. Transient absorbance spectra of **5** in dichloromethane measured 28.2 (—) and 39.5 (—) μs after the laser pulse.

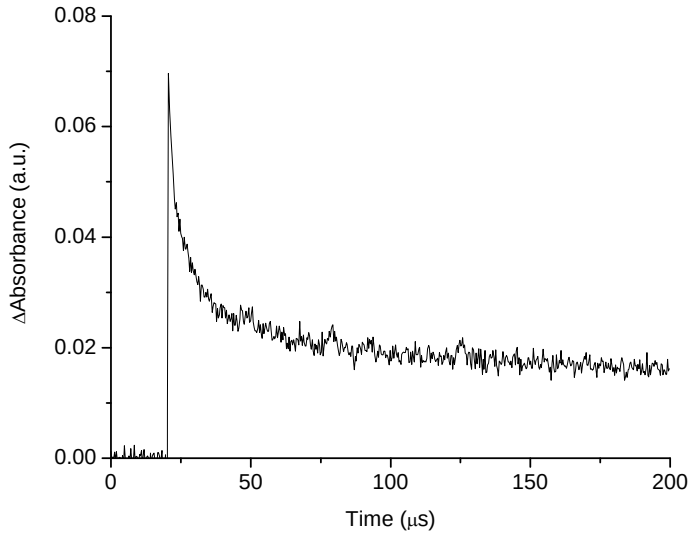

Figure 34. Kinetic decay of **5** measured at 410 nm.

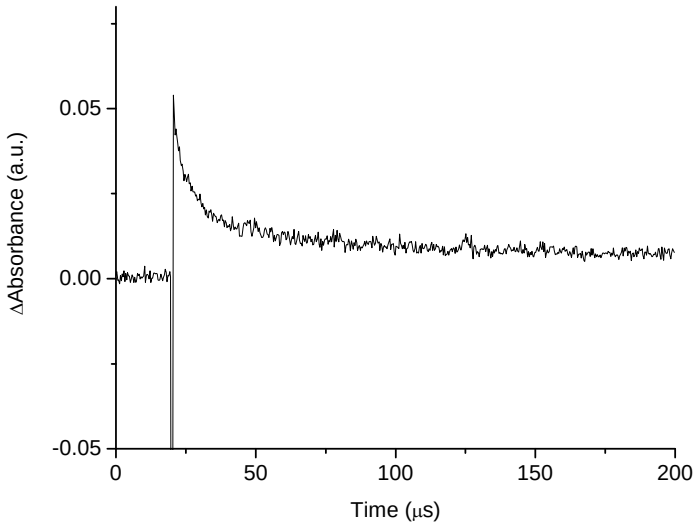

Figure 35. Kinetic decay of **5** measured at 520 nm.

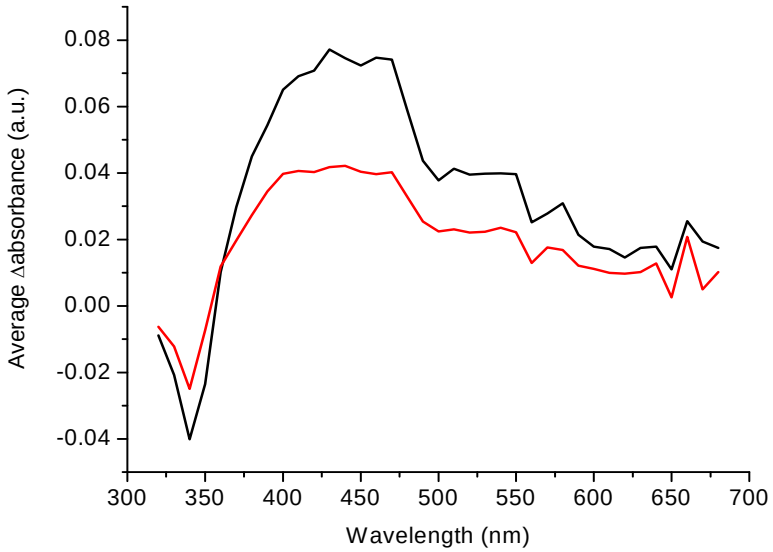

Figure 36. Transient absorbance spectra of **5** in 1:1 methanol: dichloromethane measured 28.2 (▬) and 39.5 (▬) μs after the laser pulse.

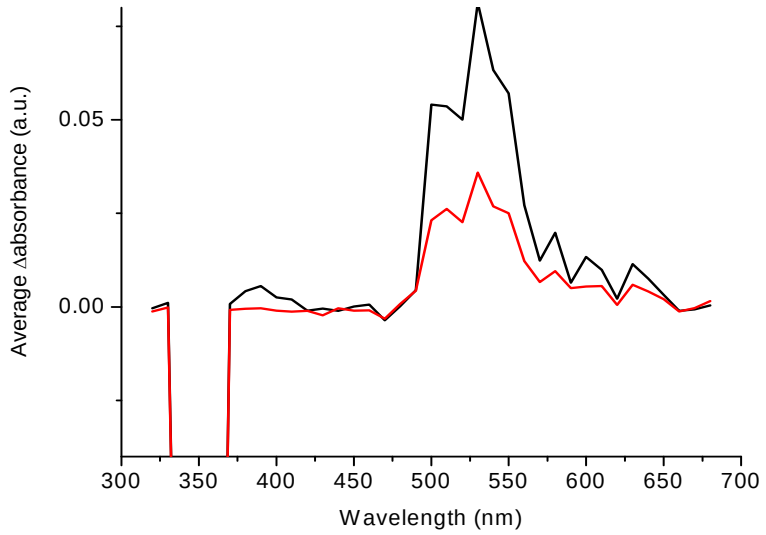

Figure 37. Transient absorbance spectra of **5** measured in 1:1 methanol: dichloromethane in the presence of 1,3-cyclohexadiene 28.2 (—) and 39.5 (—) μs after the laser pulse.

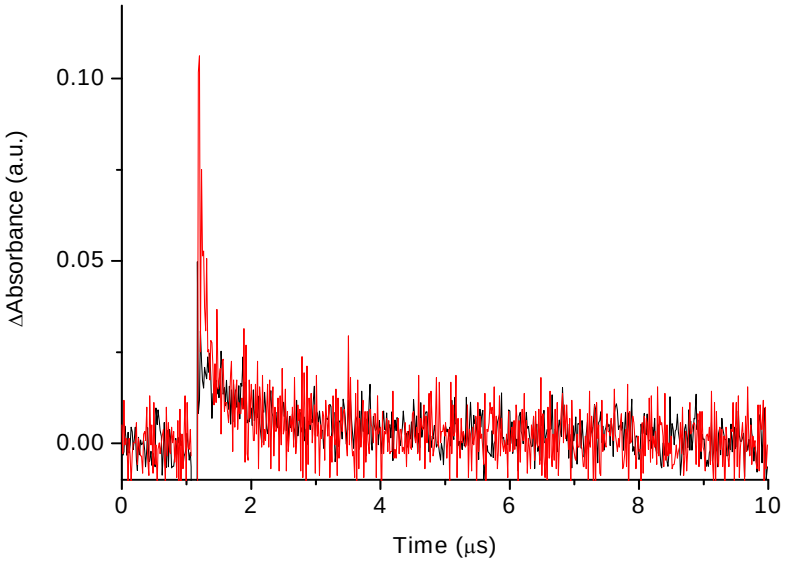

Figure 38. Kinetic decays of **5** measured at 610 nm in the absence (—) and presence (—) of 1,3-cyclohexadiene.

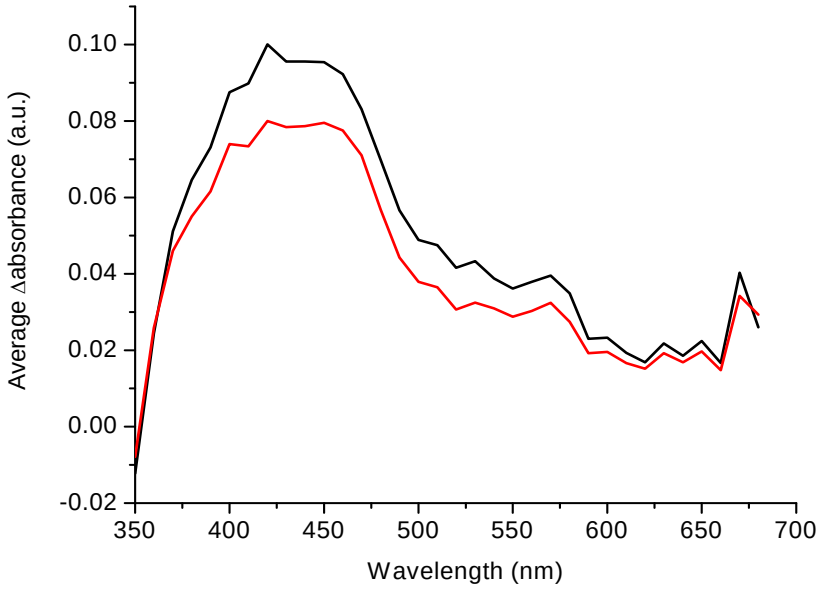

Figure 39. Transient absorbance spectra of **5** in 1:1 methanol: dichloromethane measured 28.2 (—) and 39.5 (—) μs after the laser pulse.

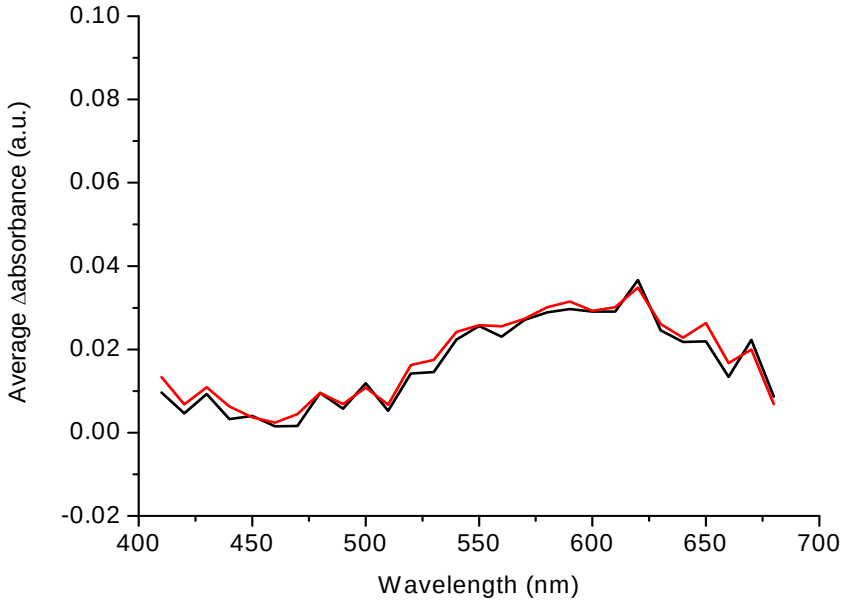

Figure 40. Transient absorbance spectra of **5** measured in 1:1 methanol: dichloromethane in the presence of methylviologen 28.2 (—) and 39.5 (—) μs after the laser pulse.

