

Supplementary Material

Copper-Mediated Aerobic Oxidative Cleavage of α,β -Unsaturated Ketones to 1,2-Diketones

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The copies of IR, ^1H NMR and ^{13}C NMR spectra for the products.

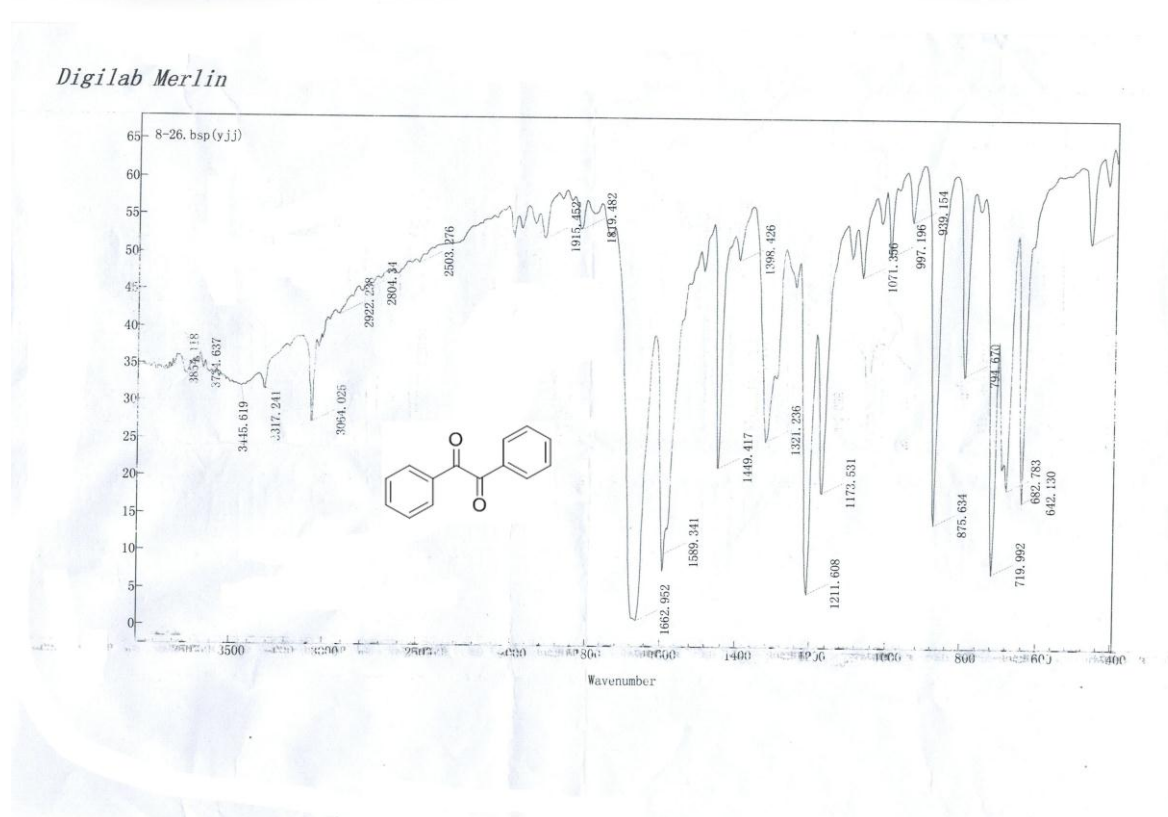


Fig 1. IR of benzil

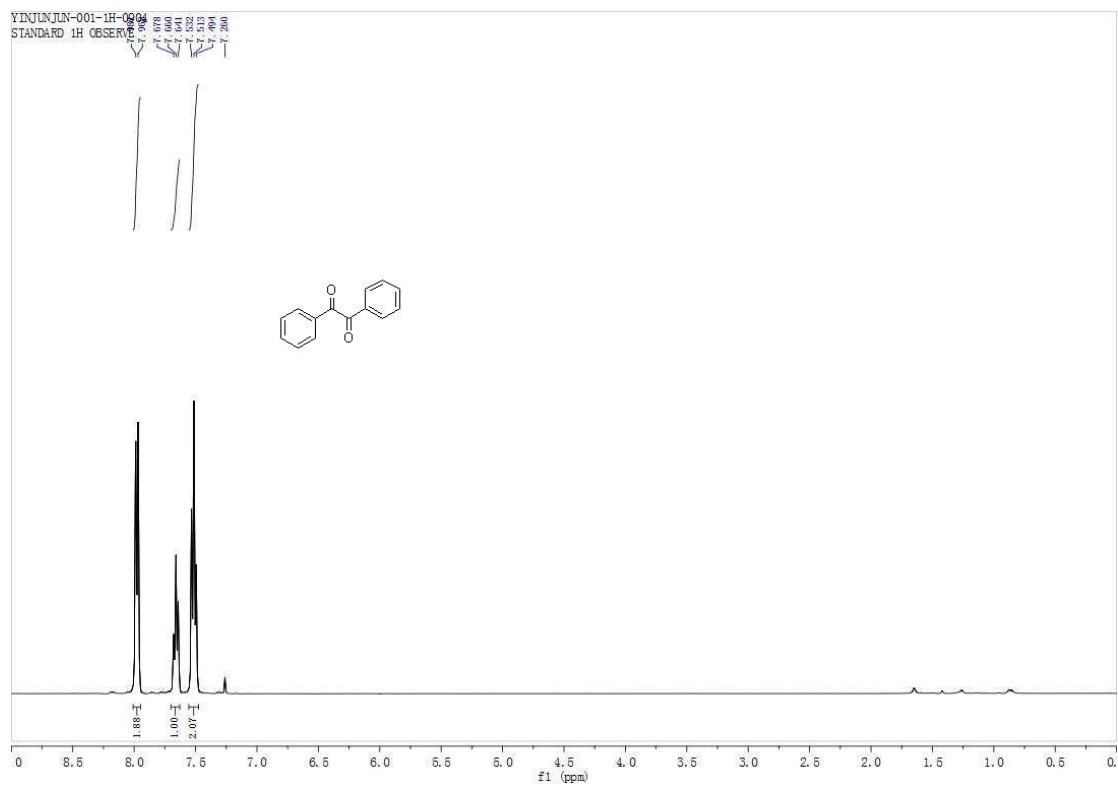


Fig 2. ^1H NMR of benzil

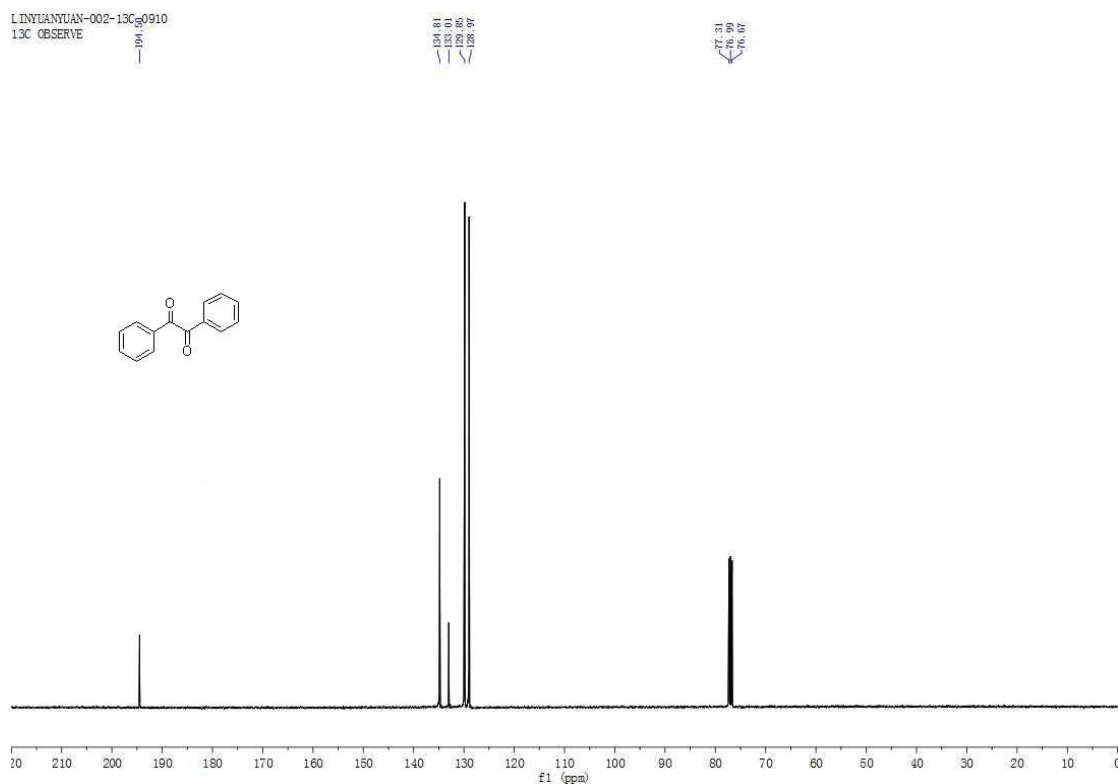


Fig 3. ^{13}C NMR of benzil

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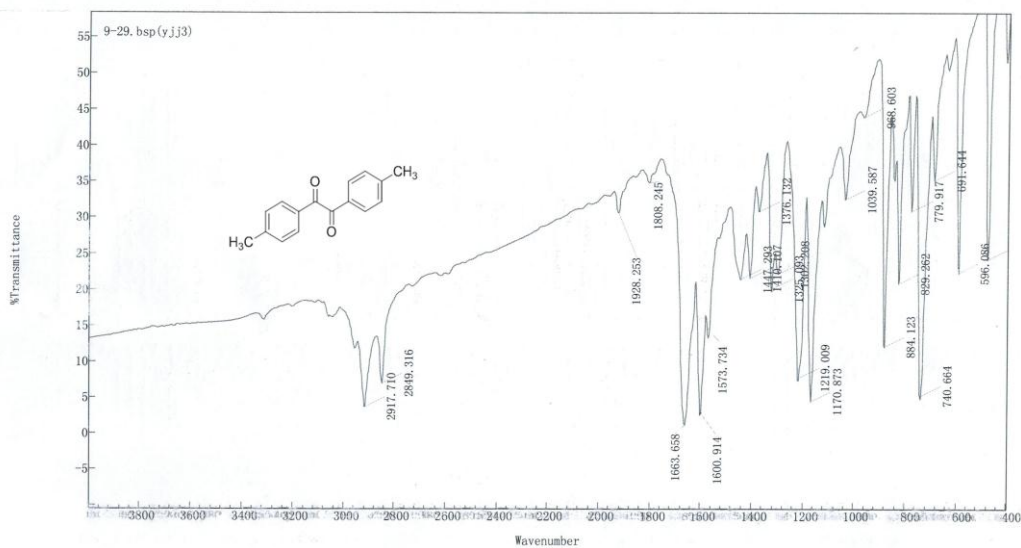


Fig 4. IR of 1,2-di(*p*-tolyl)ethane-1,2-dione

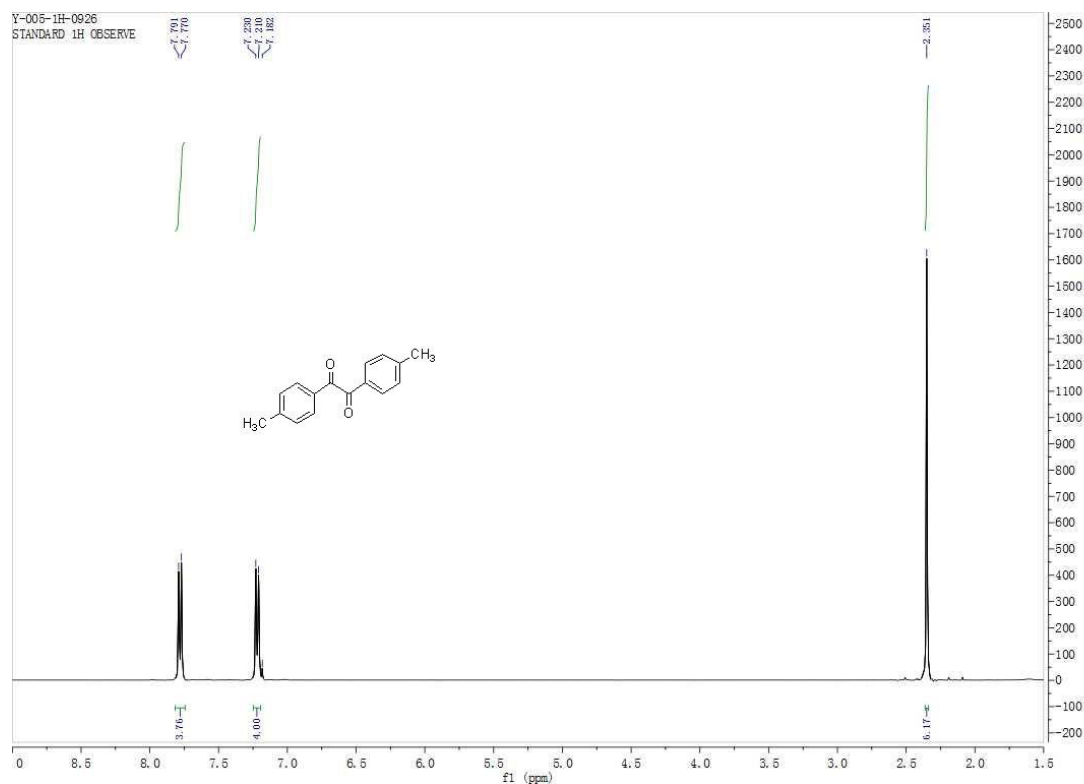


Fig 5. ¹H NMR of 1,2-di(*p*-tolyl)ethane-1,2-dione

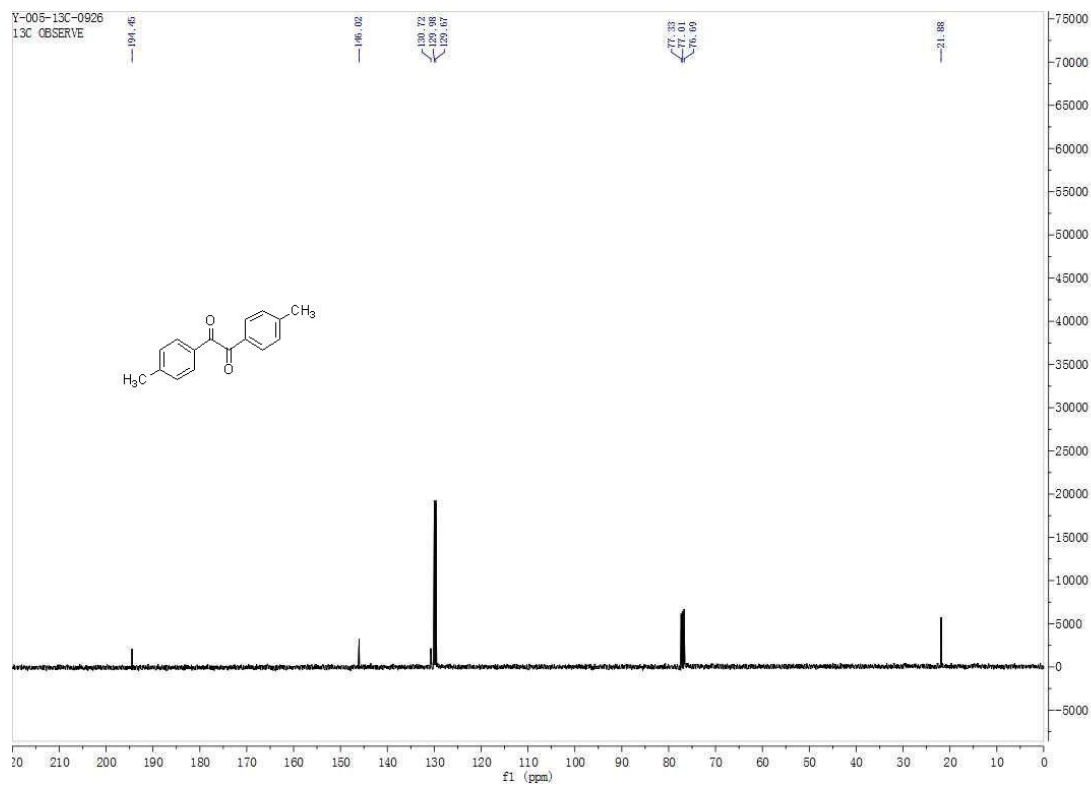


Fig 6. ^{13}C NMR of 1,2-di(*p*-tolyl)ethane-1,2-dione

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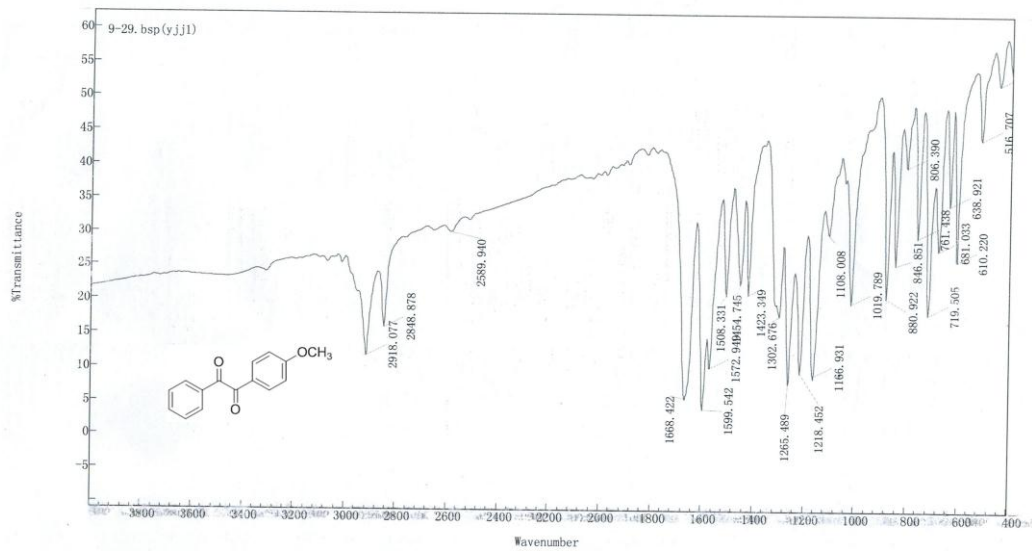


Fig 7. IR of 1-(4-methoxyphenyl)-2-phenylethane-1,2-dione

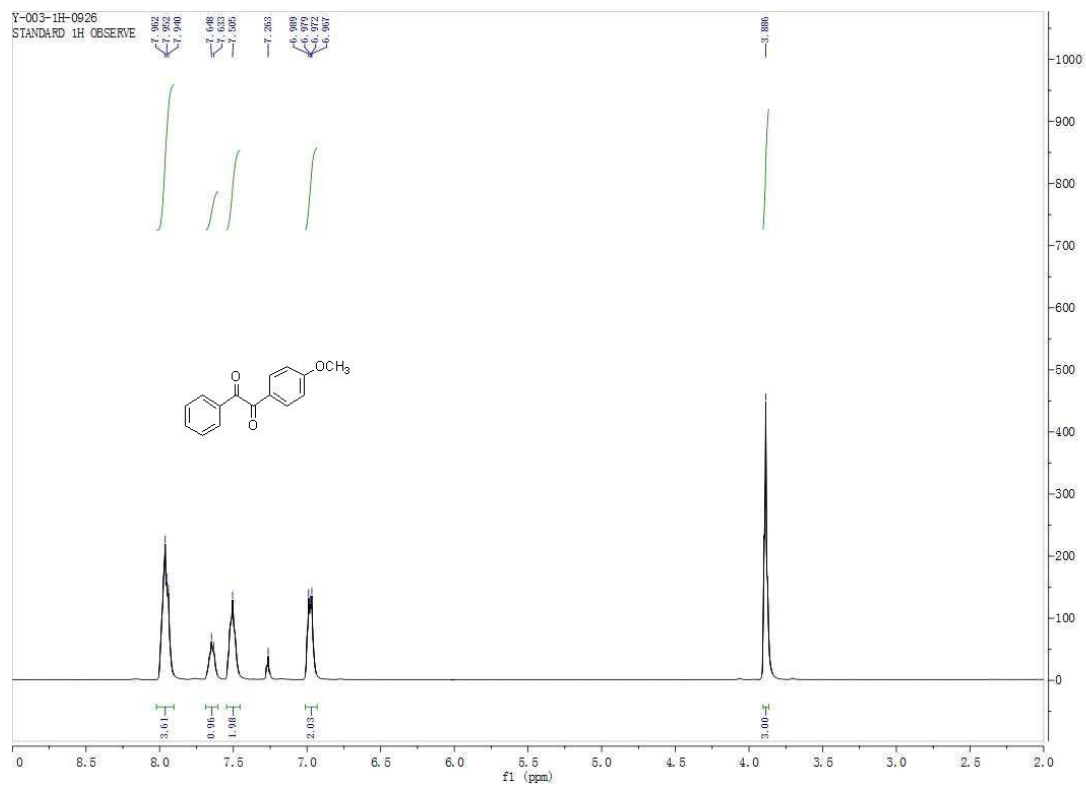


Fig 8. ^1H NMR of 1-(4-methoxyphenyl)-2-phenylethane-1,2-dione

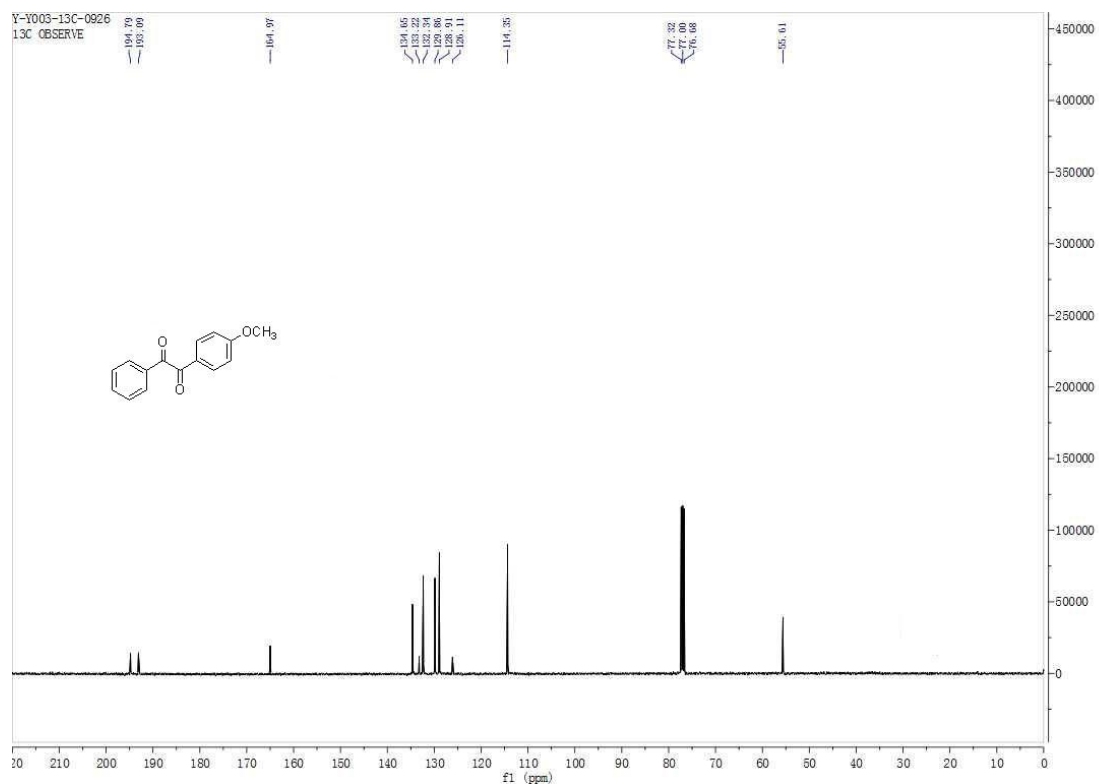


Fig 9. ^{13}C NMR of 1-(4-methoxyphenyl)-2-phenylethane-1,2-dione

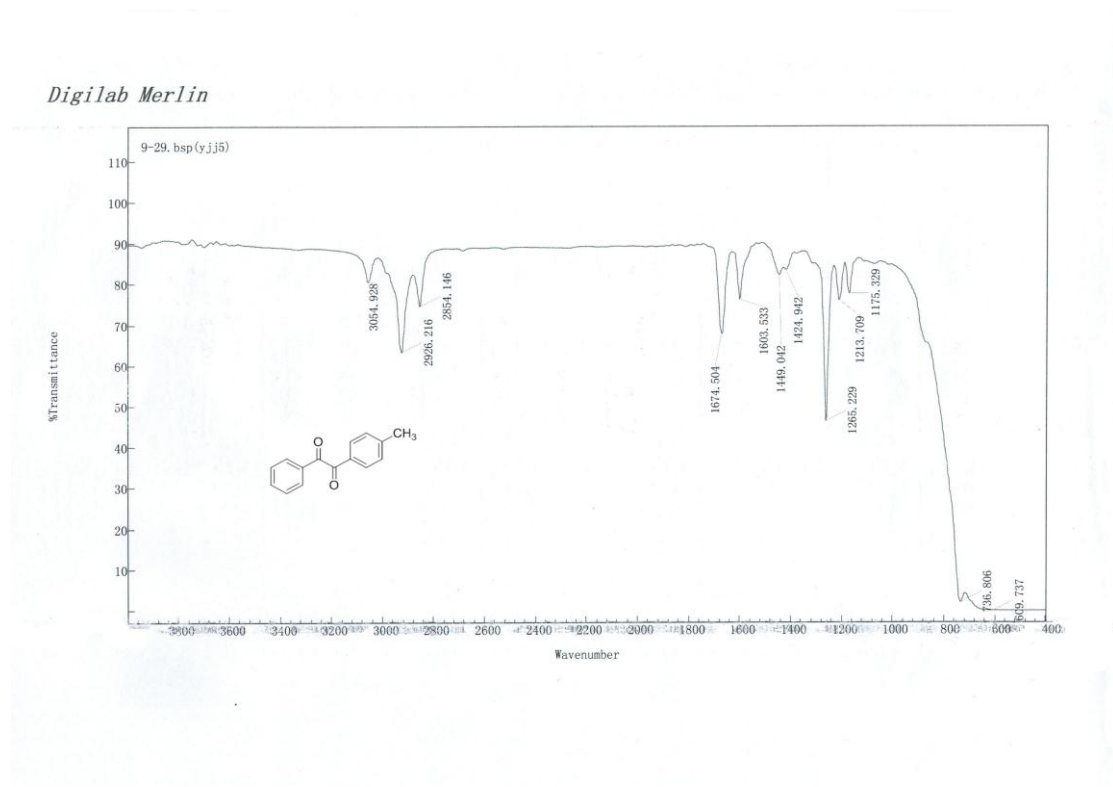


Fig 10. IR of 1-phenyl-2-*p*-tolylethane-1,2-dione

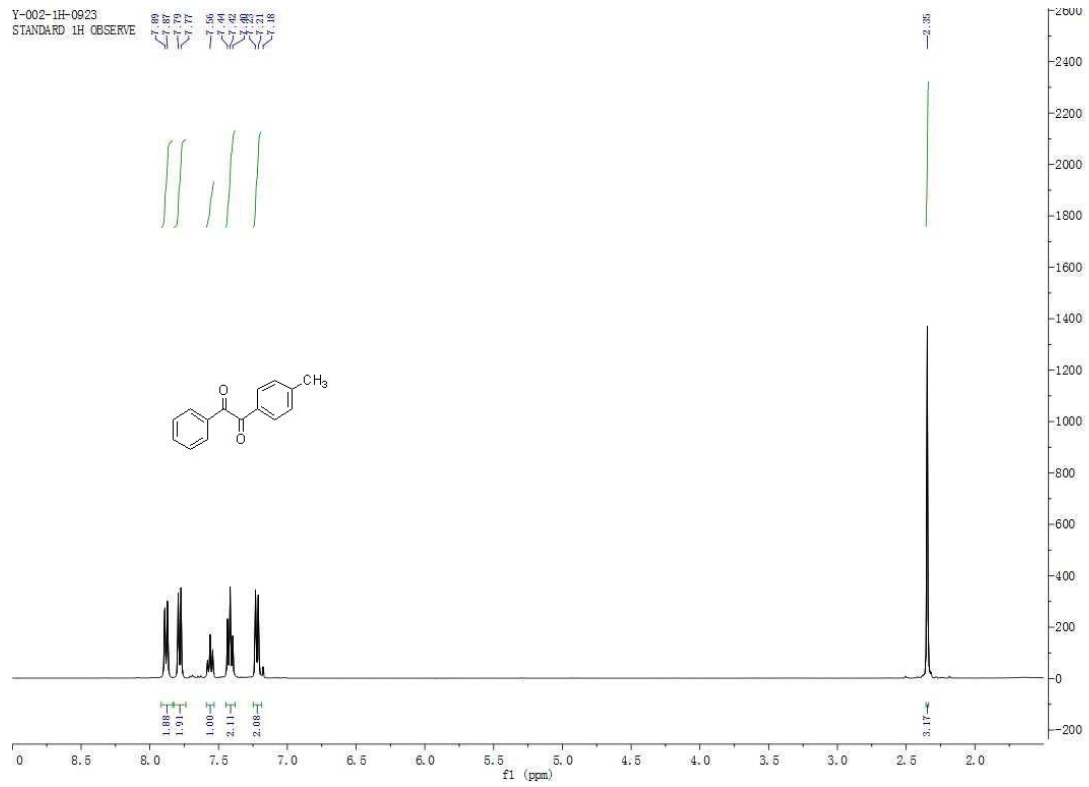


Fig 11. ¹H NMR of 1-phenyl-2-*p*-tolylethane-1,2-dione

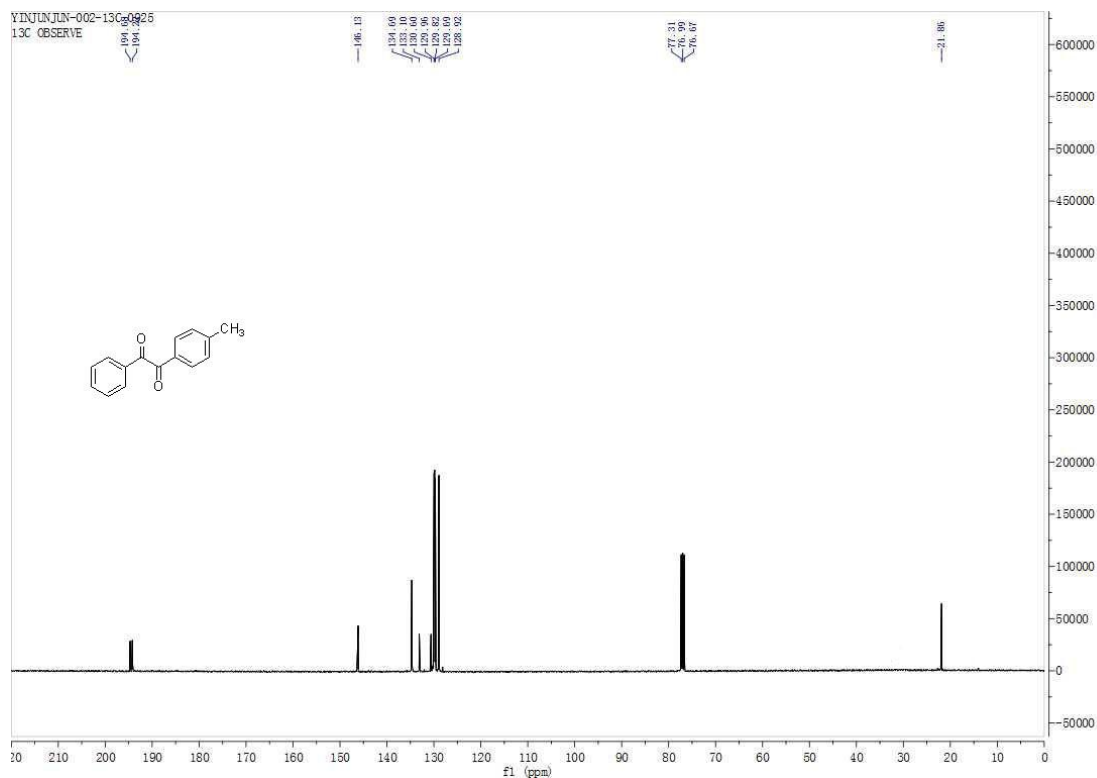


Fig 12. ^{13}C NMR of 1-phenyl-2-*p*-tolylethane-1,2-dione