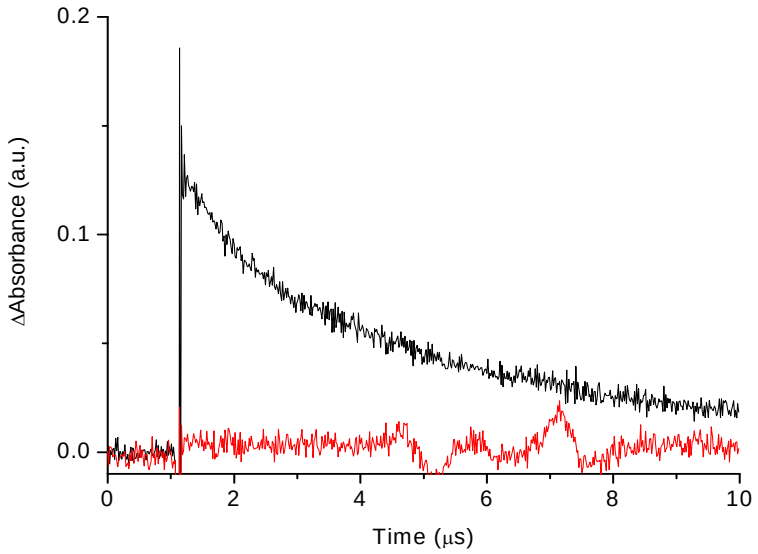

Figure 41. Kinetic decay of **5** measured at 440 nm in the absence (—) and presence (—) of methylviologen.

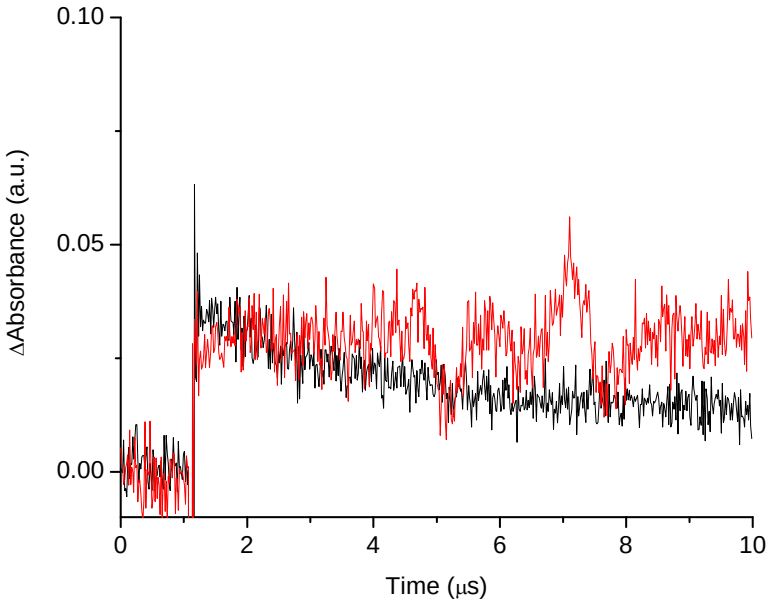

Figure 42. Kinetic decays of **5** measured at 570 nm in the absence (—) and presence (—) of methylviologen.

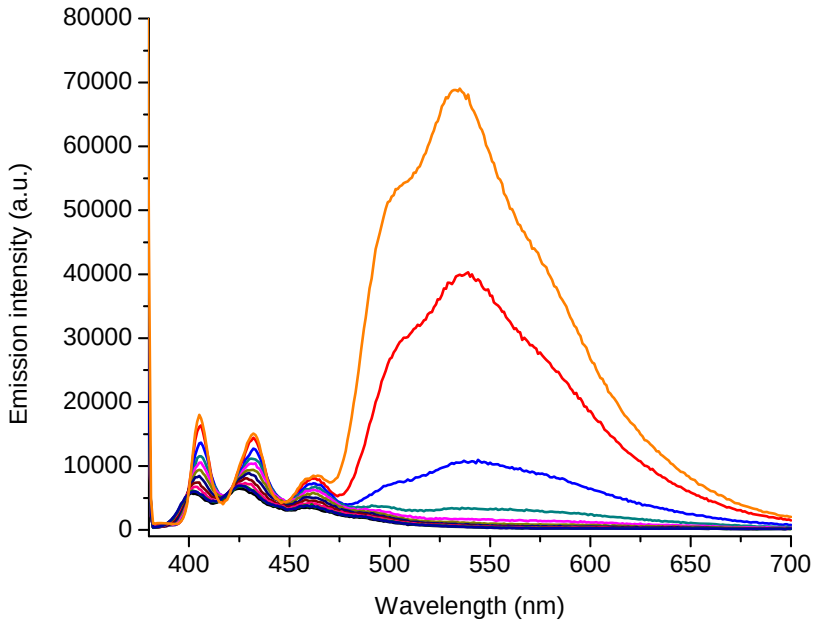

Figure 43. Fluorescence of **5** from 300 K (▬) to 90 K (▬) in deaerated 4:1 ethanol:methanol mixture.

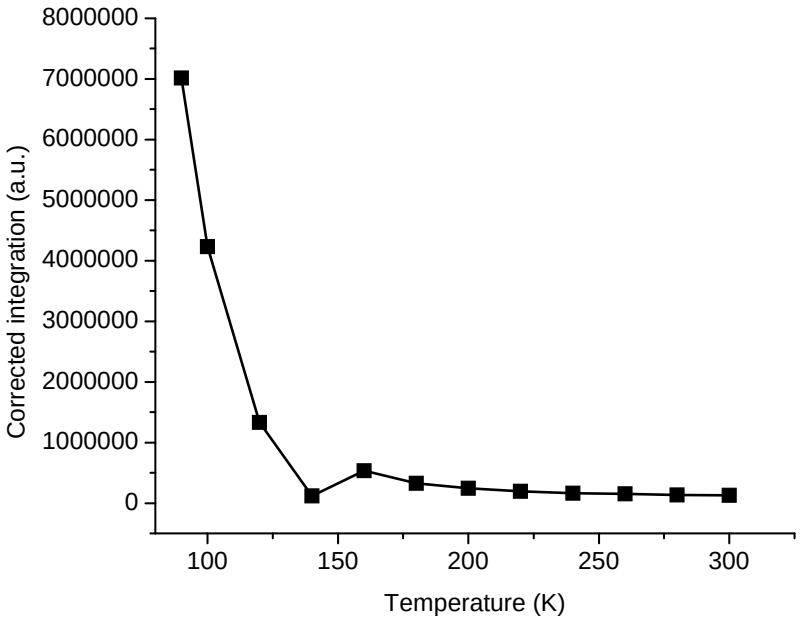

Figure 44. Corrected emission integration between 470 and 700 nm of **5** as a function of temperature.

Photophysical Characterization of 6.

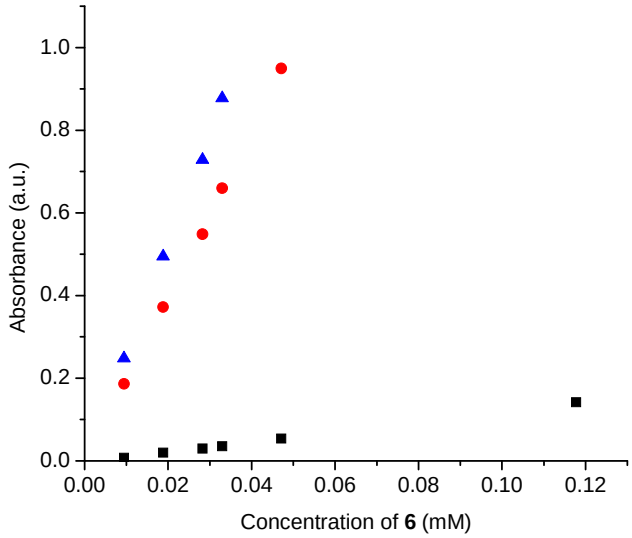

Figure 45. Absorbance of **6** at 424 nm (■), 325 nm (●) and 295 nm (▲) in dichloromethane as a function of concentration.

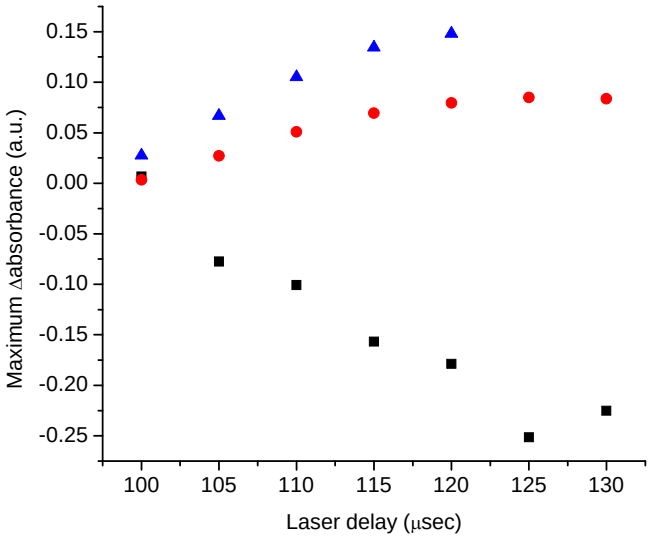

Figure 46. Variation of the maximum Δ absorbance of **6** as a function of laser power at 295 nm (■), 410 nm (●) and 525 nm (▲).

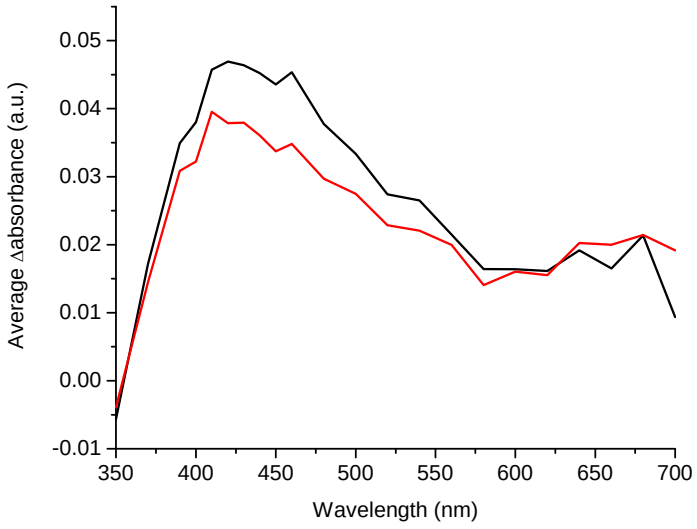

Figure 47. Transient absorbance spectra of **6** in dichloromethane measured 4.78 (▬) and 7.76 (▬) μs after the laser pulse.