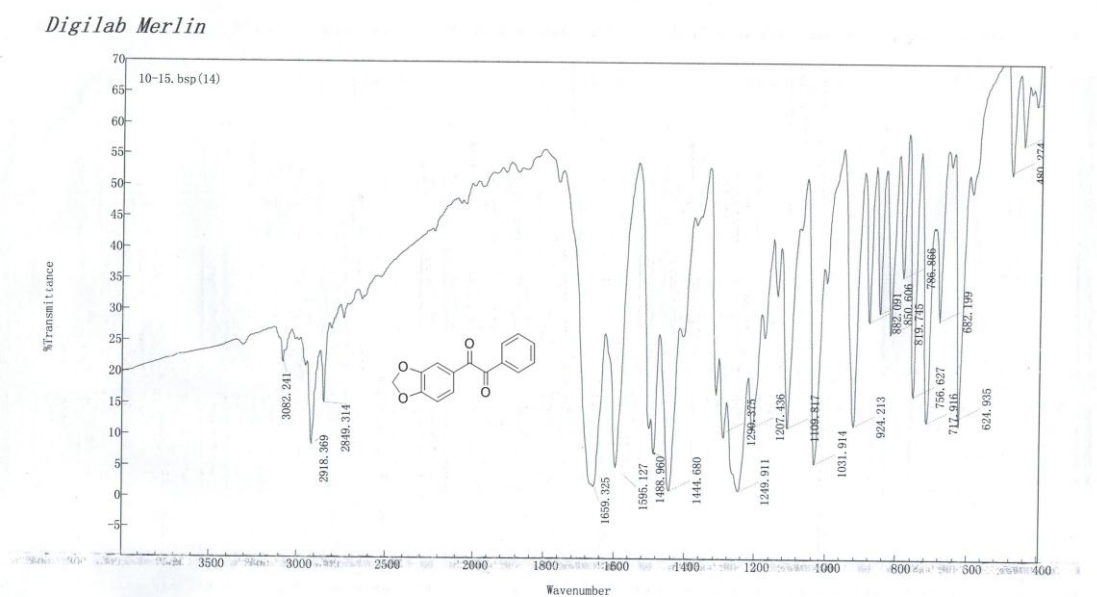


Fig 13. IR of 1-(benzo[*d*][1,3]dioxol-5-yl)-2-phenylethane-1,2-dione

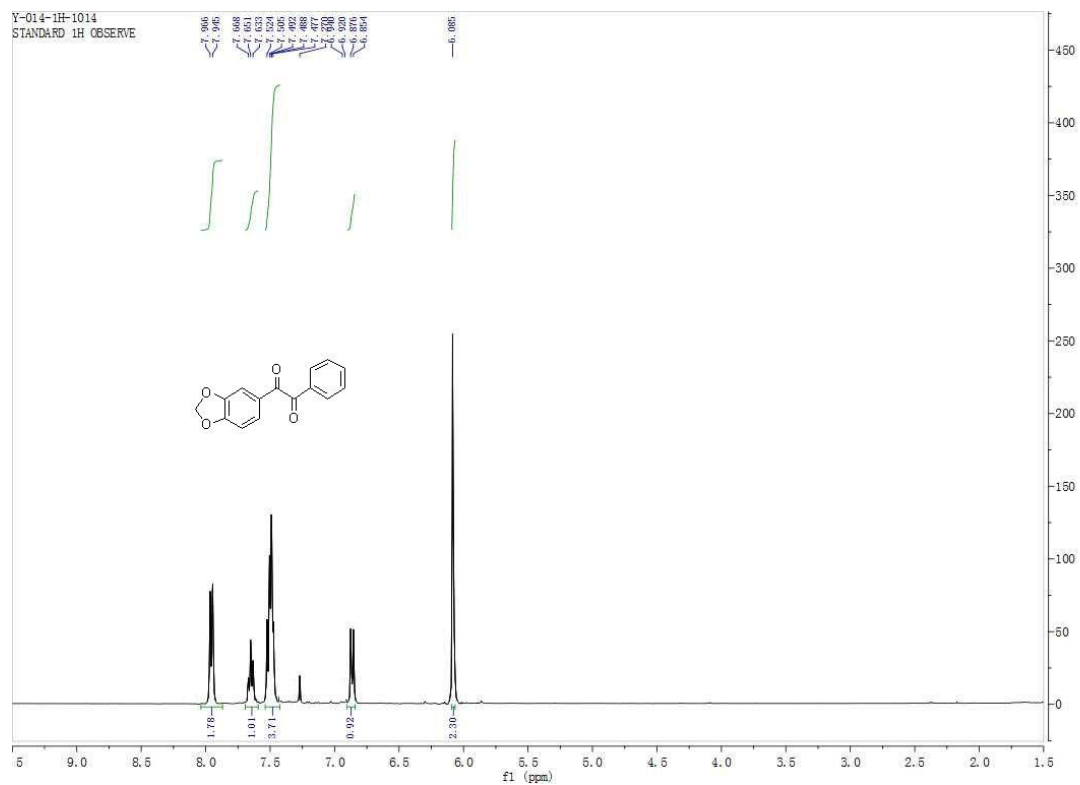


Fig 14. ^1H NMR of 1-(benzo[*d*][1,3]dioxol-5-yl)-2-phenylethane-1,2-dione

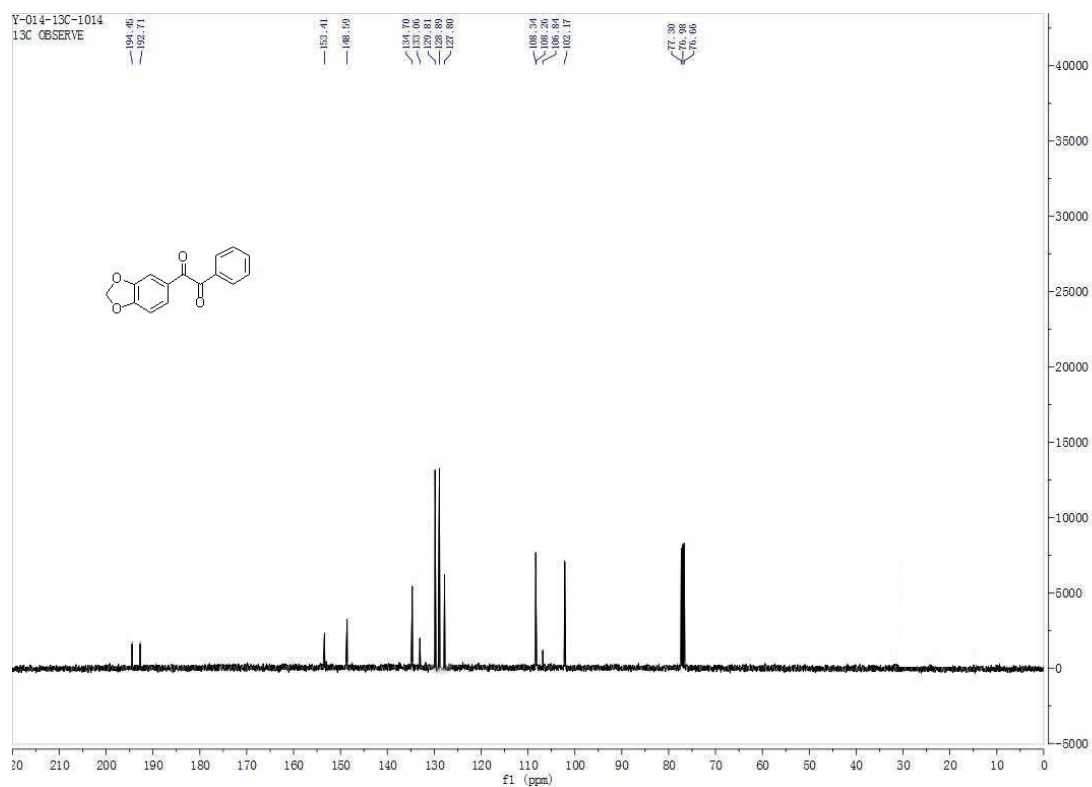


Fig 15. ^{13}C NMR of 1-(benzo[*d*][1,3]dioxol-5-yl)-2-phenylethane-1,2-dione

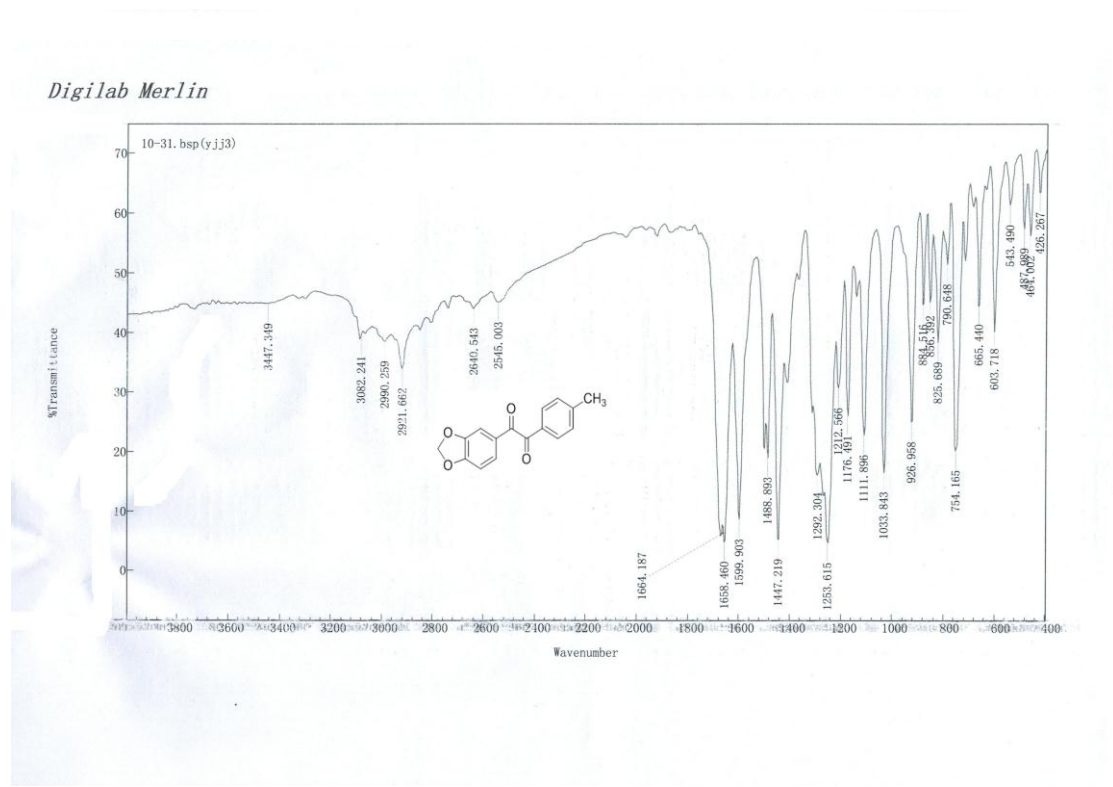


Fig 16. IR of 1-(benzo[d][1,3]dioxol-5-yl)-2-p-tolyethane-1,2-dione

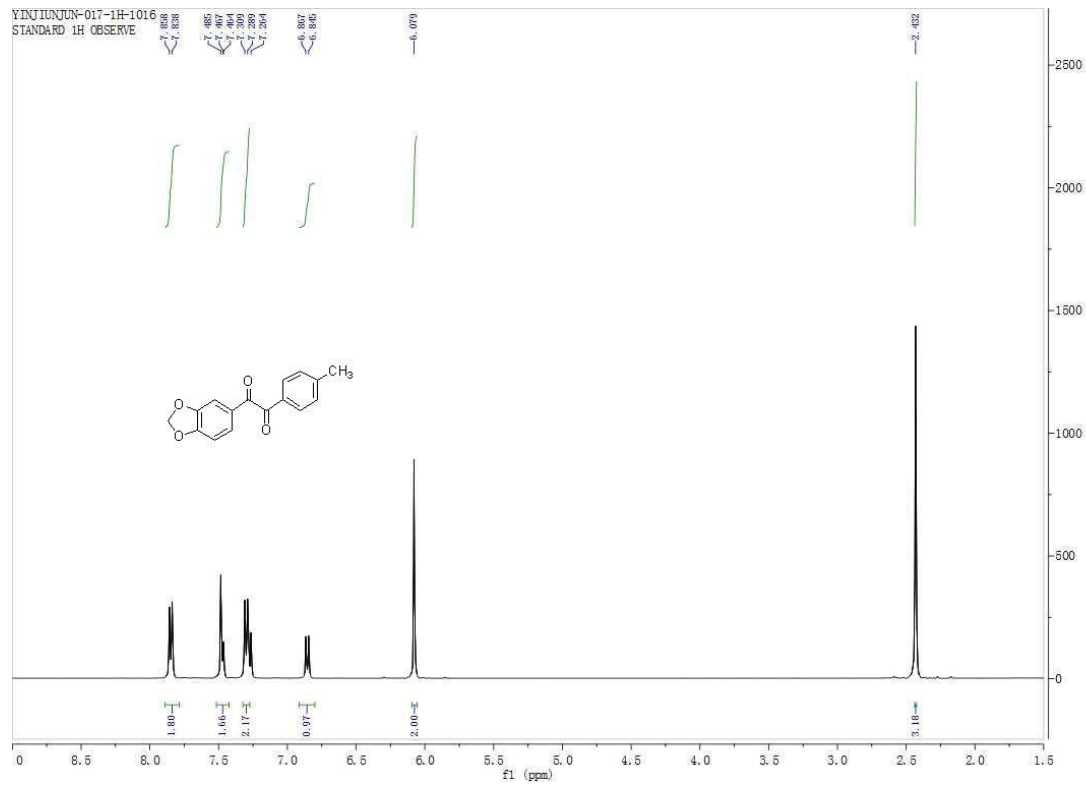


Fig 17. ¹H NMR of 1-(benzo[d][1,3]dioxol-5-yl)-2-p-tolyethane-1,2-dione

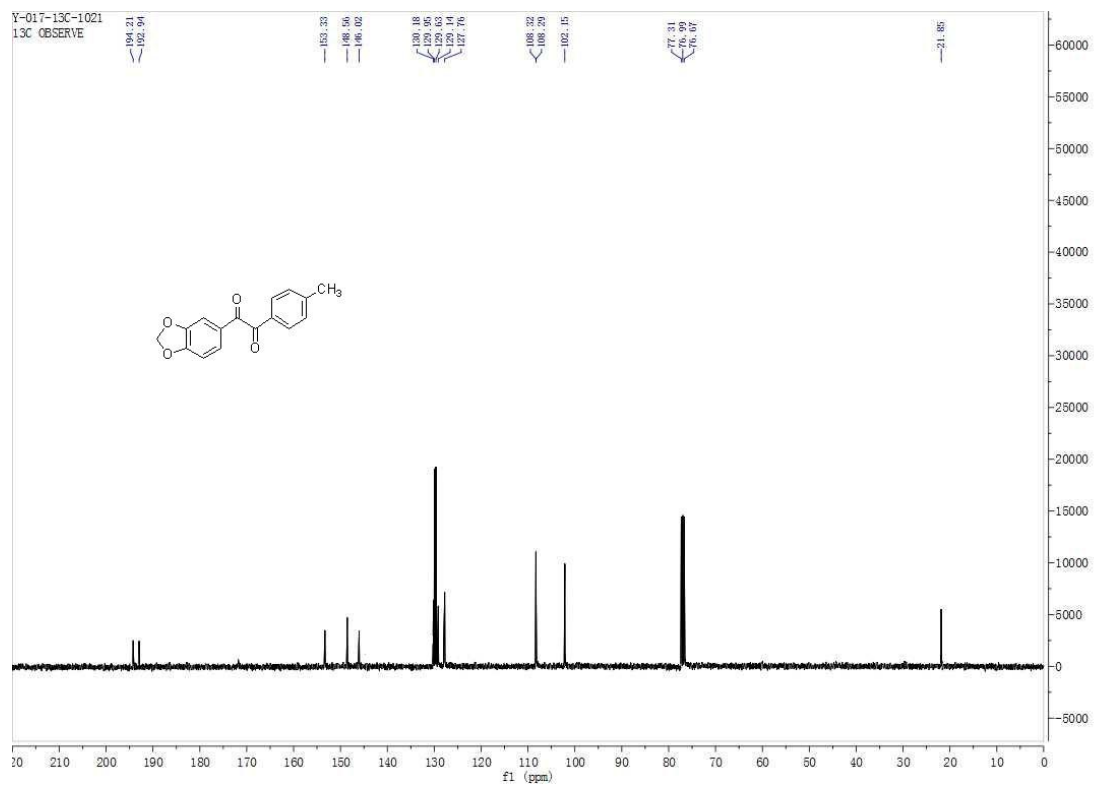


Fig 18. ^{13}C NMR of 1-(benzo[d][1,3]dioxol-5-yl)-2-p-tolylethane-1,2-dione

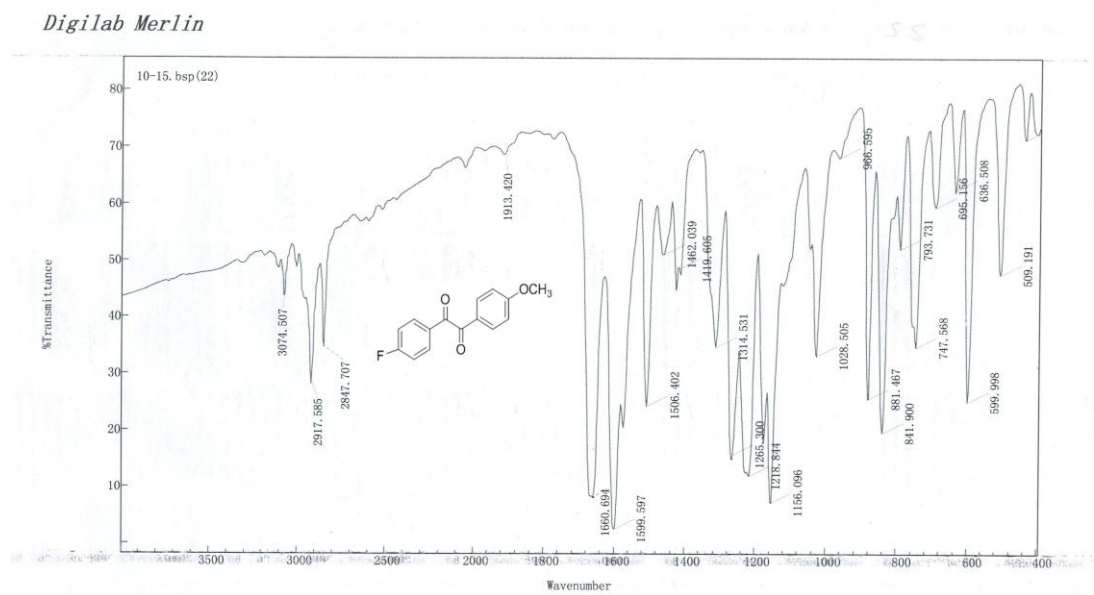


Fig 19. IR of 1-(4-fluorophenyl)-2-(4-methoxyphenyl)ethane-1,2-dione

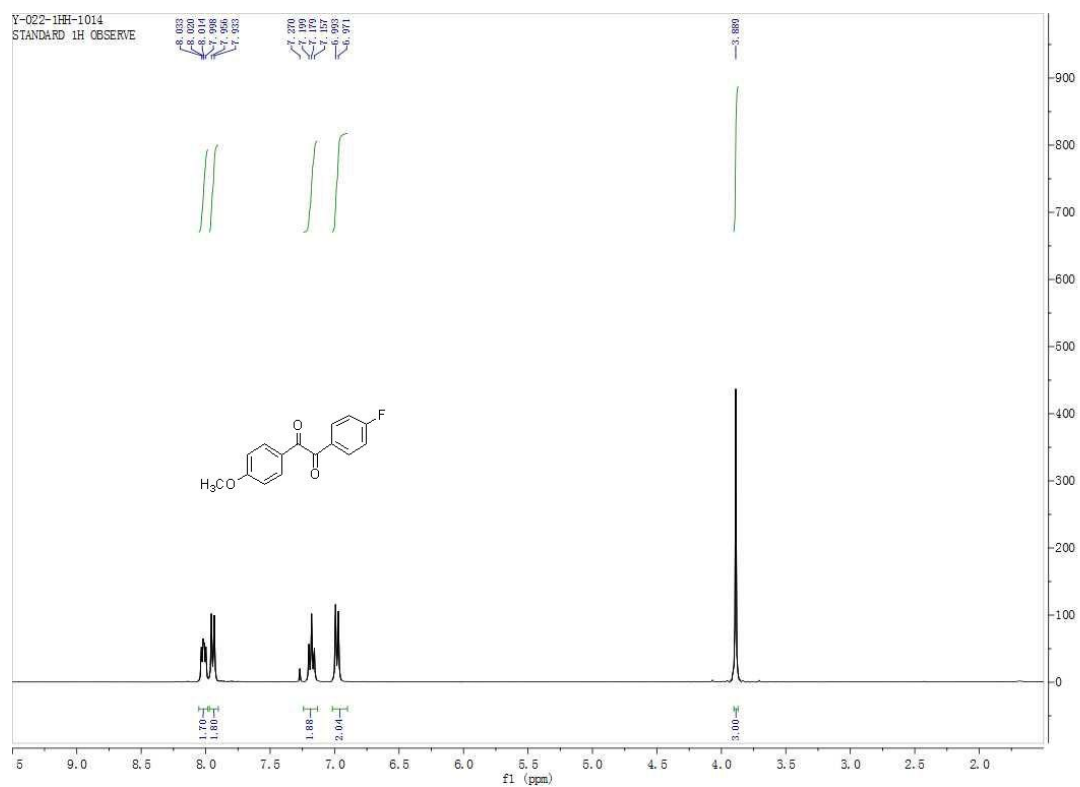


Fig 20. ^1H NMR of 1-(4-fluorophenyl)-2-(4-methoxyphenyl)ethane-1,2-dione

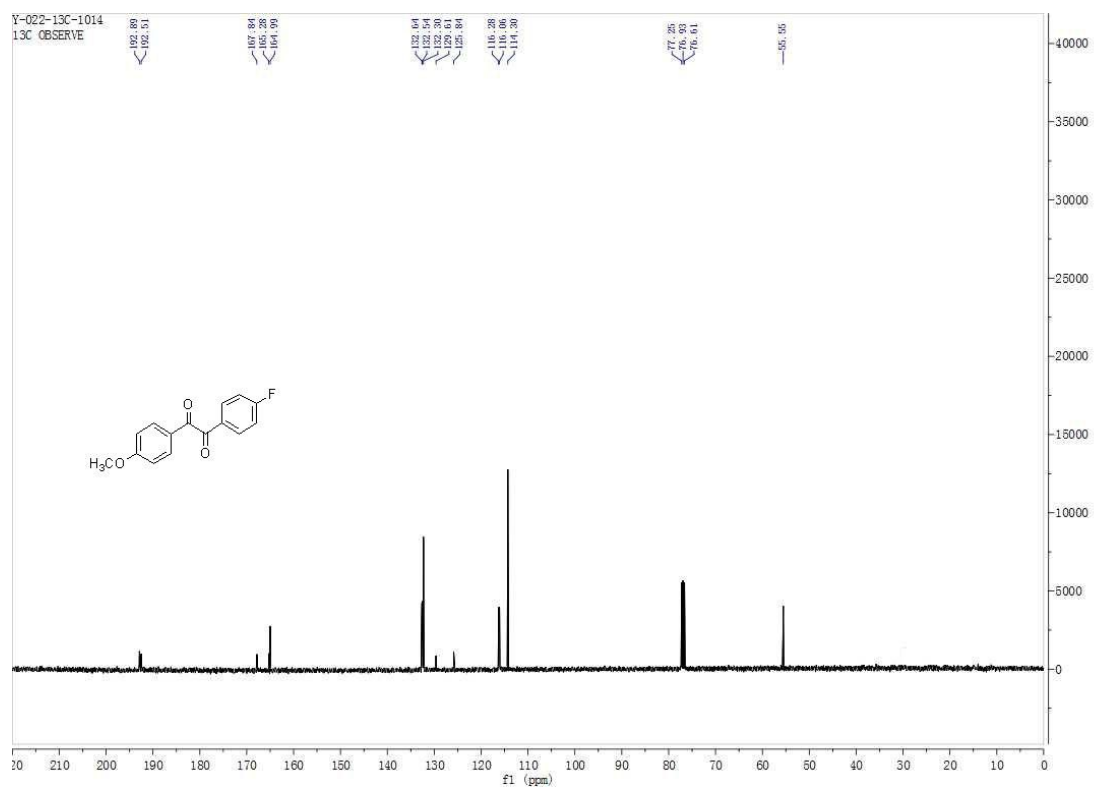


Fig 21. ^{13}C NMR of 1-(4-fluorophenyl)-2-(4-methoxyphenyl)ethane-1,2-dione

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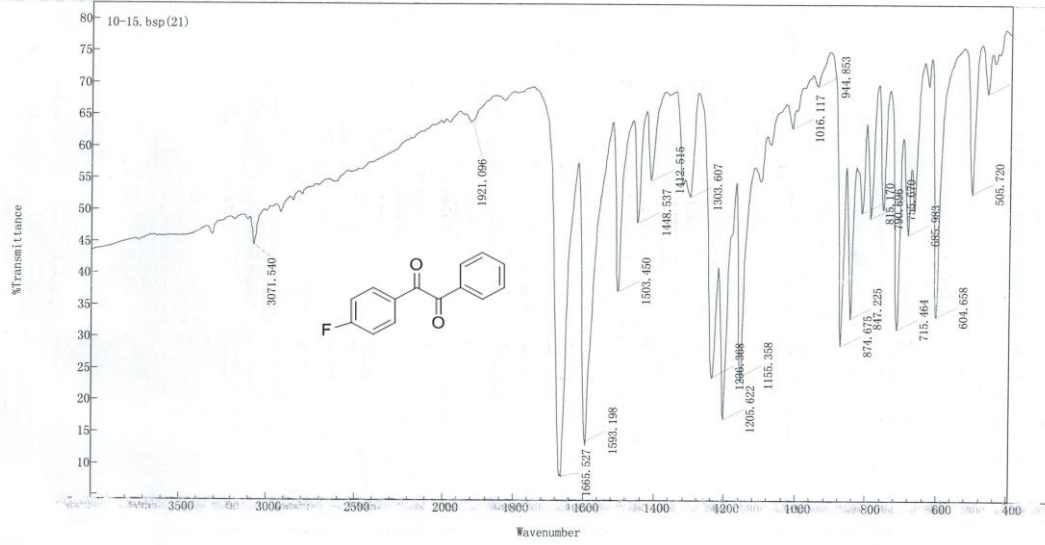