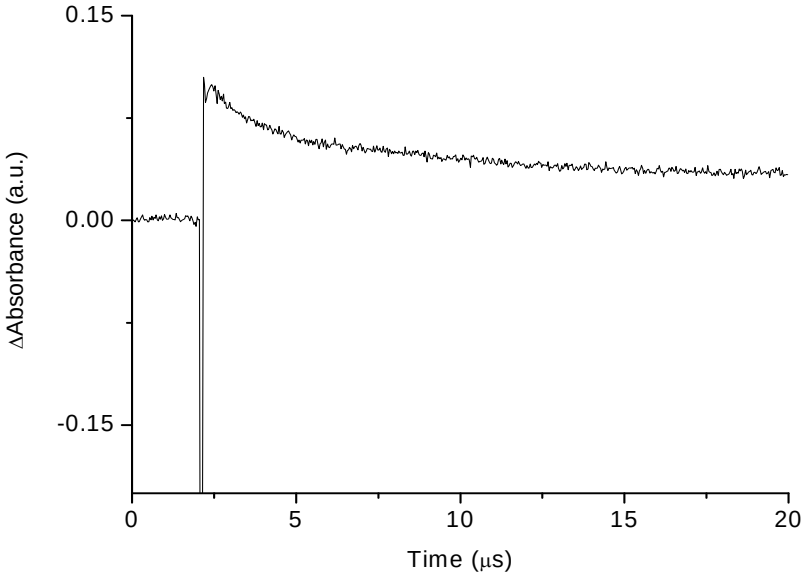

Figure 48. Kinetic decay of **6** measured at 410 nm.

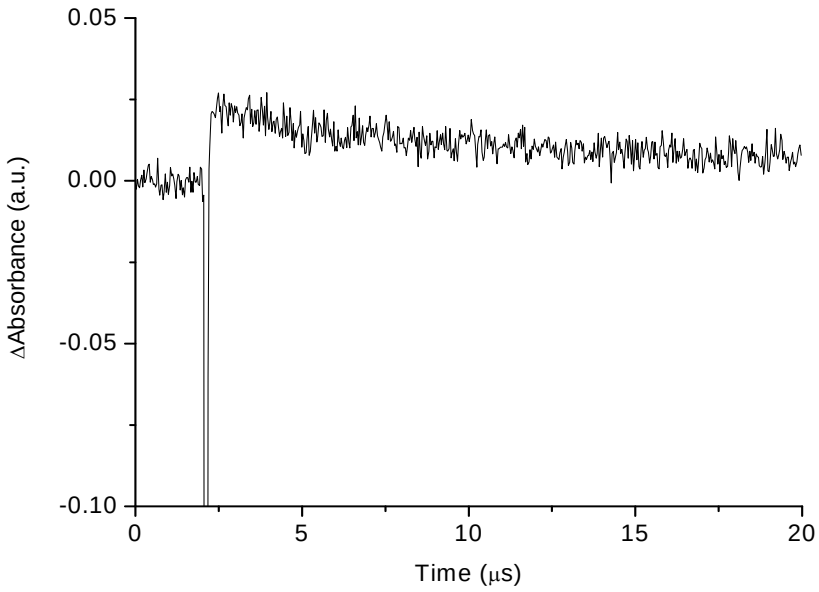

Figure 49. Kinetic decay of **6** measured at 620 nm.

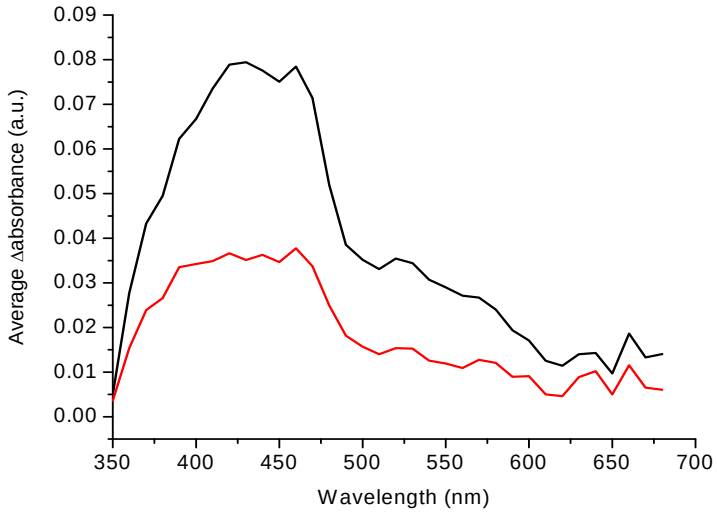

Figure 50. Transient absorbance spectra of **6** measured in 1:1 methanol: dichloromethane 4.78 (—) and 7.76 (—) μs after the laser pulse.

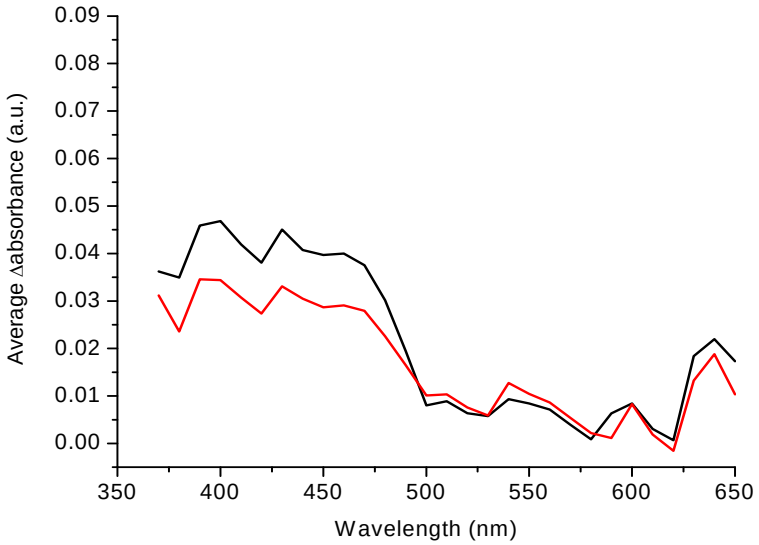

Figure 51. Transient absorbance spectra of **6** measured in 1:1 methanol: dichloromethane in the presence of 1,3-cyclohexadiene 4.78 (—) and 7.76 (—) μs after the laser pulse.

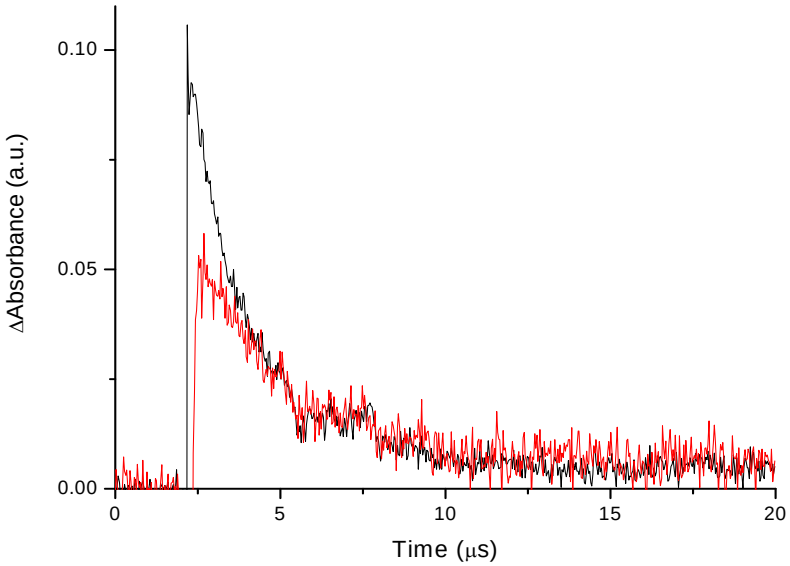

Figure 52. Kinetic decays of **6** measured at 430 nm in the absence (—) and presence (—) of 1,3-cyclohexadiene.

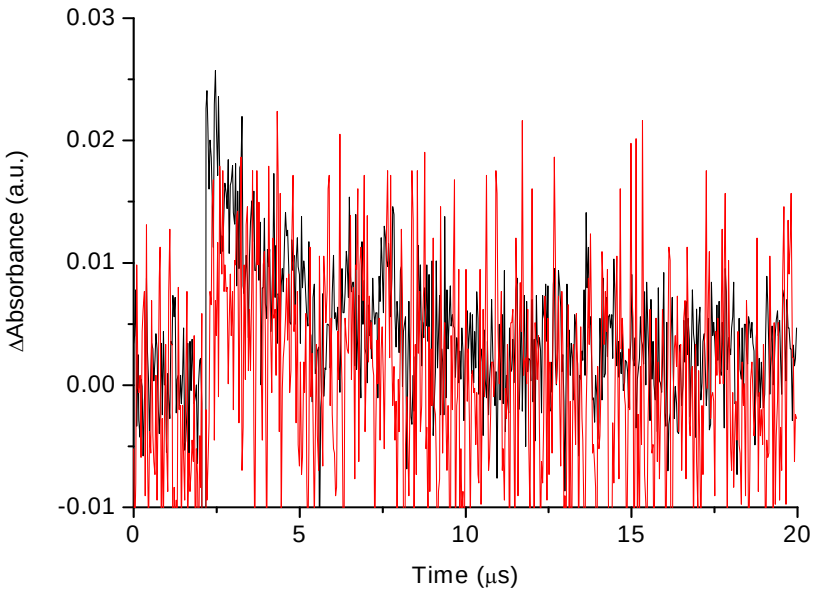

Figure 53. Kinetic decays of **6** measured at 650 nm in the absence (—) and presence (—) of 1,3-cyclohexadiene.

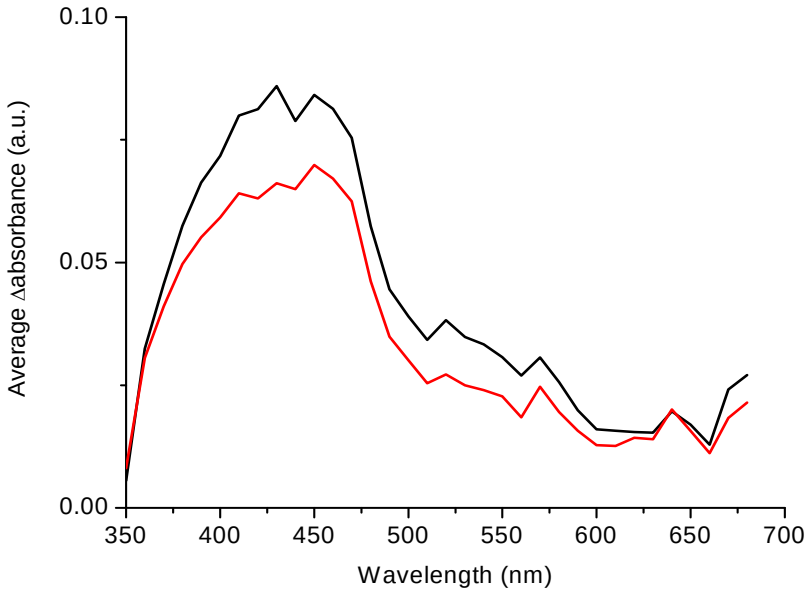

Figure 54. Transient absorbance spectra of **6** measured in 1:1 methanol: dichloromethane 4.78 (—) and 7.76 (—) μs after the laser pulse.