Fig 22. IR of 1-(4-fluorophenyl)-2-phenylethane-1,2-dione

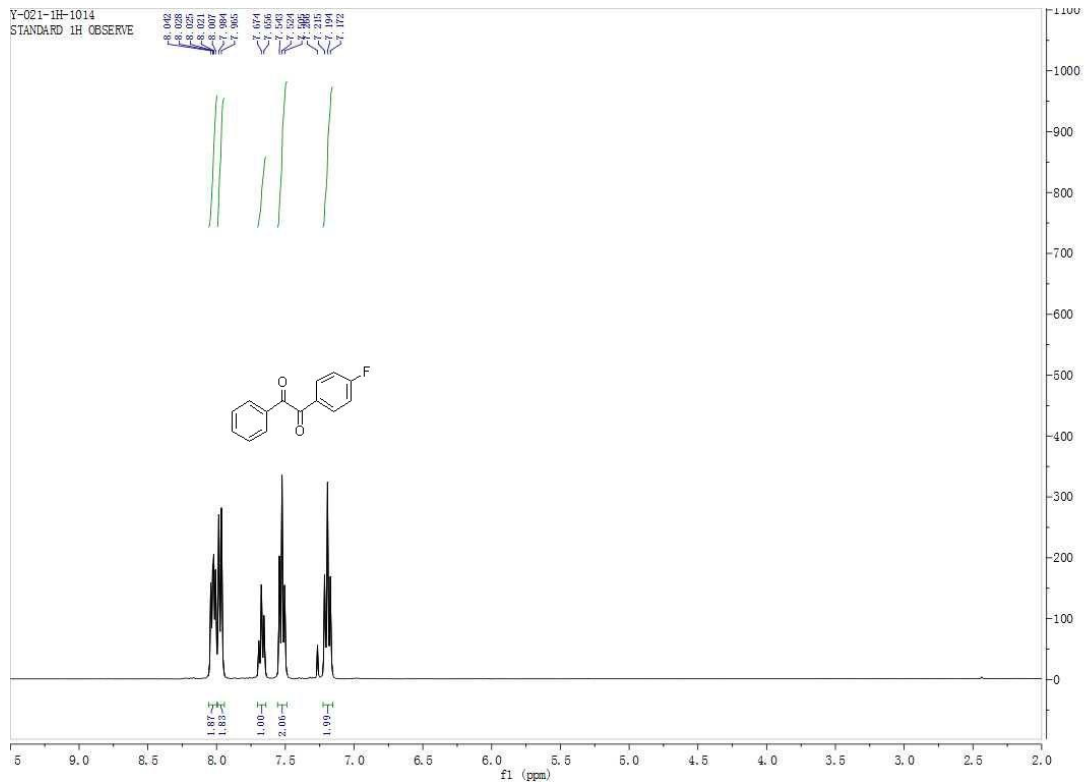


Fig 23. ¹H NMR of 1-(4-fluorophenyl)-2-phenylethane-1,2-dione

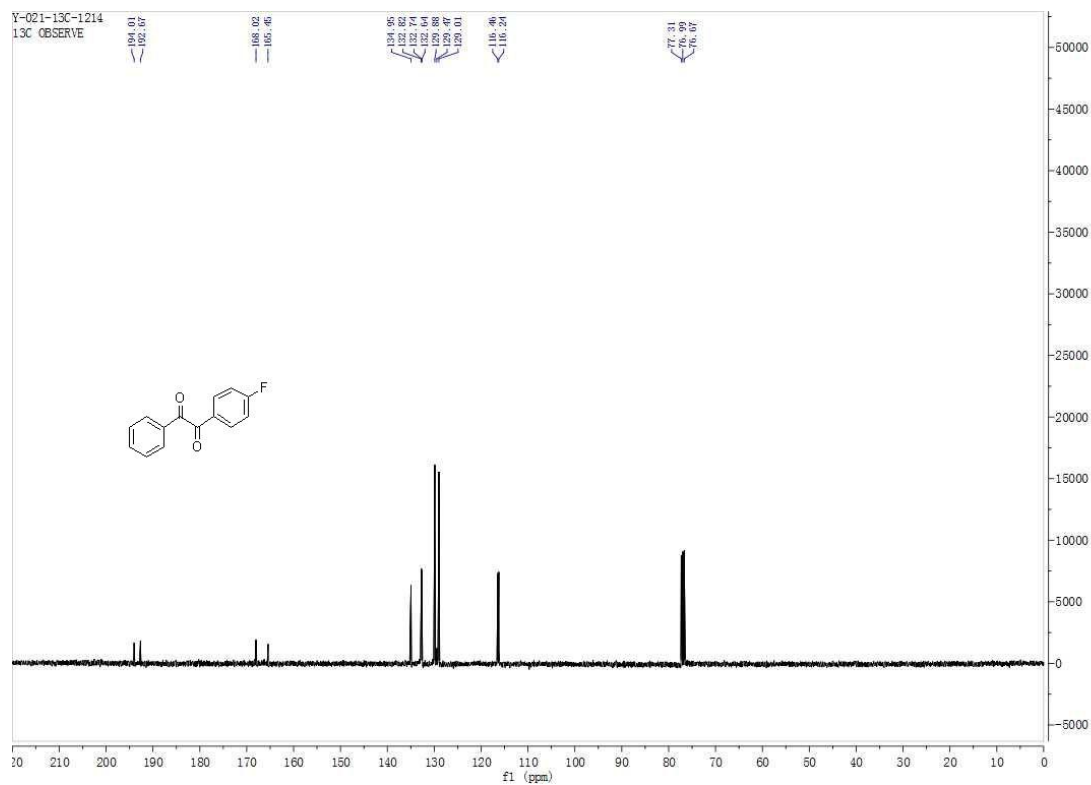


Fig 24. ^{13}C NMR of 1-(4-fluorophenyl)-2-phenylethane-1,2-dione

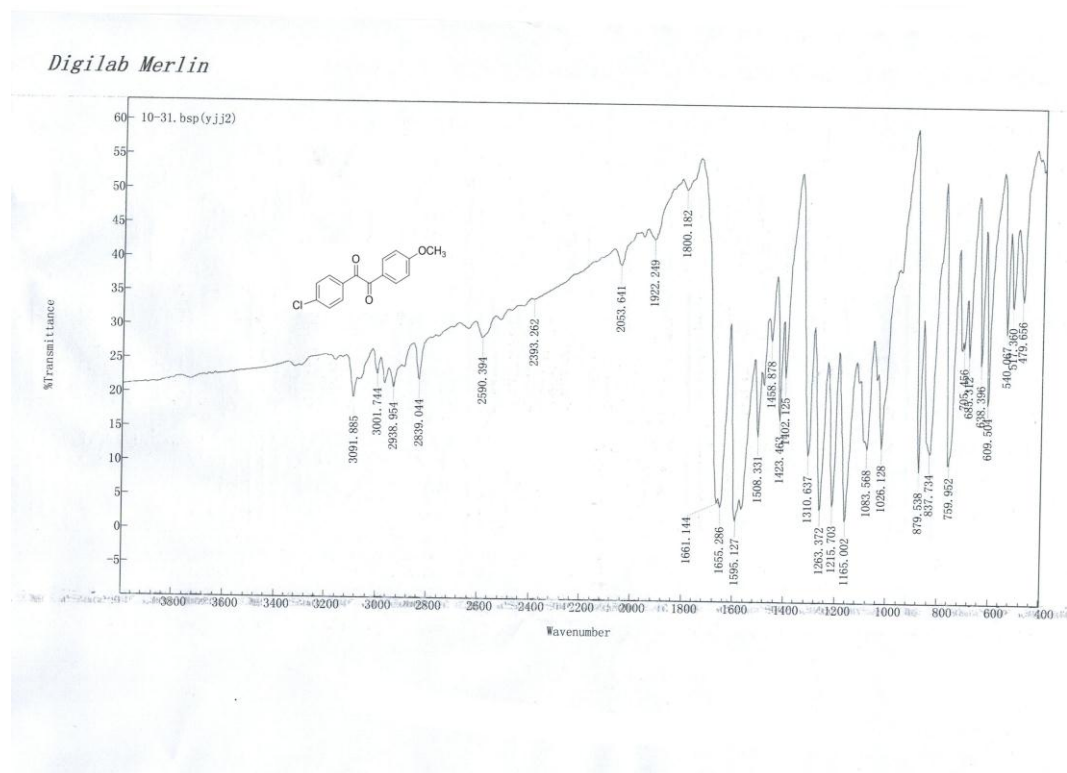


Fig 25. IR of 1-(4-chlorophenyl)-2-(4-methoxyphenyl)ethane-1,2-dione

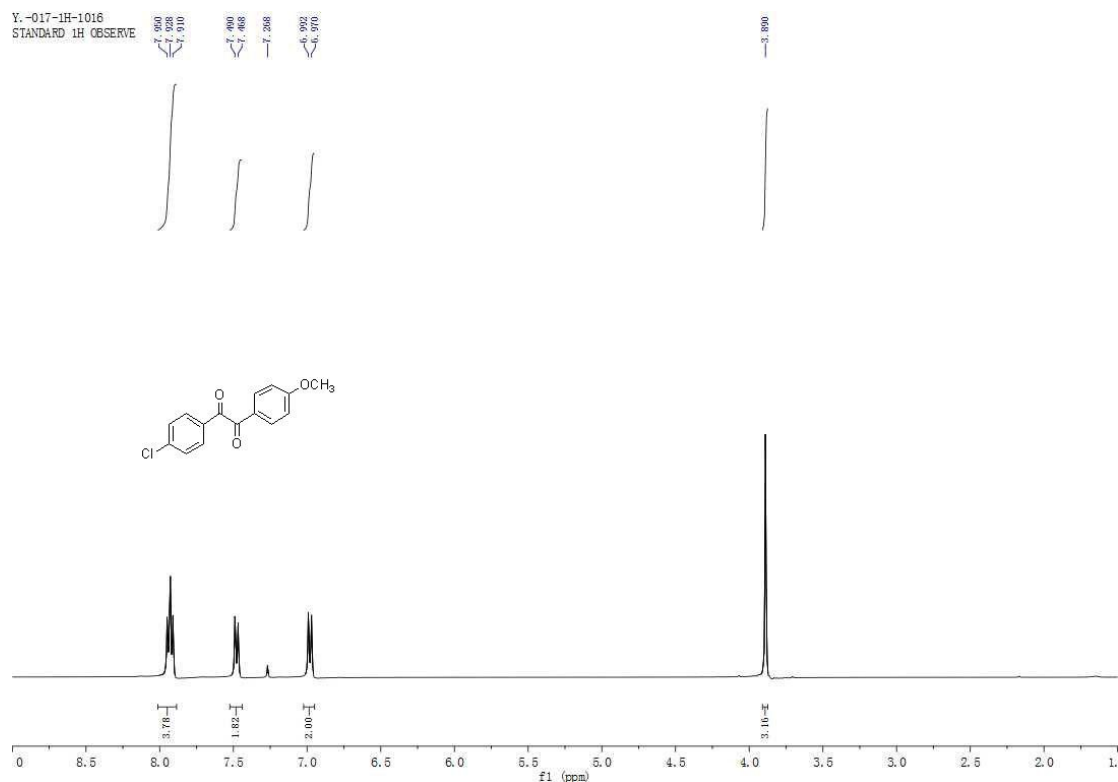


Fig 26. ¹H NMR of 1-(4-chlorophenyl)-2-(4-methoxyphenyl)ethane-1,2-dione

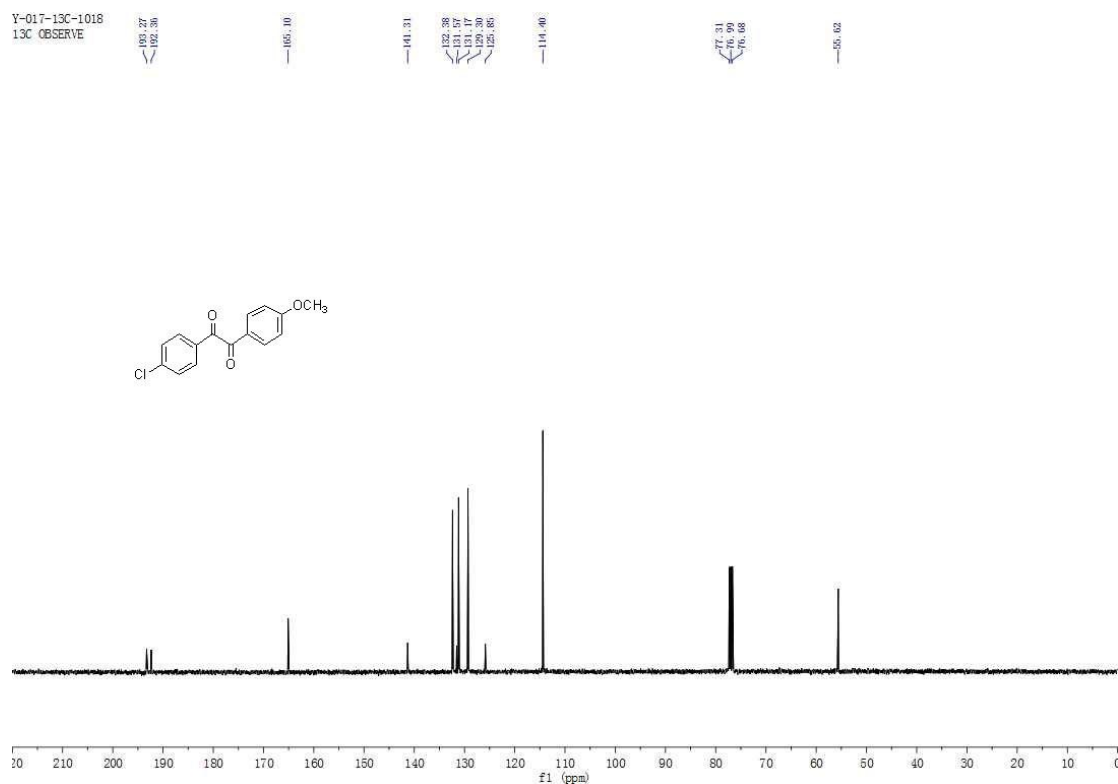


Fig 27. ¹³C NMR of 1-(4-chlorophenyl)-2-(4-methoxyphenyl)ethane-1,2-dione

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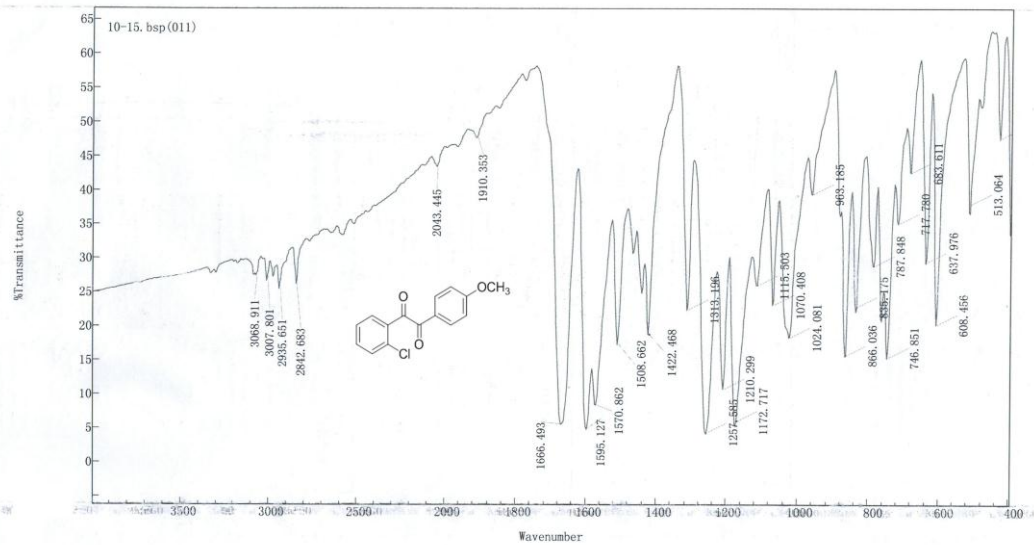


Fig 28. IR of 1-(2-chlorophenyl)-2-(4-methoxyphenyl)ethane-1,2-dione

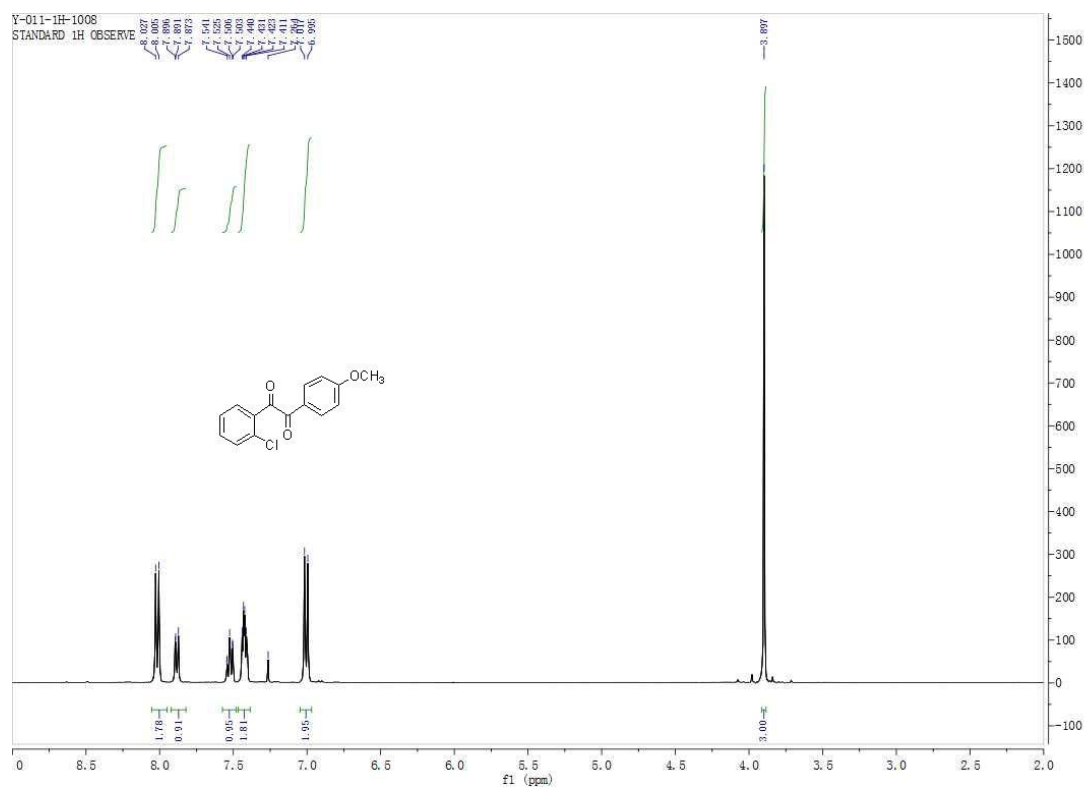


Fig 29. ¹H NMR of 1-(2-chlorophenyl)-2-(4-methoxyphenyl)ethane-1,2-dione

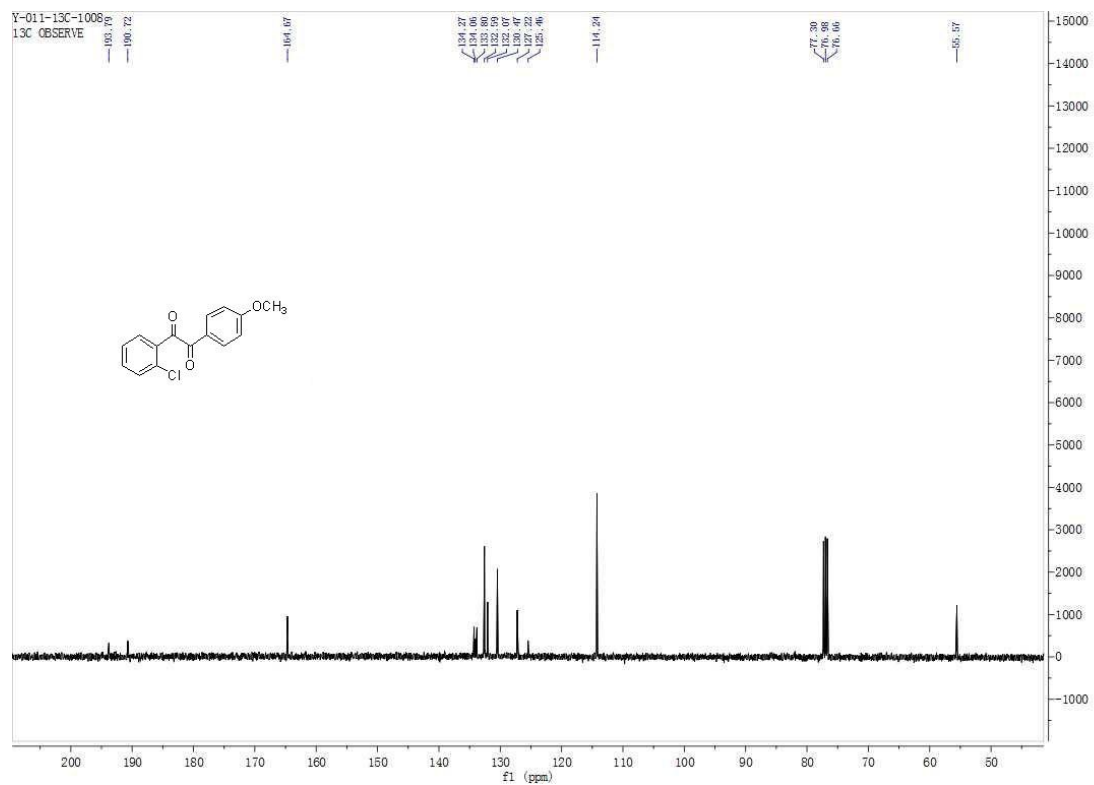


Fig 30. ^{13}C NMR of 1-(2-chlorophenyl)-2-(4-methoxyphenyl)ethane-1,2-dione

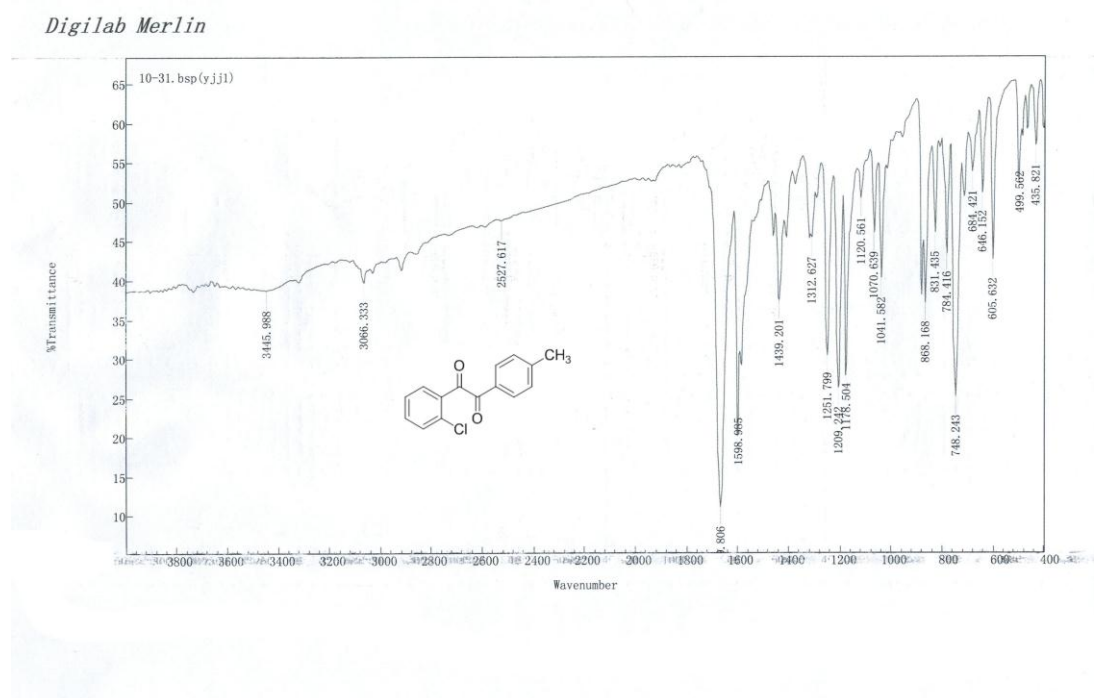


Fig 31. IR of 1-(2-chlorophenyl)-2-p-tolyloethane-1,2-dione

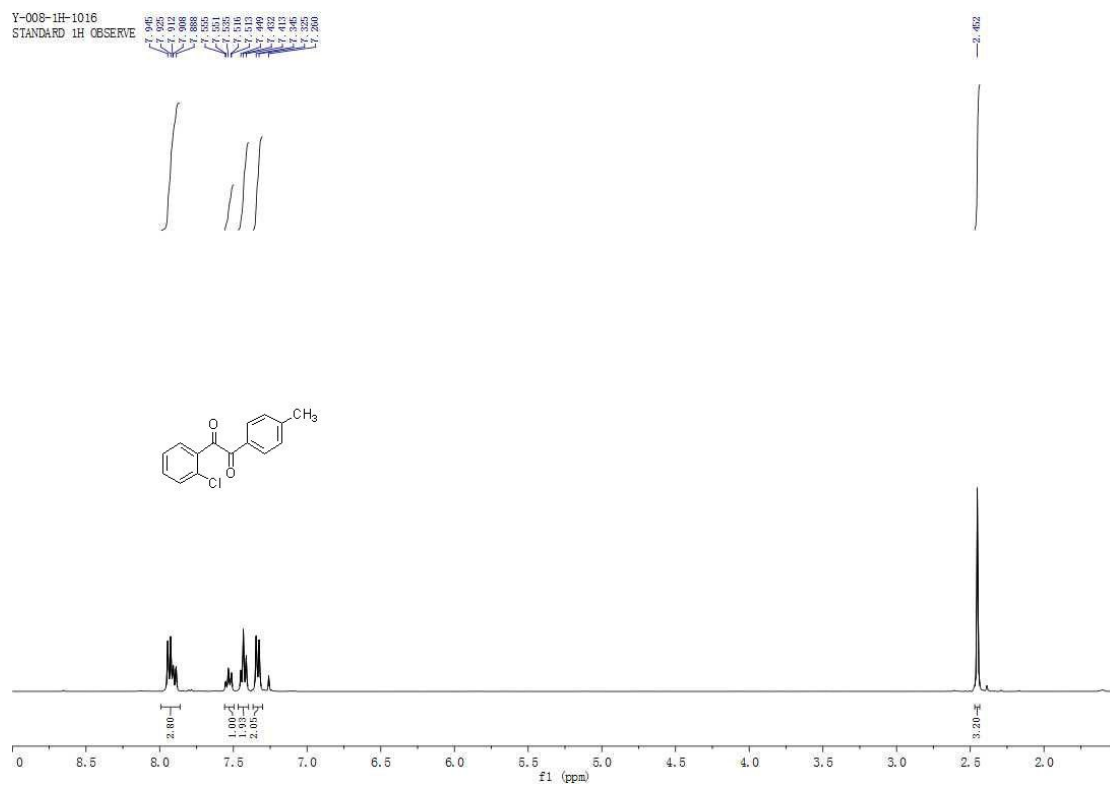


Fig 32. ^1H NMR of 1-(2-chlorophenyl)-2-*p*-tolylethane-1,2-dione

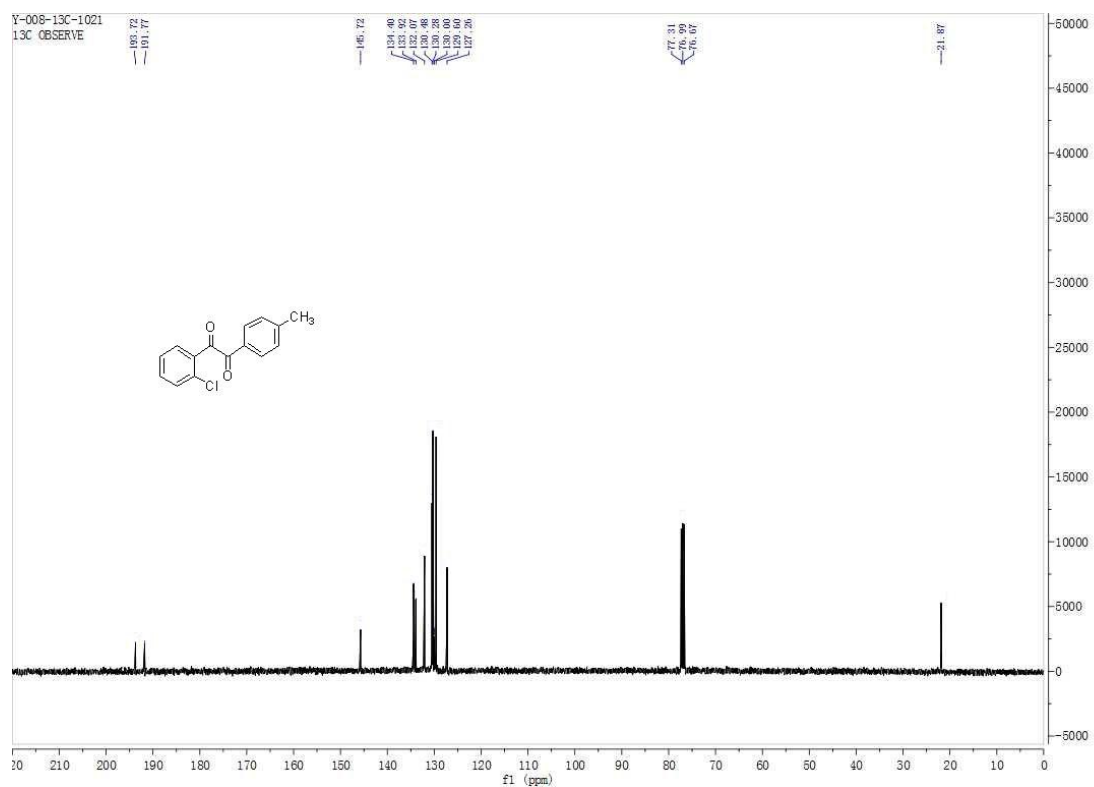


Fig 33. ^{13}C NMR of 1-(2-chlorophenyl)-2-*p*-tolylethane-1,2-dione

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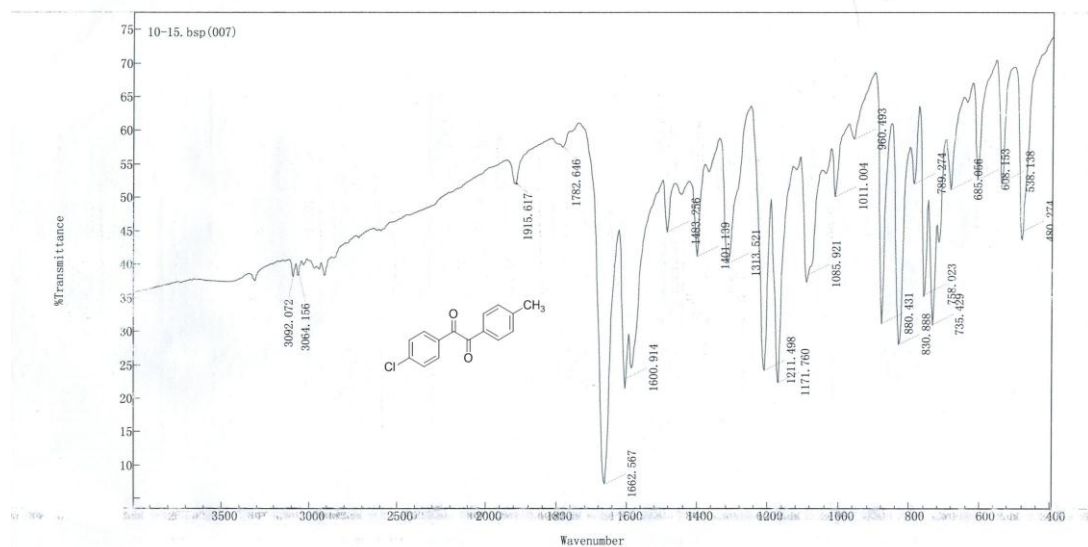