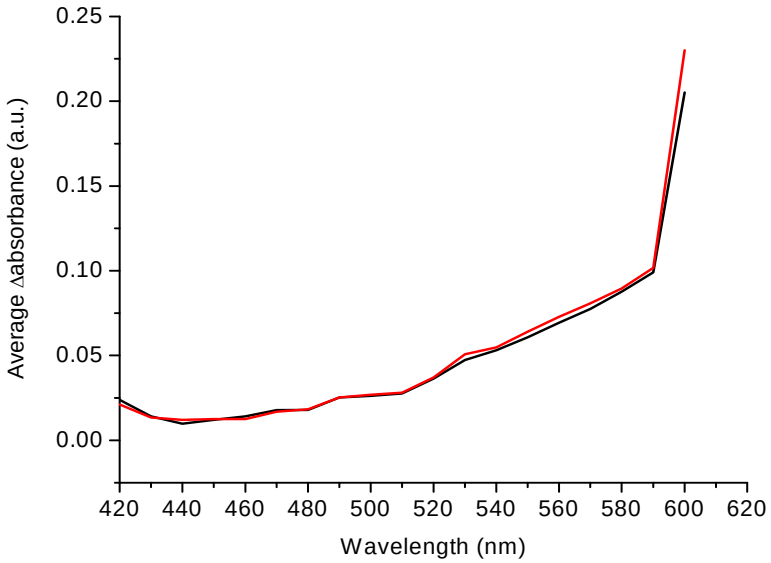

Figure 55. Transient absorbance spectra of **6** measured in 1:1 methanol: dichloromethane in the presence of methylviologen 4.78 (—) and 7.76 (—) μs after the laser pulse.

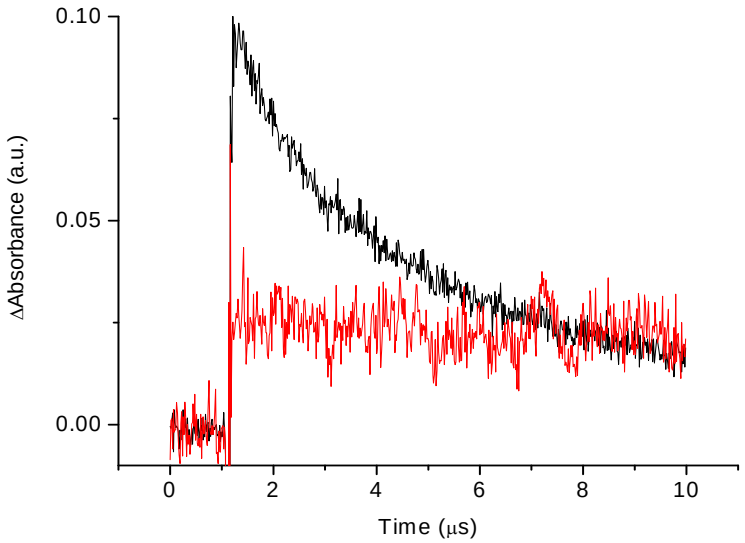

Figure 56. Kinetic decays of **6** measured at 430 nm in the absence (—) and presence (—) of methylviologen.

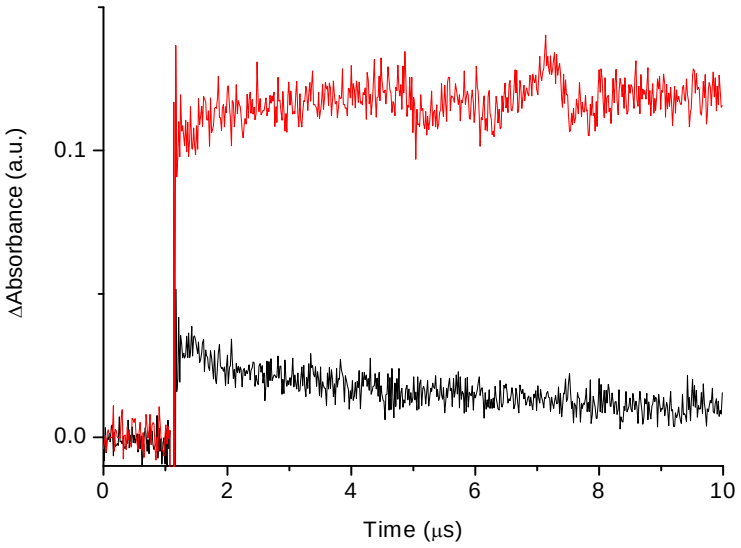

Figure 57. Kinetic decays of **6** measured at 560 nm in the absence (—) and presence (—) of methylviologen.

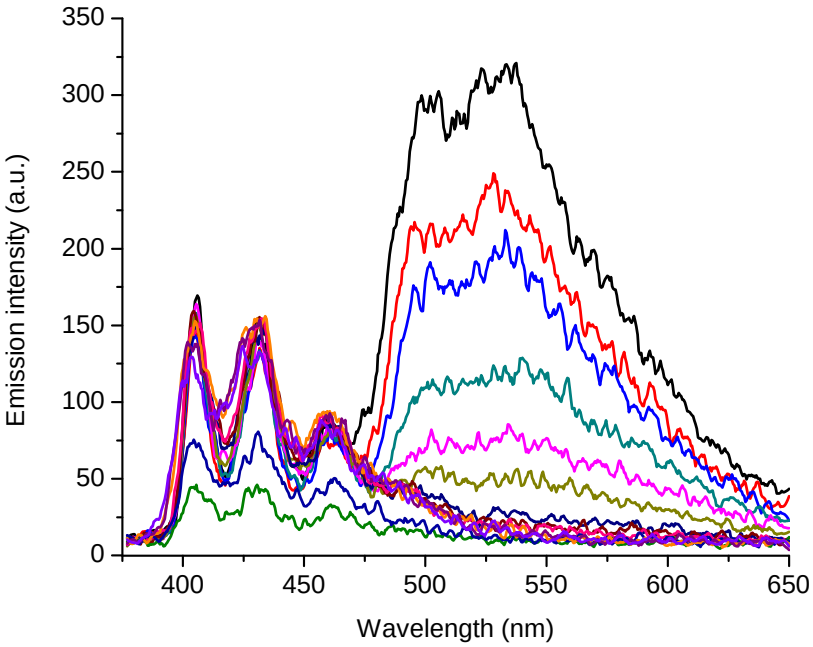

Figure 58. Fluorescence of **6** from 300 K (—) to 90 K (—) in deaerated 4:1 ethanol:methanol mixture.

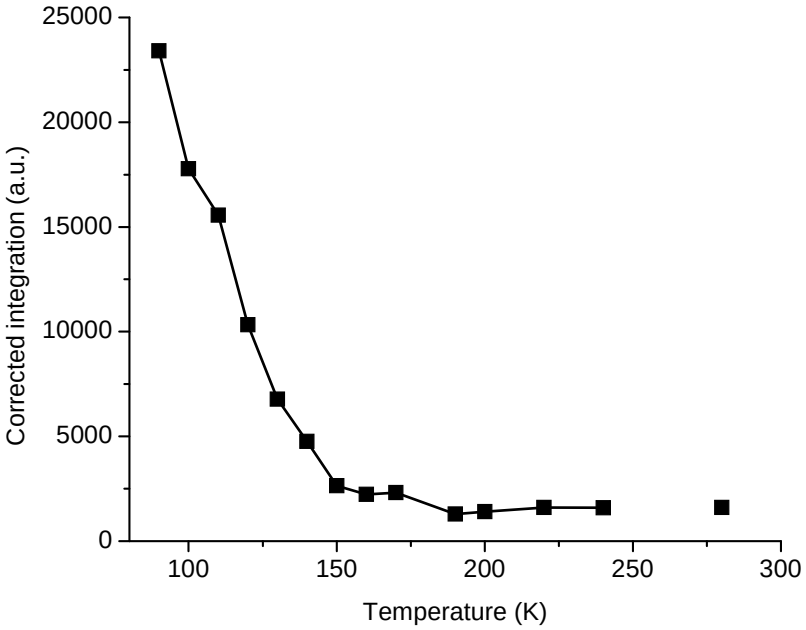

Figure 59. Corrected emission integration between 450 and 650 nm of **6** as a function of temperature.

Photophysical Characterization of 7

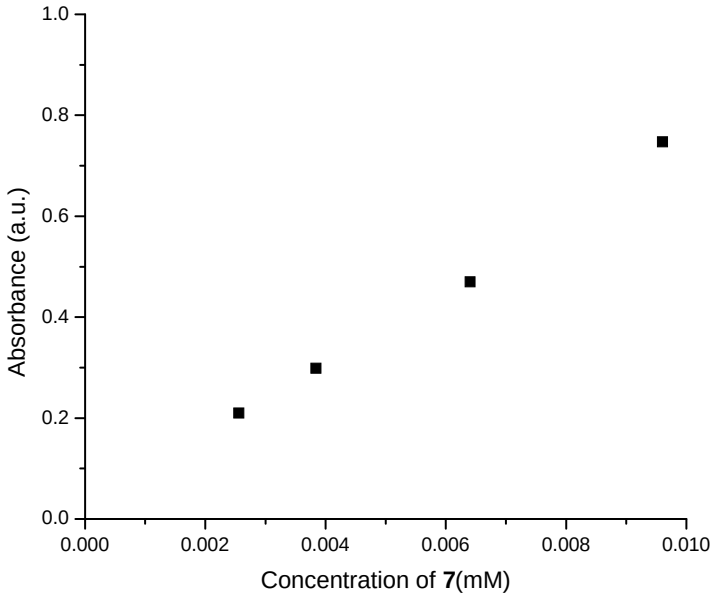

Figure 60. Absorbance of **6** at 352 nm (■) in dichloromethane as a function of concentration.

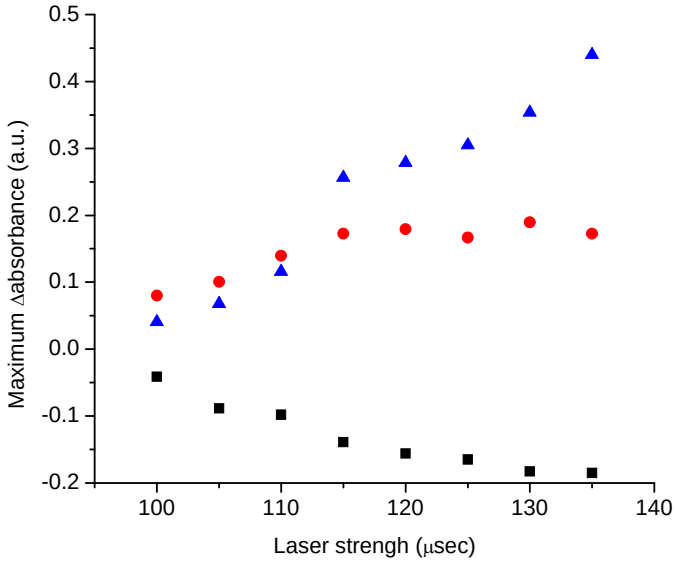

Figure 61. Variation of the maximum Δ absorbance of **7** as a function of laser power at 352 nm (■), 480 nm (●) and 525 nm (▲).