Fig 34. IR of 1-(4-chlorophenyl)-2-p-tolyloethane-1,2-dione

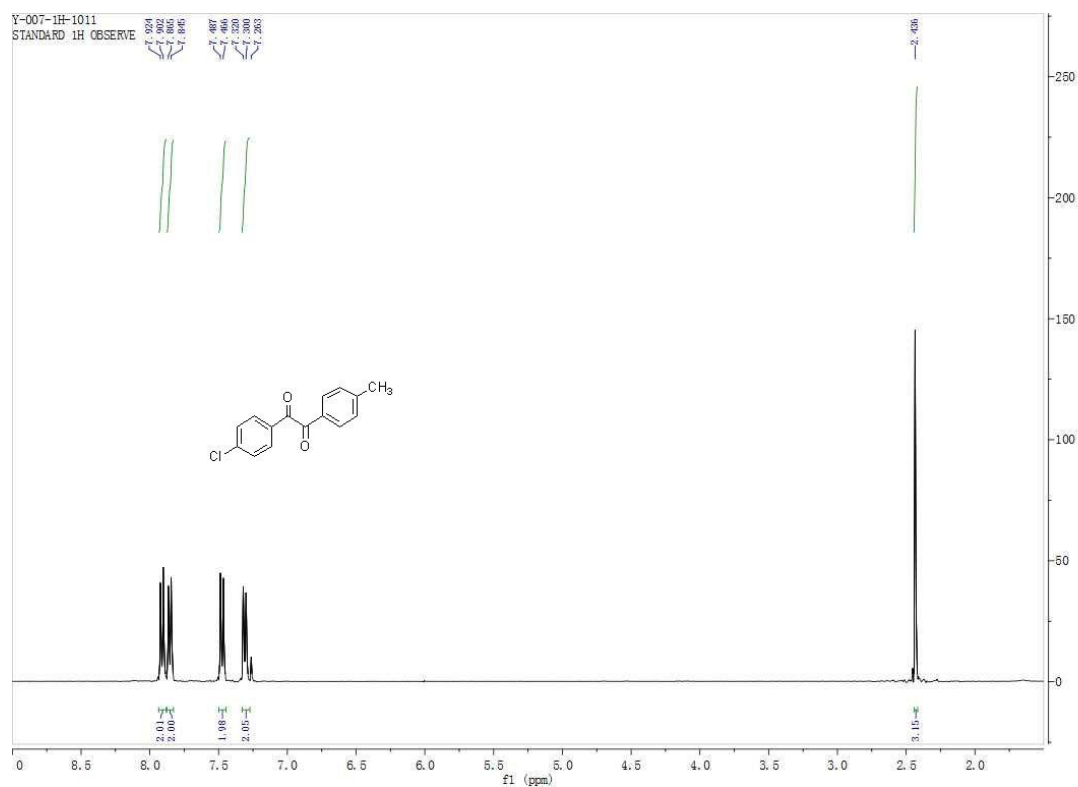


Fig 35. ¹H NMR of 1-(4-chlorophenyl)-2-p-tolyloethane-1,2-dione

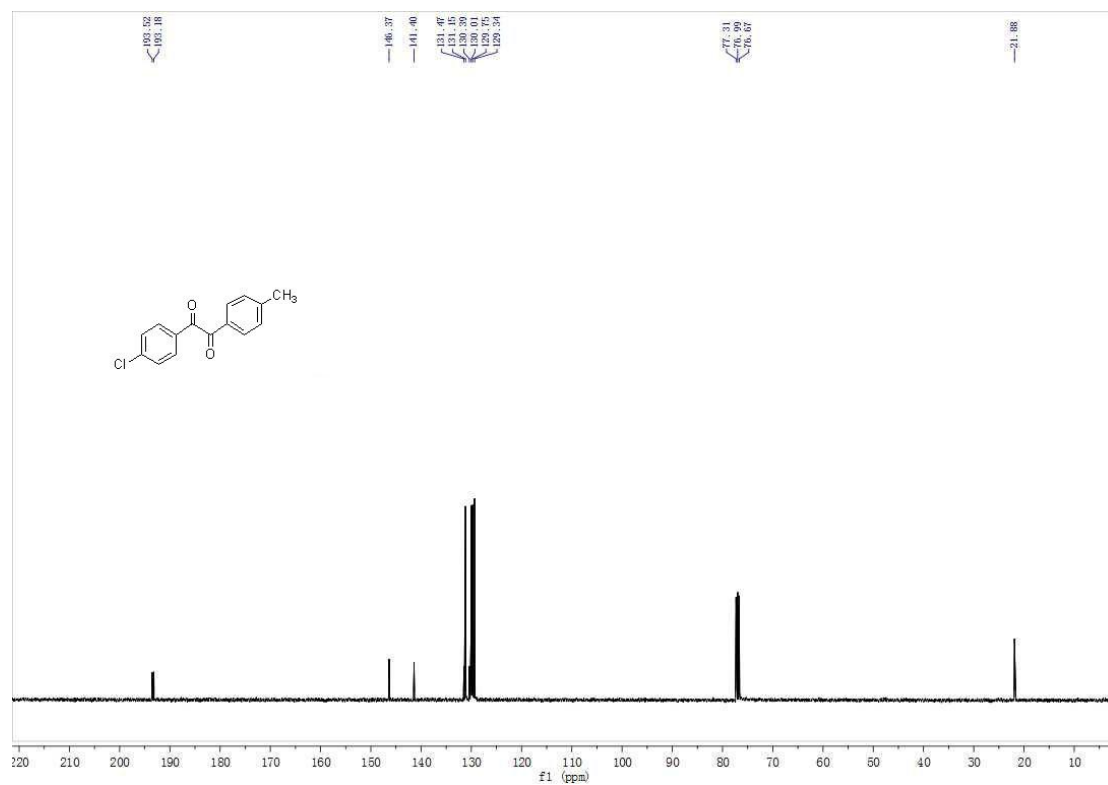


Fig 36. ^{13}C NMR of 1-(4-chlorophenyl)-2-*p*-tolylethane-1,2-dione

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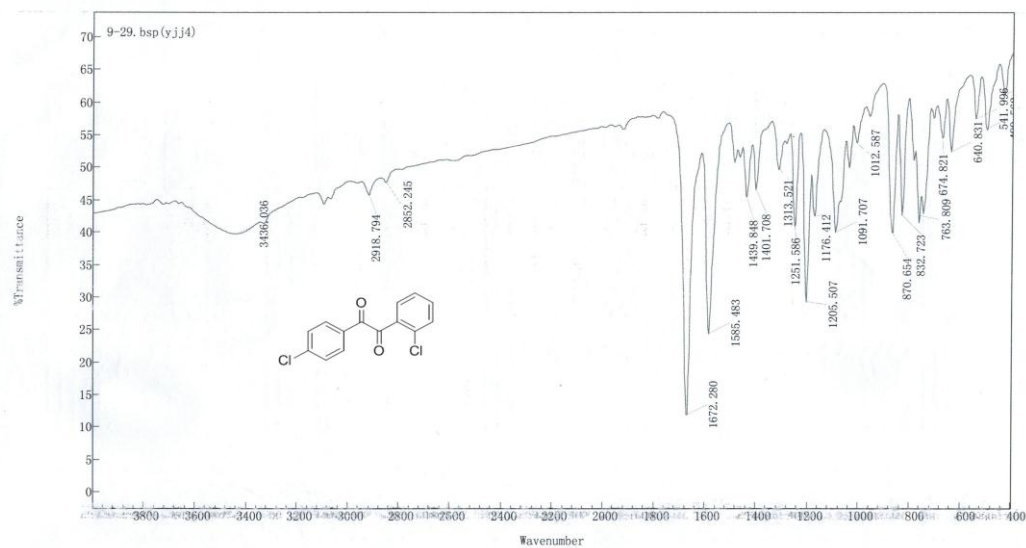


Fig 37. IR of 1-(2-chlorophenyl)-2-(4-chlorophenyl)ethane-1,2-dione

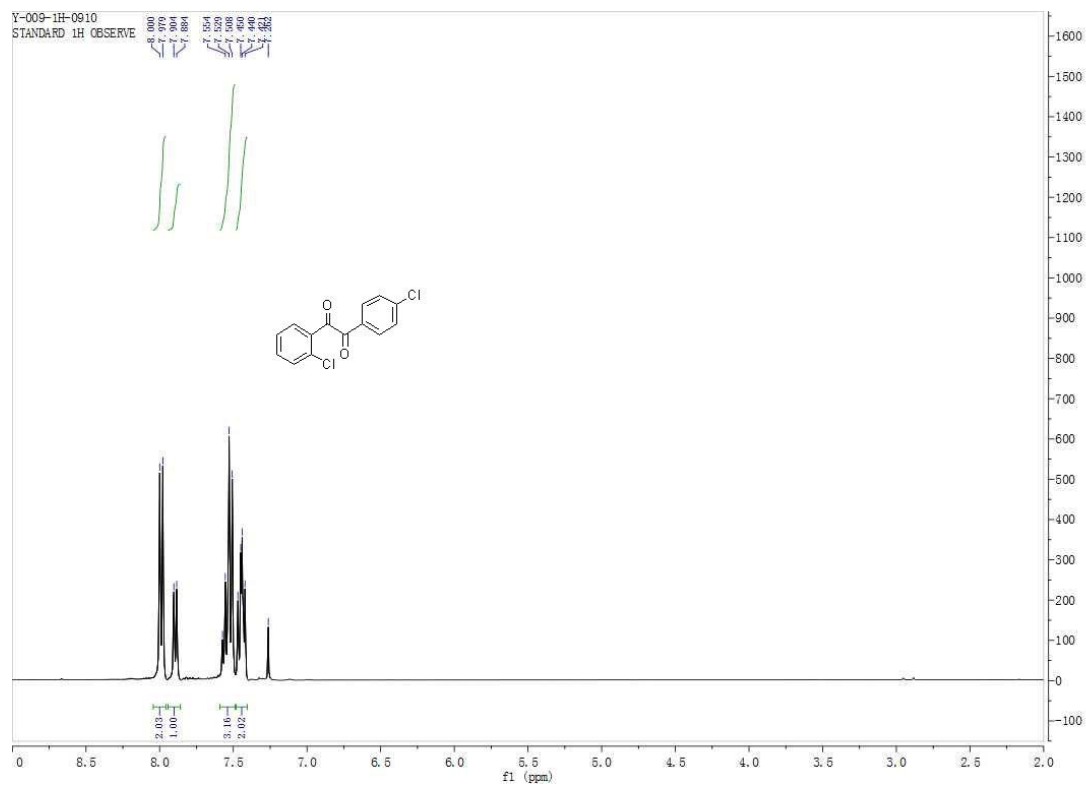


Fig 38. ¹H NMR of 1-(2-chlorophenyl)-2-(4-chlorophenyl)ethane-1,2-dione

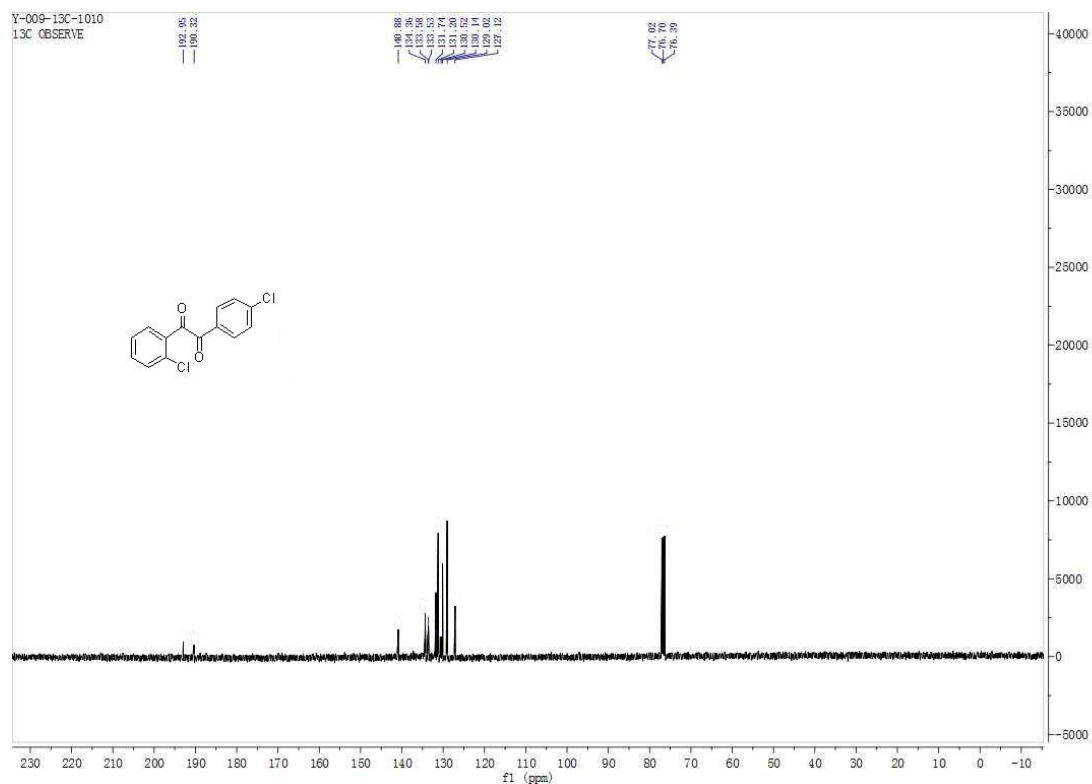


Fig 39. ¹³C NMR of 1-(2-chlorophenyl)-2-(4-chlorophenyl)ethane-1,2-dione

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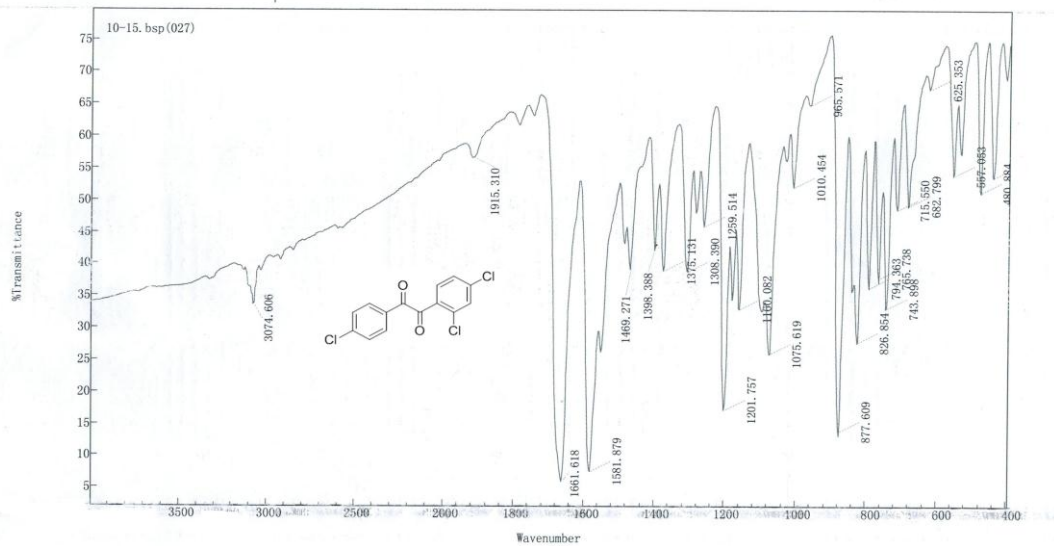