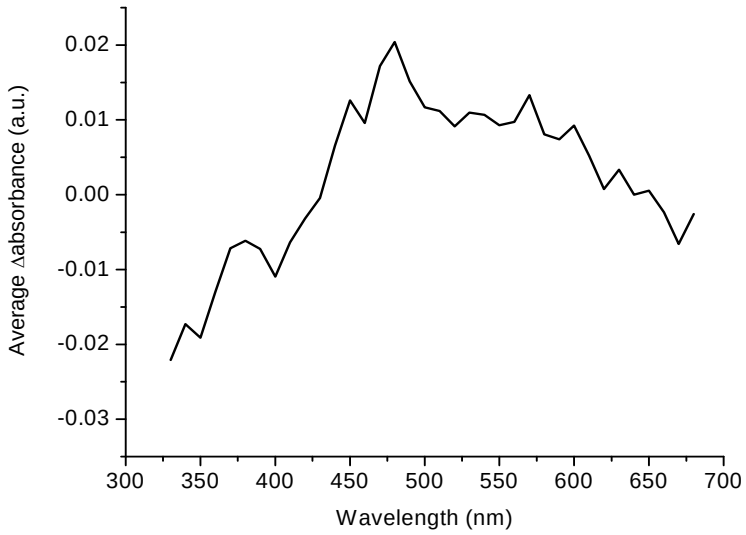

Figure 62. Transient absorbance spectra of **7** in dichloromethane measured 1.48 (▬) μs after the laser pulse.

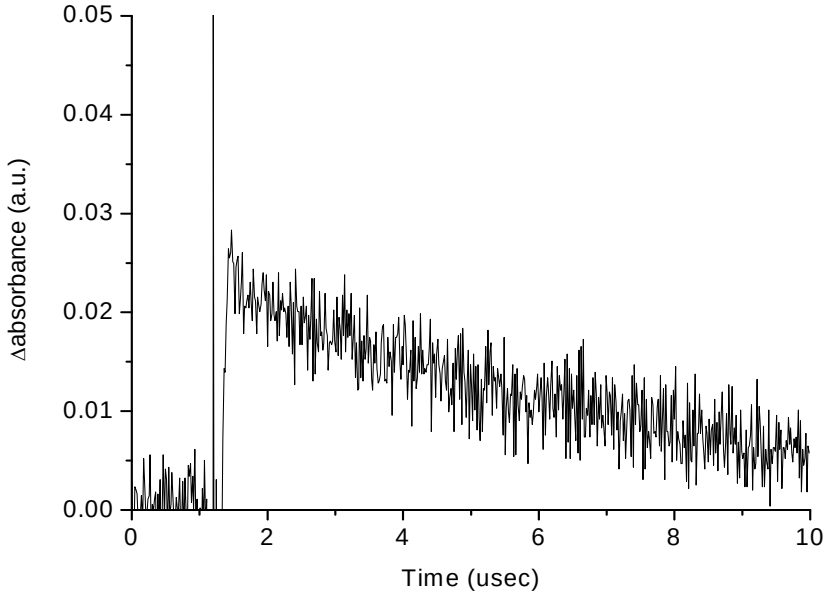

Figure 63. Kinetic decay of **7** measured at 480 nm.

Photophysical Characterization of 8

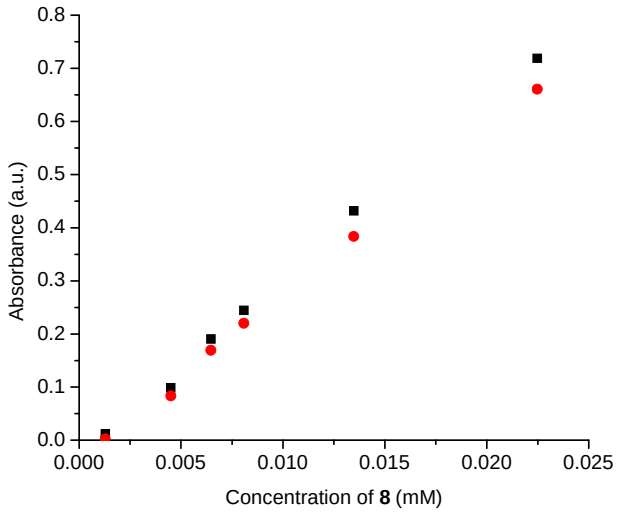

Figure 64. Absorbance of **8** at 350 nm (■) and 310 nm (●) in dichloromethane as a function of concentration.

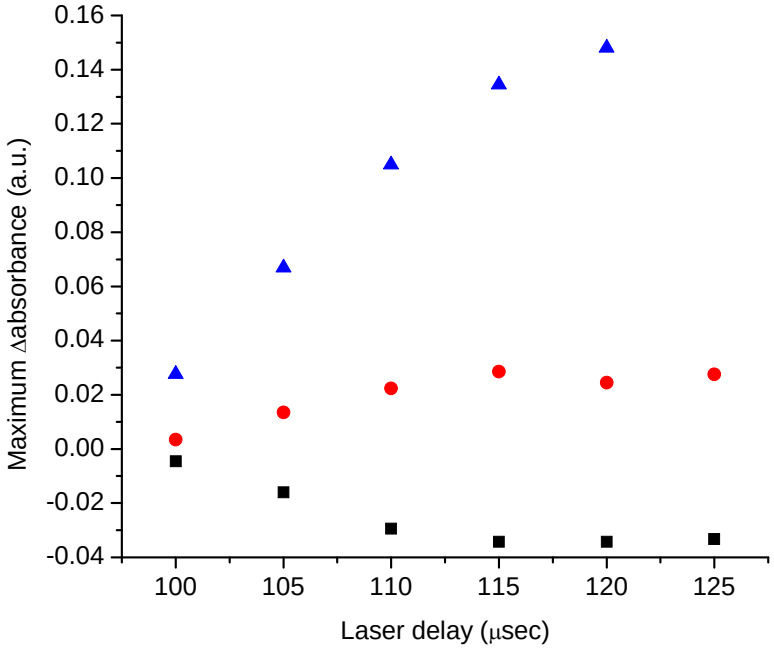

Figure 65. Variation of the maximum Δ absorbance of **8** as a function of laser power at 310 nm (■), 440 nm (●) and 525 nm (▲).

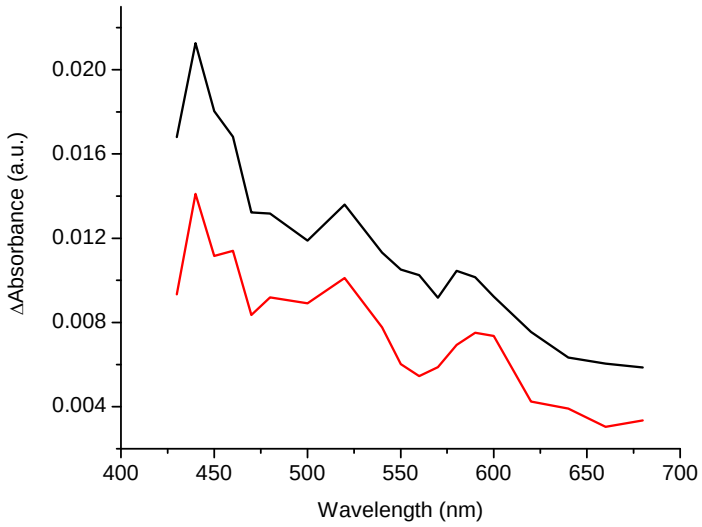

Figure 66. Transient absorbance spectra of **8** in dichloromethane measured 62.4 (—) and 107.8 (—) μs after the laser pulse.

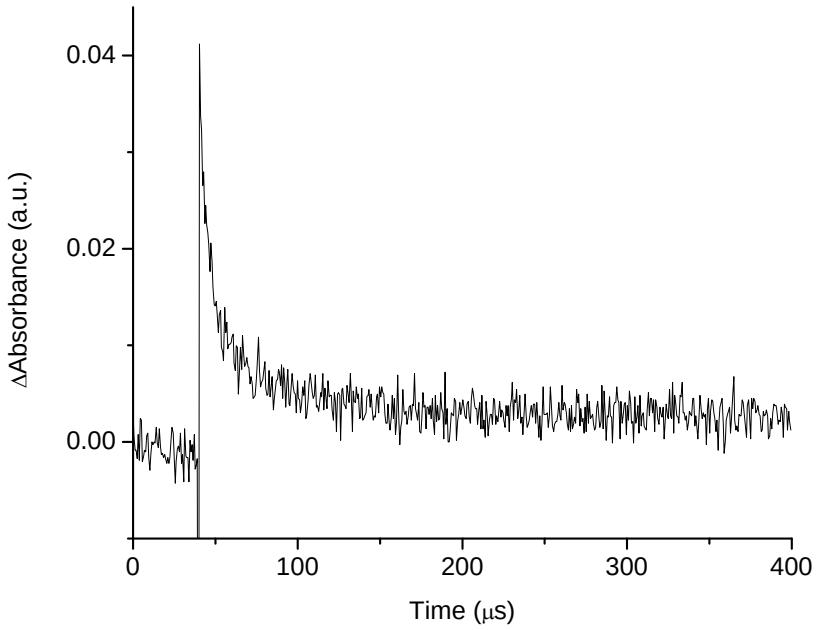

Figure 67. Kinetic decay of **8** measured at 450 nm.

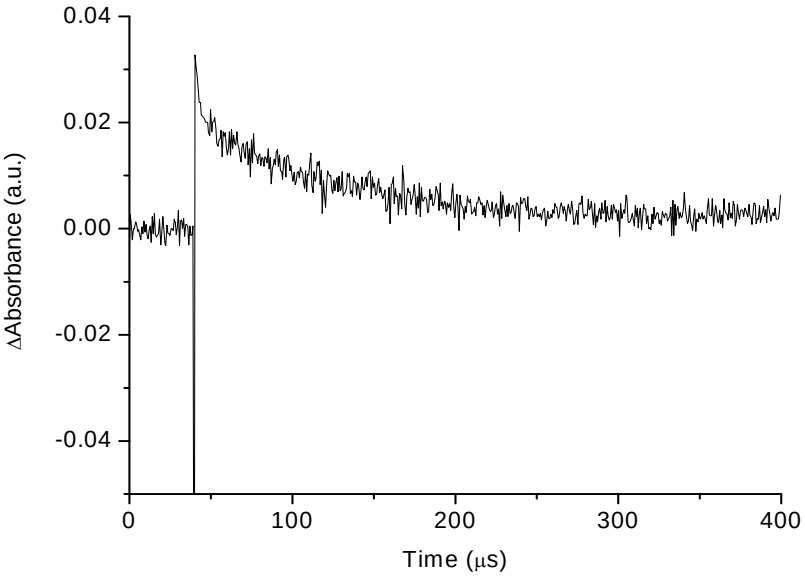

Figure 68. Kinetic decay of **8** measured at 580 nm.

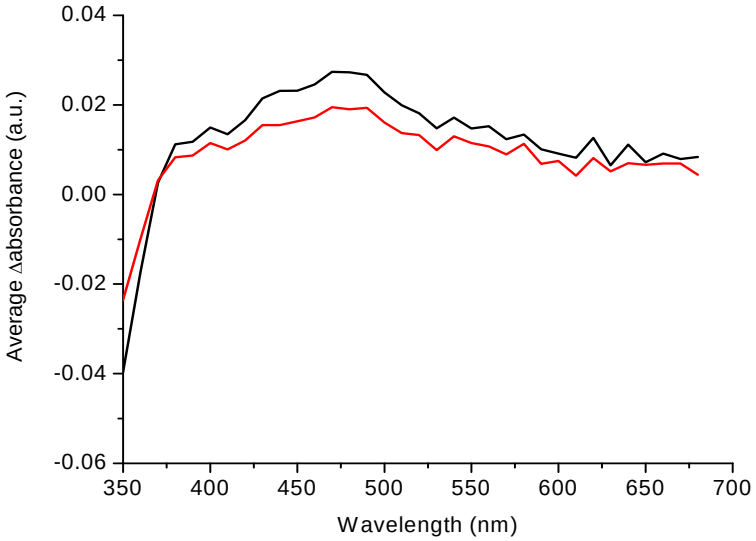

Figure 69. Transient absorbance spectra of **8** in 1:1 methanol: dichloromethane measured 62.4 (▬) and 107.8 (▬) μs after the laser pulse.

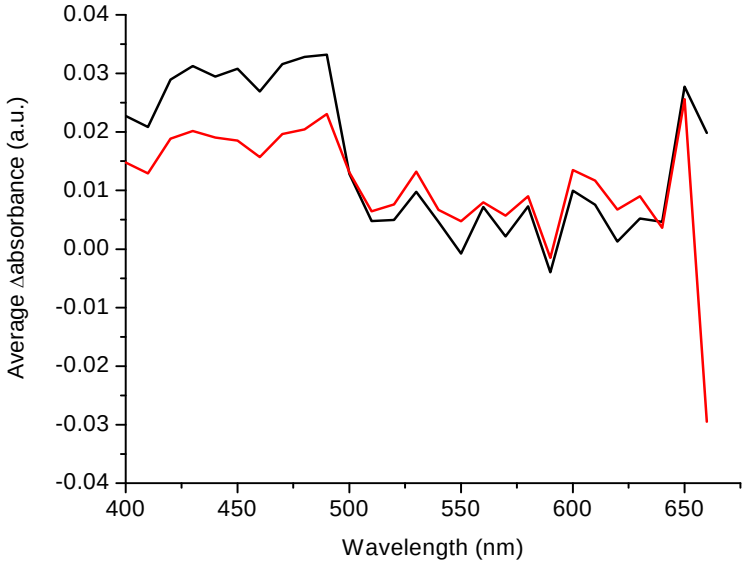

Figure 70. Transient absorbance spectra of **8** measured in 1:1 methanol: dichloromethane in the presence of 1,3-cyclohexadiene 62.4 (—) and 107.8 (—) μs after the laser pulse.

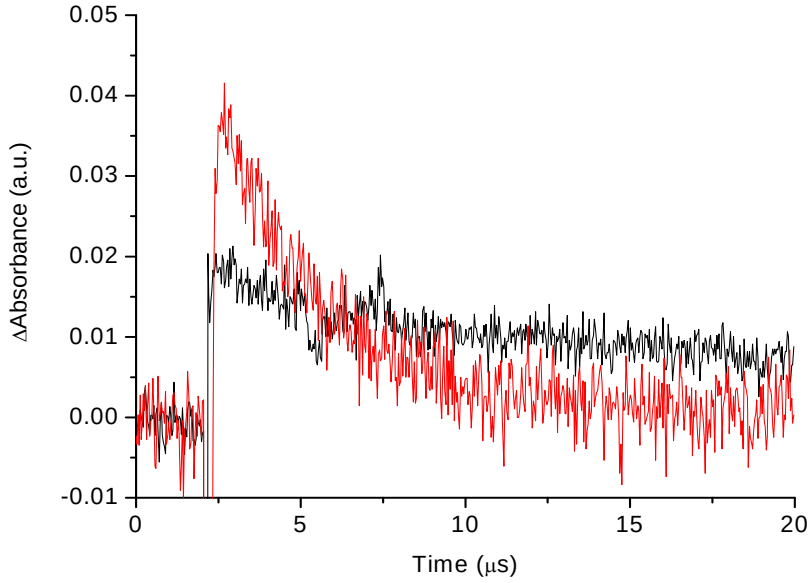

Figure 71. Kinetic decay of **8** measured at 410 nm in the absence (—) and presence (—) of 1,3-cyclohexadiene.

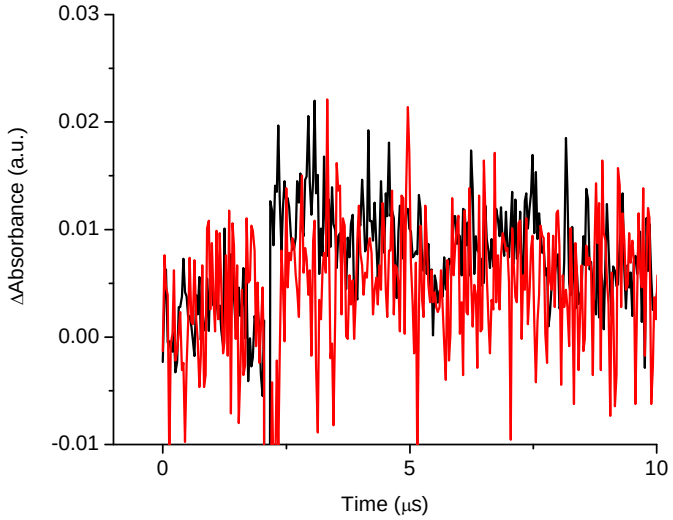

Figure 72. Kinetic decay of **8** measured at 620 nm in the absence (—) and presence (—) of 1,3-cyclohexadiene.

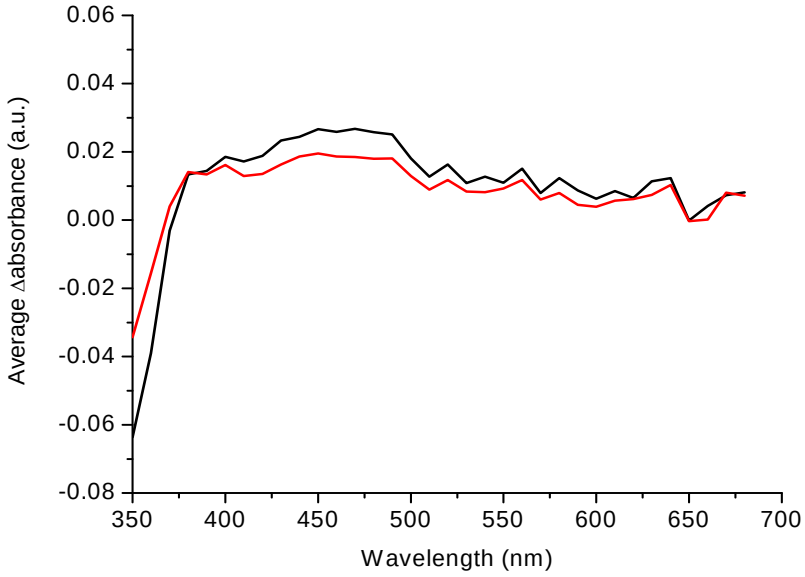

Figure 73. Transient absorbance spectra of **8** in 1:1 methanol: dichloromethane measured 62.4 (—) and 107.8 (—) μs after the laser pulse.

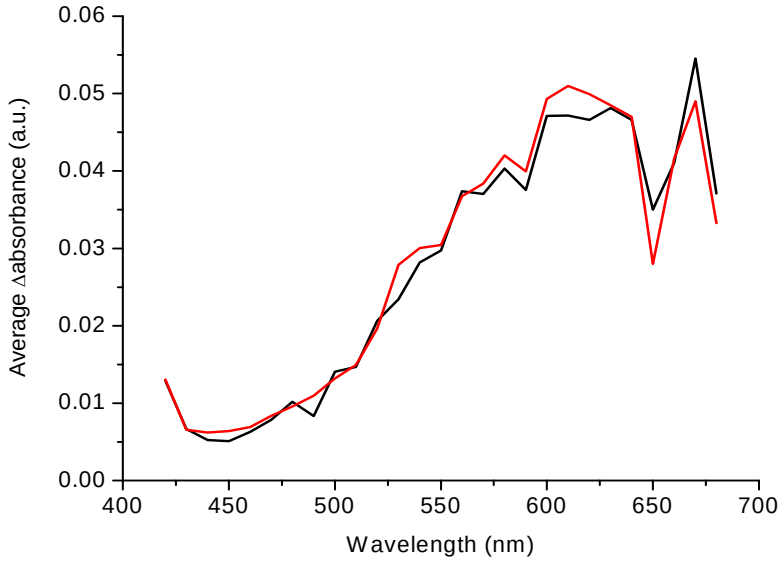

Figure 74. Transient absorbance spectra of **8** measured in 1:1 methanol: dichloromethane in the presence of methylviologen 62.4 (—) and 107.8 (—) μs after the laser pulse.

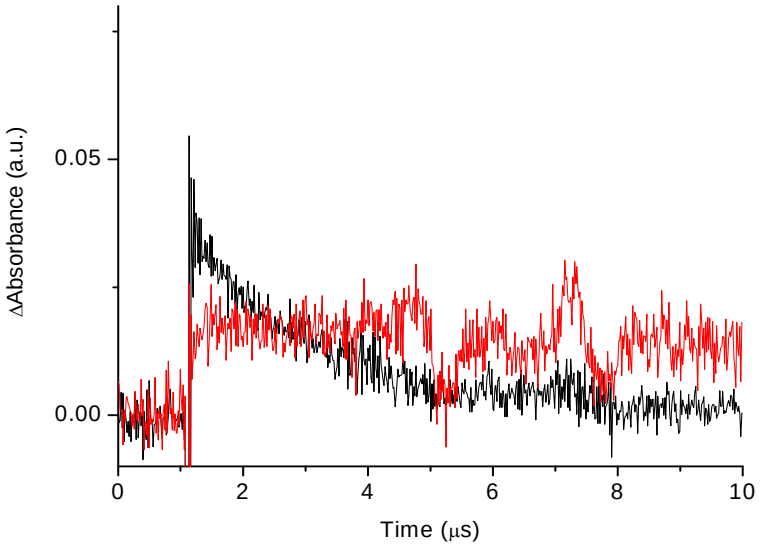

Figure 75. Kinetic decays of **8** measured at 410 nm in the absence (—) and presence (—) of methylviologen.

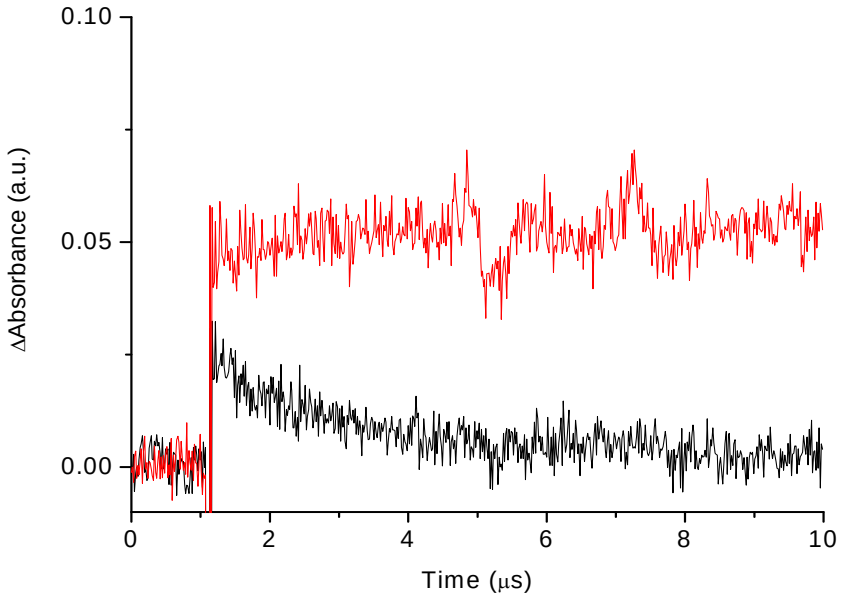

Figure 76. Kinetic decays of **8** measured at 620 nm in the absence (—) and presence (—) of methylviologen.

Photophysical Characterization of 9.

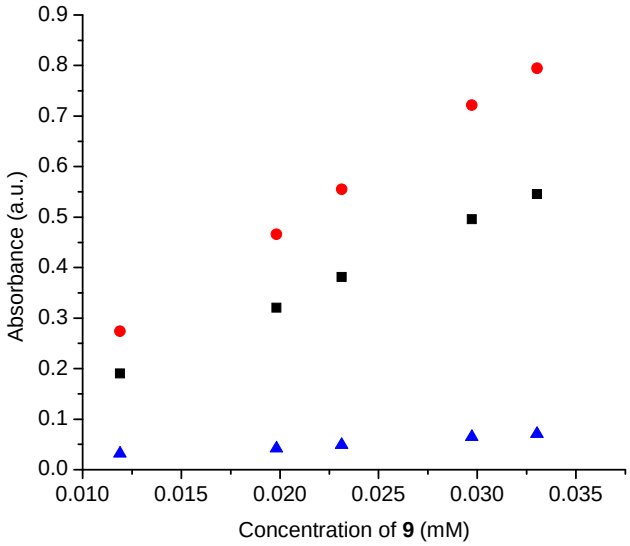

Figure 77. Absorbance of **9** at 295 nm (■), 351 nm (●) and 425 nm (▲) in dichloromethane as a function of concentration.

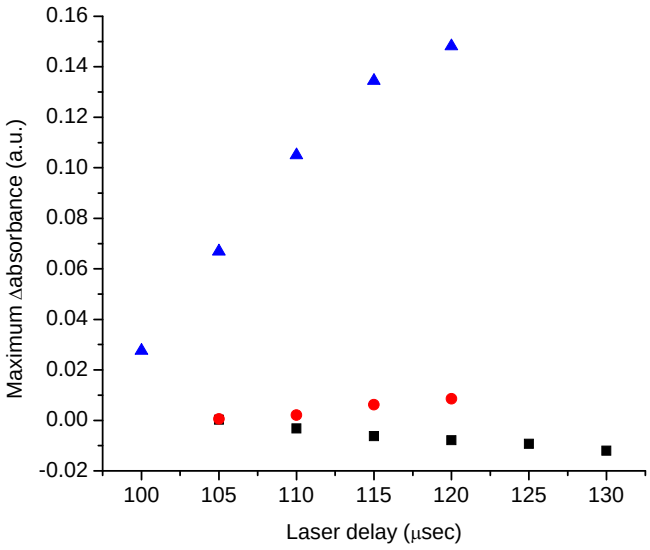

Figure 78. Variation of the maximum Δ absorbance of **9** as a function of laser power at 300nm (■), 440 nm (●) and 525 nm (▲).

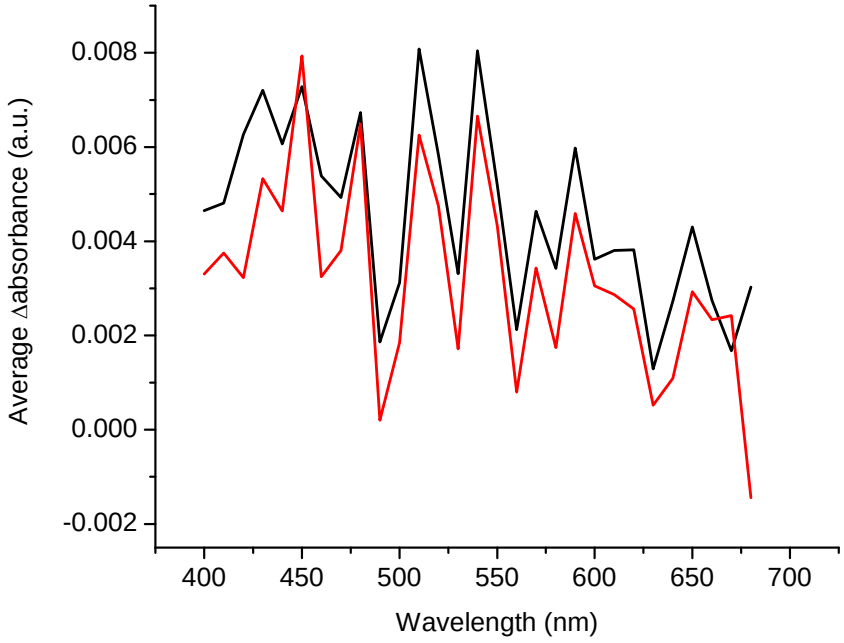

Figure 79. Transient absorbance spectra of **9** in dichloromethane measured 101.4 (—) and 161.5 (—) μs after the laser pulse.

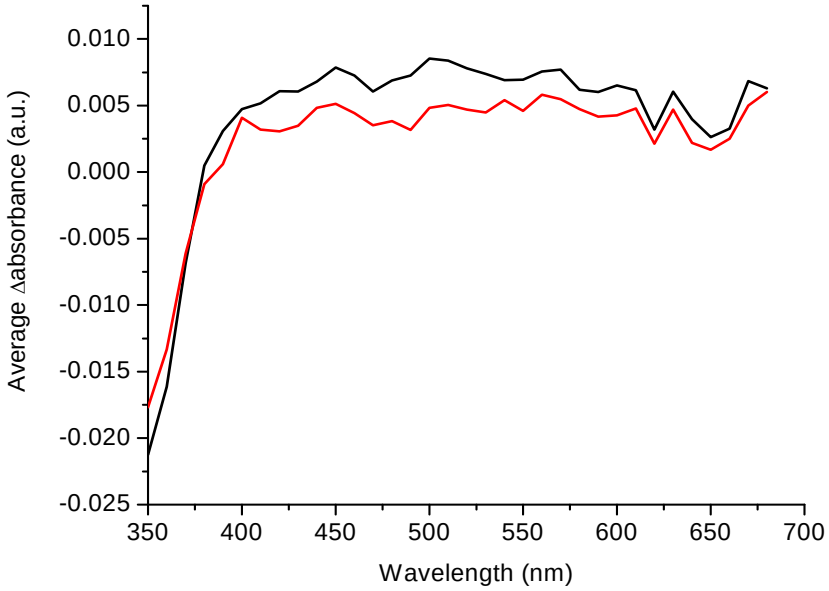

Figure 80. Transient absorbance spectra of **9** in 1:1 methanol: dichloromethane measured 101.4 (—) and 161.5 (—) μs after the laser pulse.

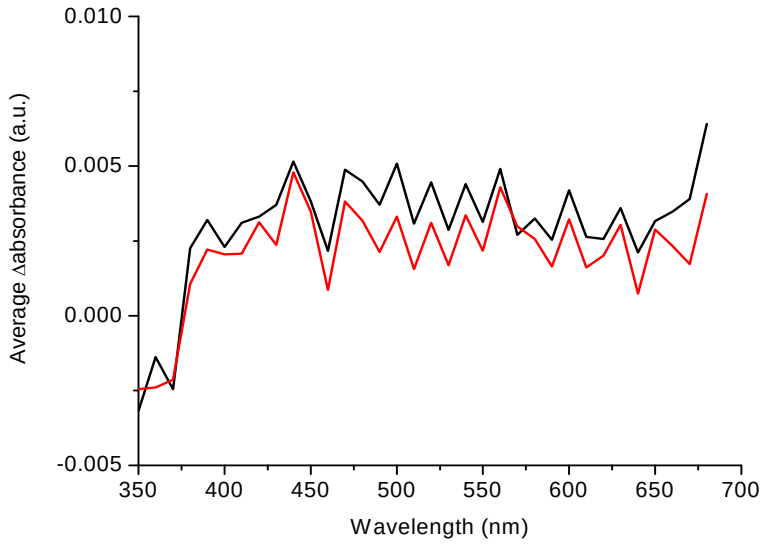

Figure 81. Transient absorbance spectra of **9** measured in 1:1 methanol: dichloromethane in the presence of 1,3-cyclohexadiene 101.4 (—) and 161.5 (—) μs after the laser pulse.

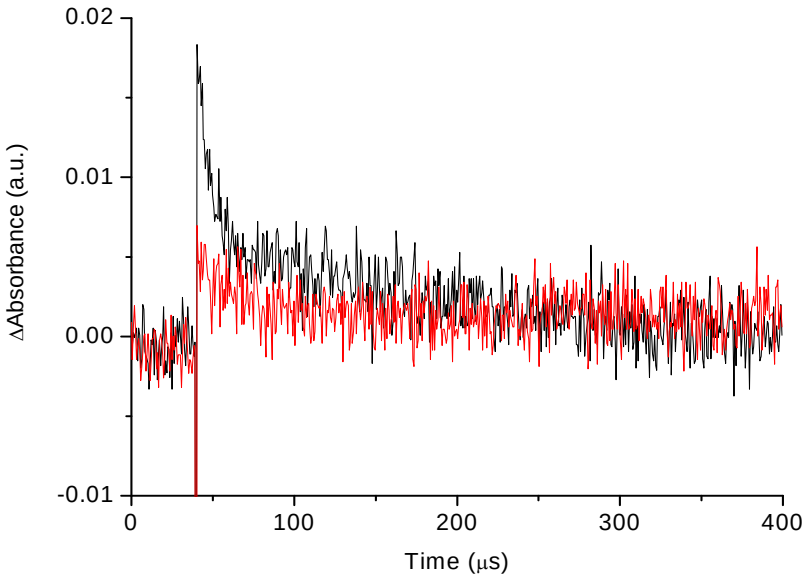

Figure 82. Kinetic decays of **9** measured at 450 nm in the absence (—) and presence (—) of 1,3-cyclohexadiene.

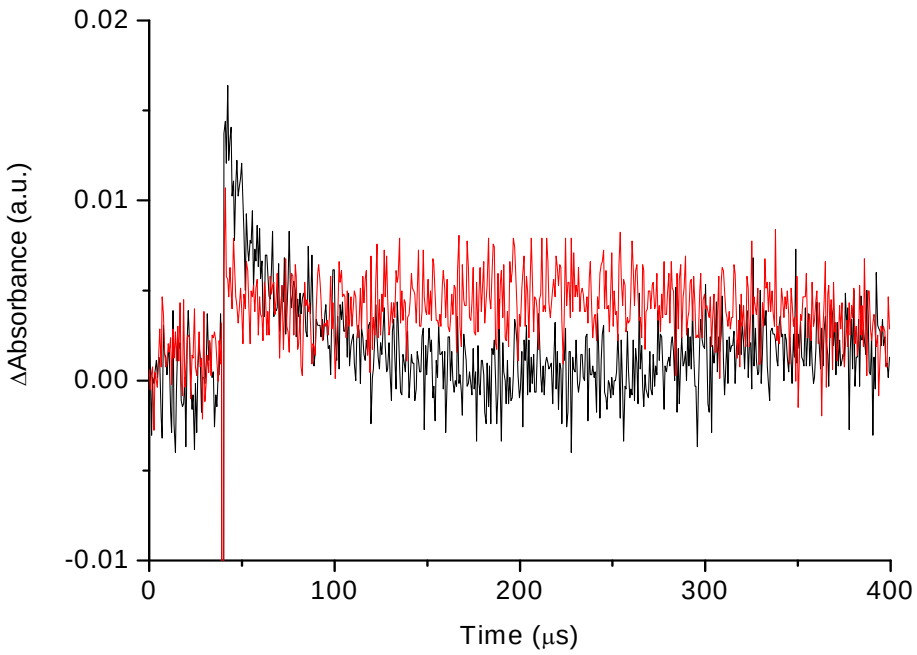

Figure 83. Kinetic decays of **9** measured at 520 nm in the absence (—) and presence (—) of 1,3-cyclohexadiene.

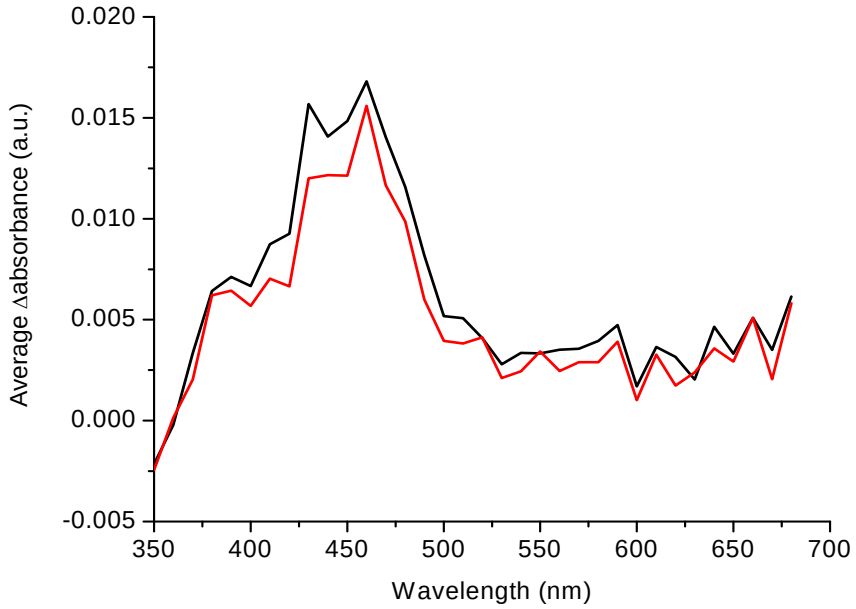

Figure 84. Transient absorbance spectra of **9** measured in 1:1 methanol: dichloromethane in the presence of methylviologen 101.4 (—) and 161.5 (—) μs after the laser pulse.

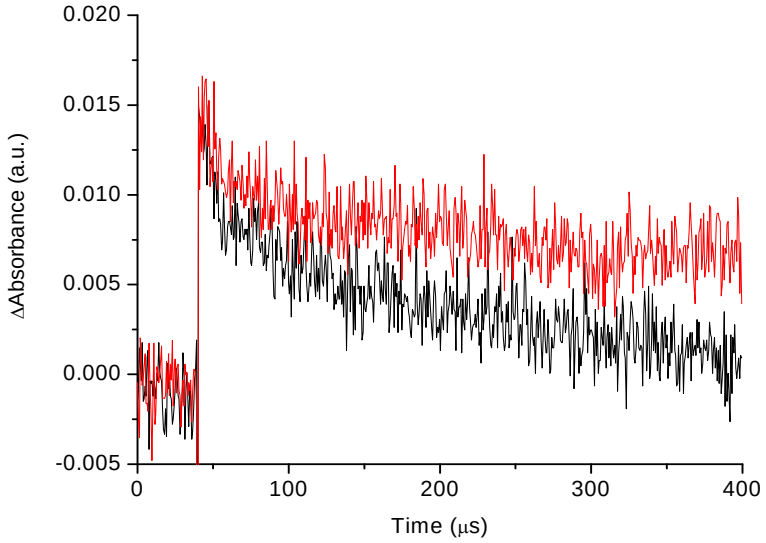

Figure 85. Kinetic decays of **9** measured at 450 nm in the absence (—) and presence (—) of methylviologen.

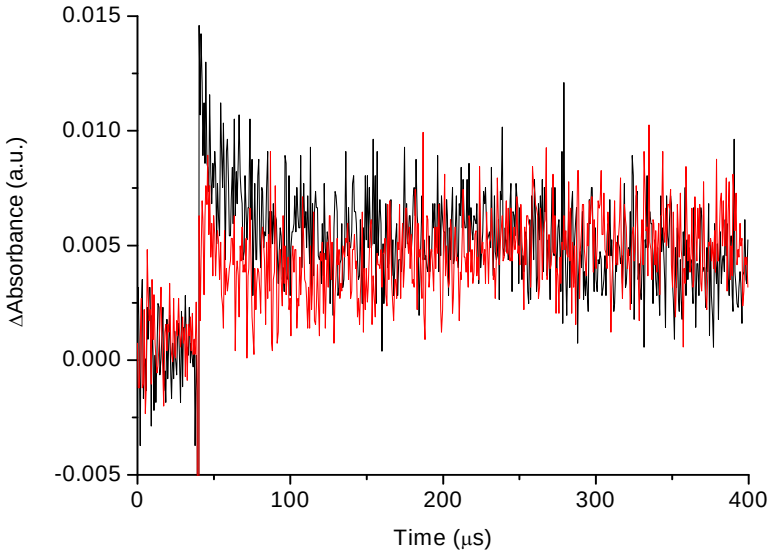

Figure 86. Kinetic decays of **9** measured at 520 nm in the absence (—) and presence (—) of methylviologen.

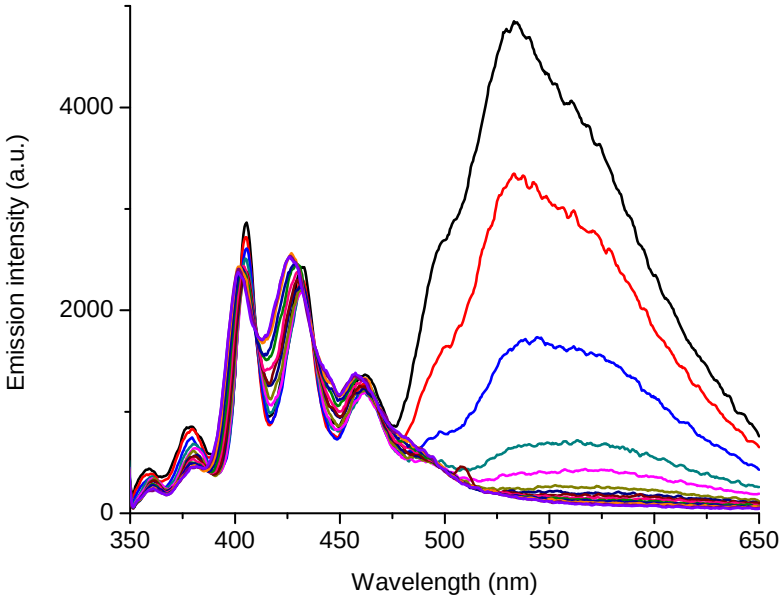

Figure 87. Fluorescence of **9** from 300 K (—) to 90 K (—) in deaerated 4:1 ethanol:methanol mixture.

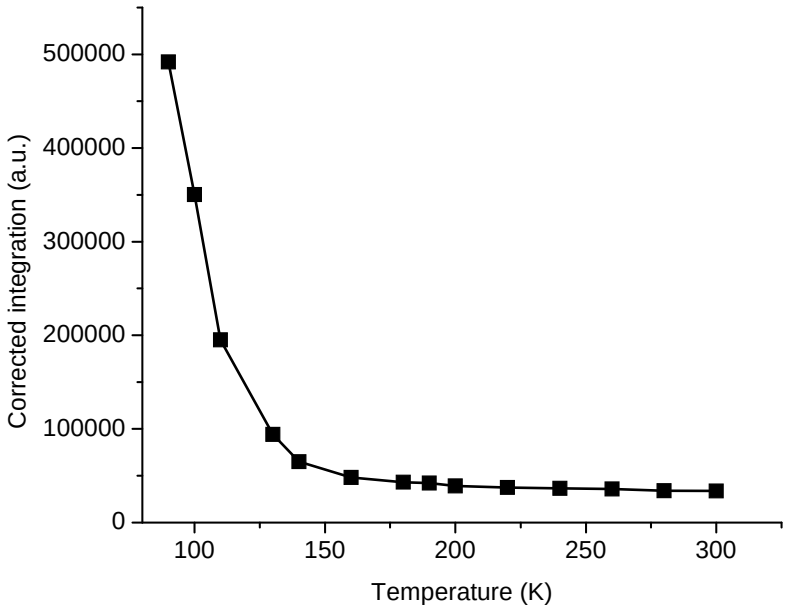

Figure 88. Corrected emission integration between 475 and 650 nm of **9** as a function of temperature.