Fig 40. IR of 1-(4-chlorophenyl)-2-(2,4-dichlorophenyl)ethane-1,2-dione

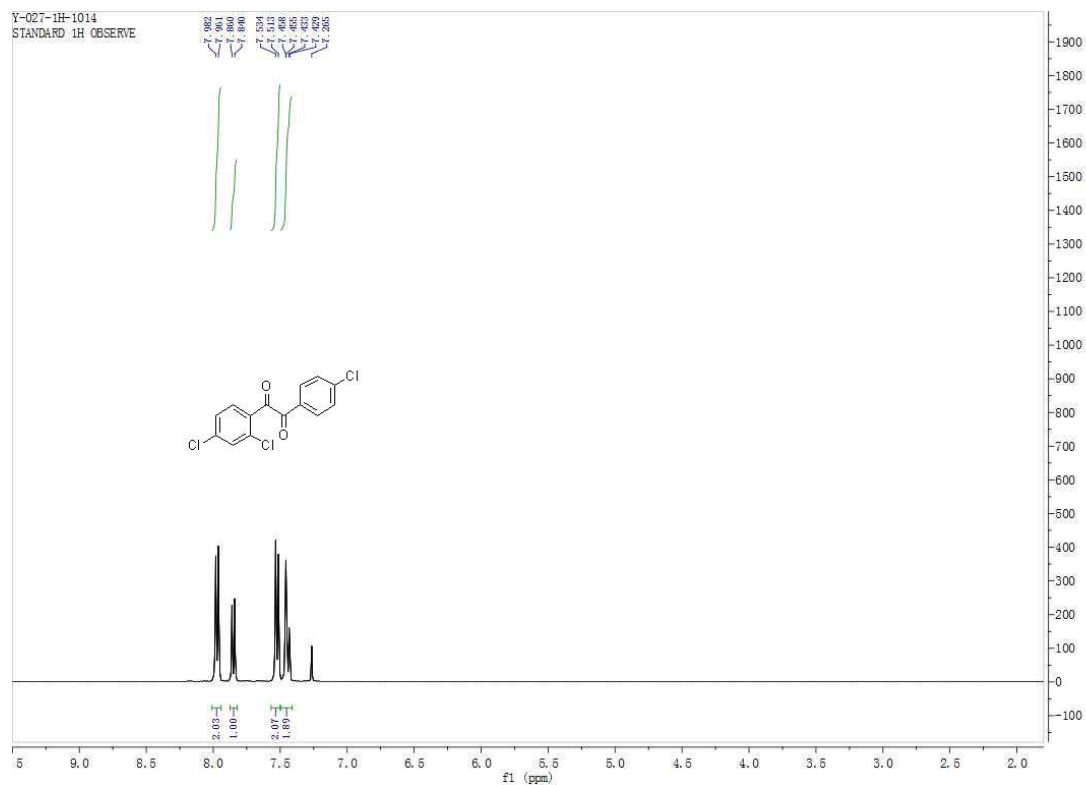


Fig 41. ¹H NMR of 1-(4-chlorophenyl)-2-(2,4-dichlorophenyl)ethane-1,2-dione

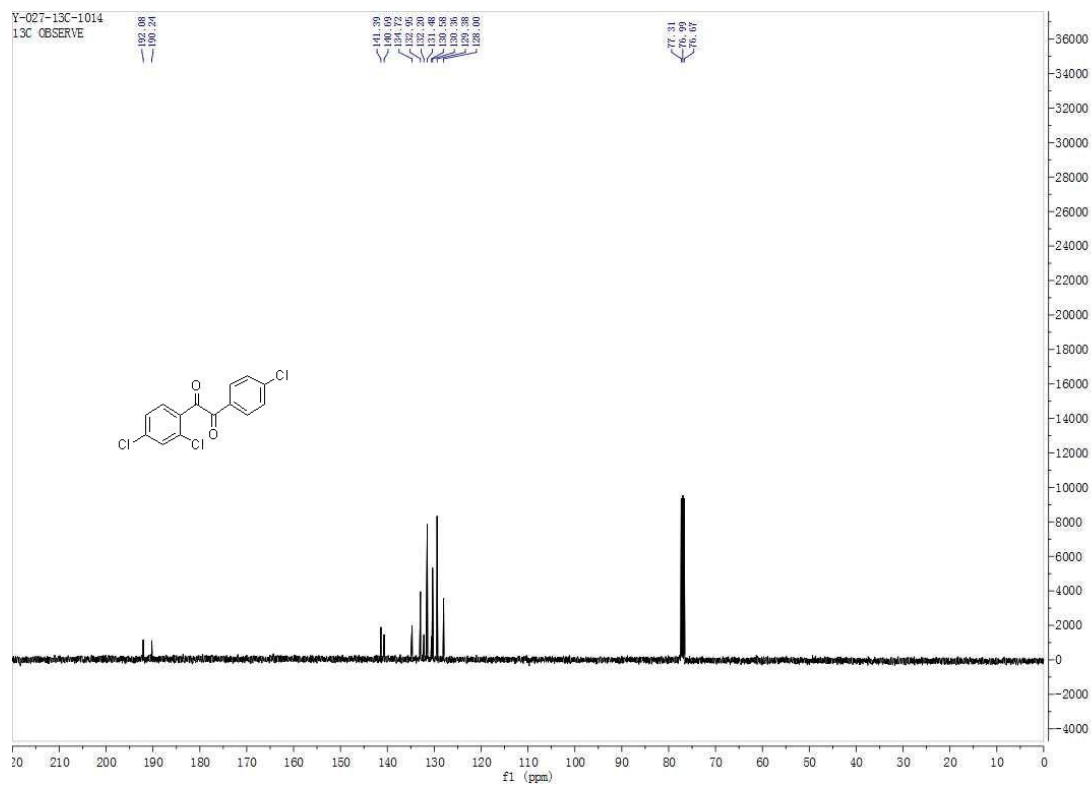


Fig 42. ^{13}C NMR of 1-(4-chlorophenyl)-2-(2,4-dichlorophenyl)ethane-1,2-dione

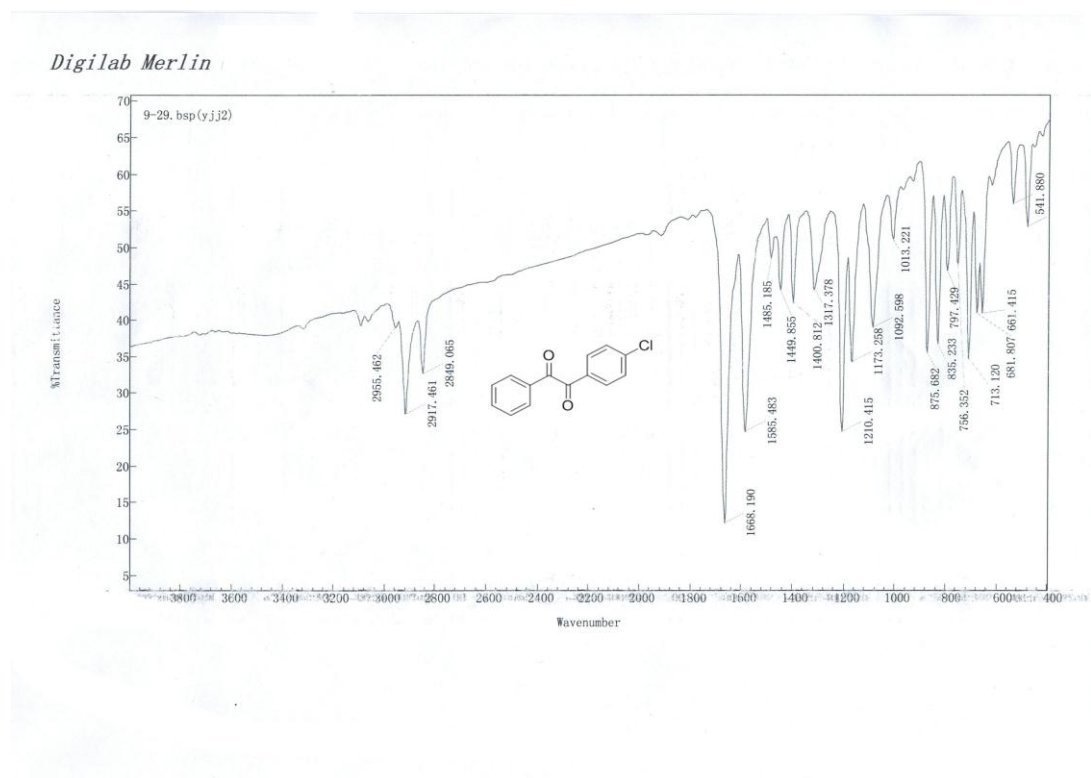


Fig 43. IR of 1-(4-chlorophenyl)-2-phenylethane-1,2-dione

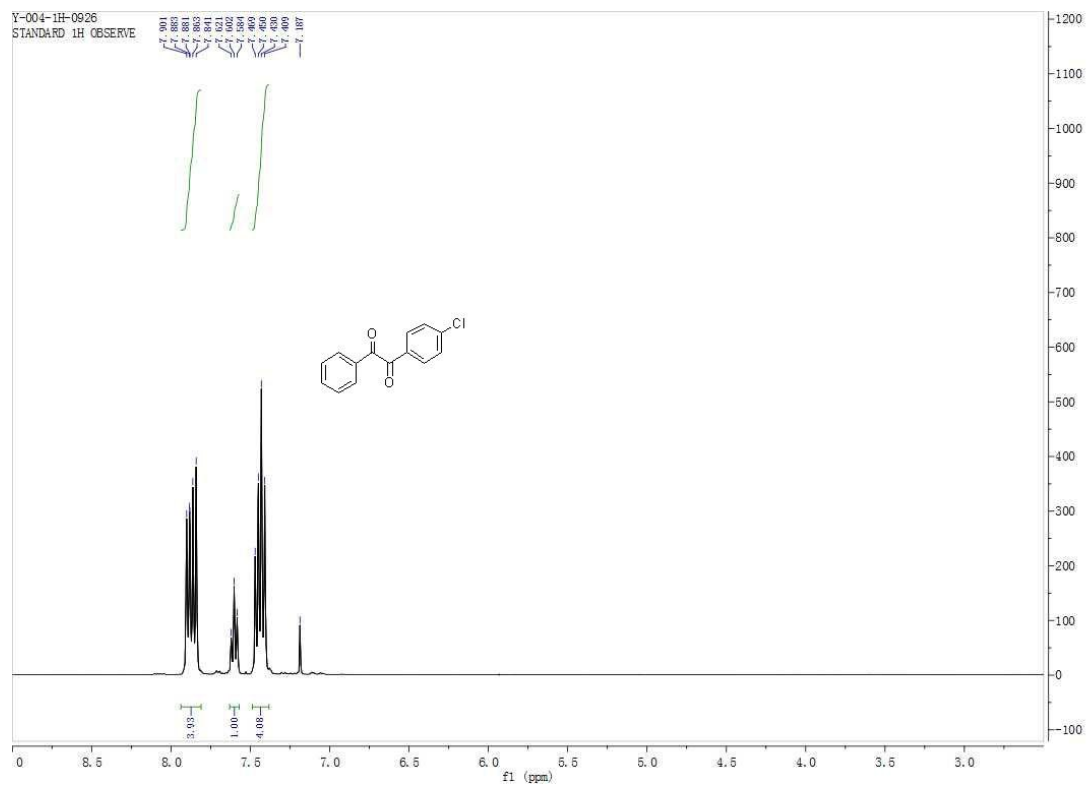


Fig 44. ¹H NMR of 1-(4-chlorophenyl)-2-phenylethane-1,2-dione

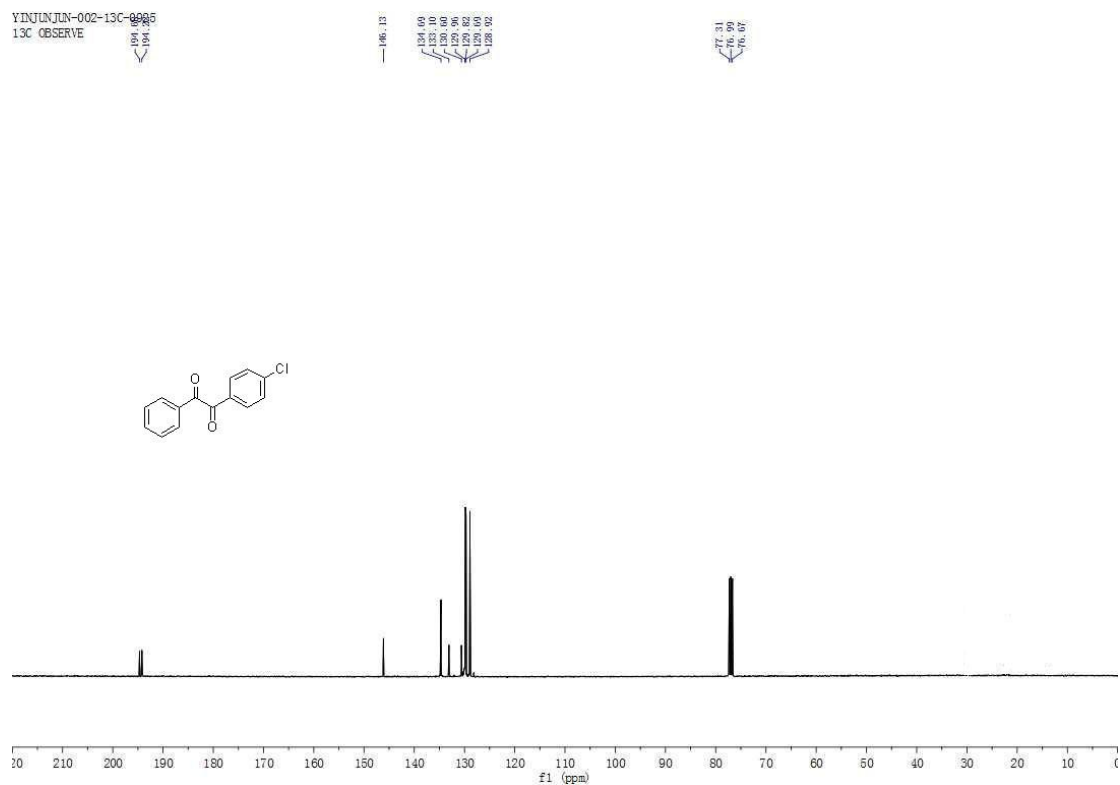


Fig 45. ¹³C NMR of 1-(4-chlorophenyl)-2-phenylethane-1,2-dione

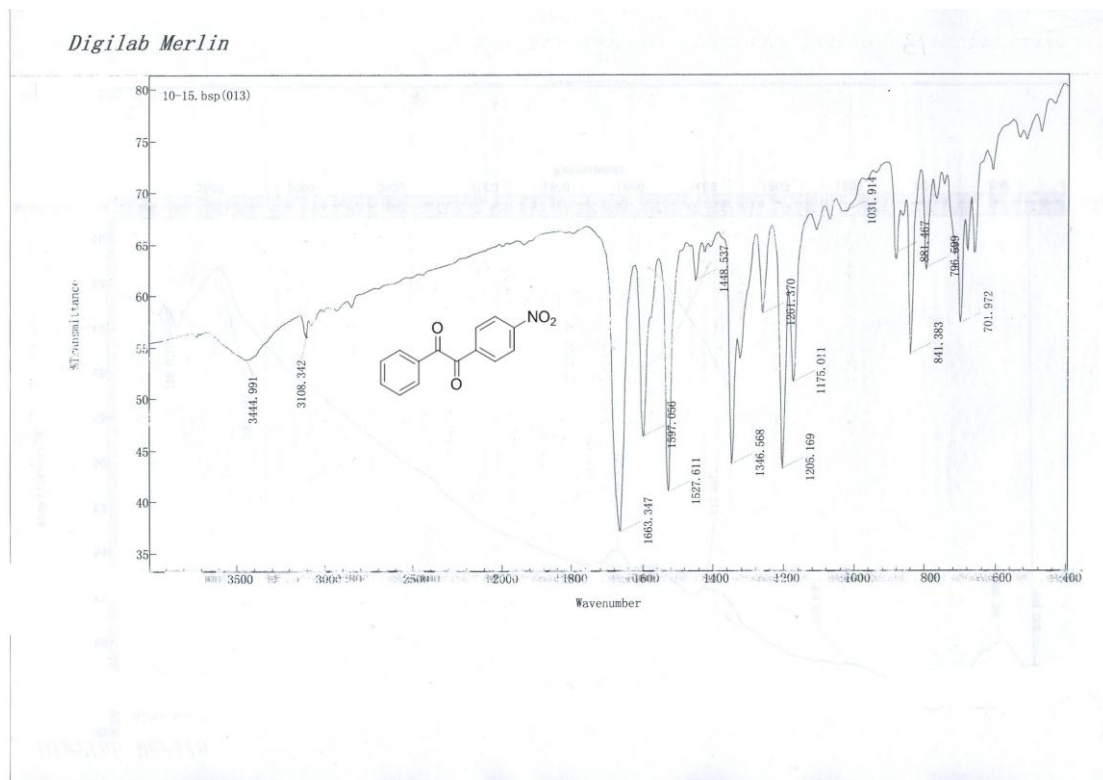


Fig 46. IR of 1-(4-nitrophenyl)-2-phenylethane-1,2-dione

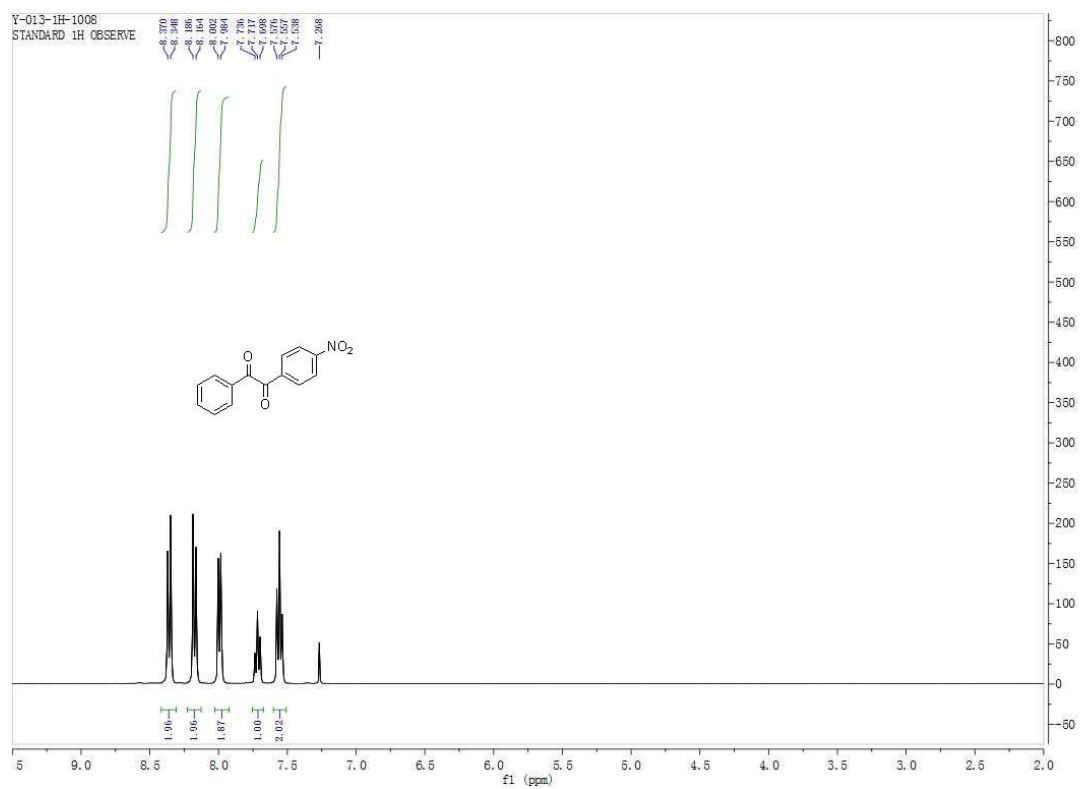


Fig 47. ^1H NMR of 1-(4-nitrophenyl)-2-phenylethane-1,2-dione

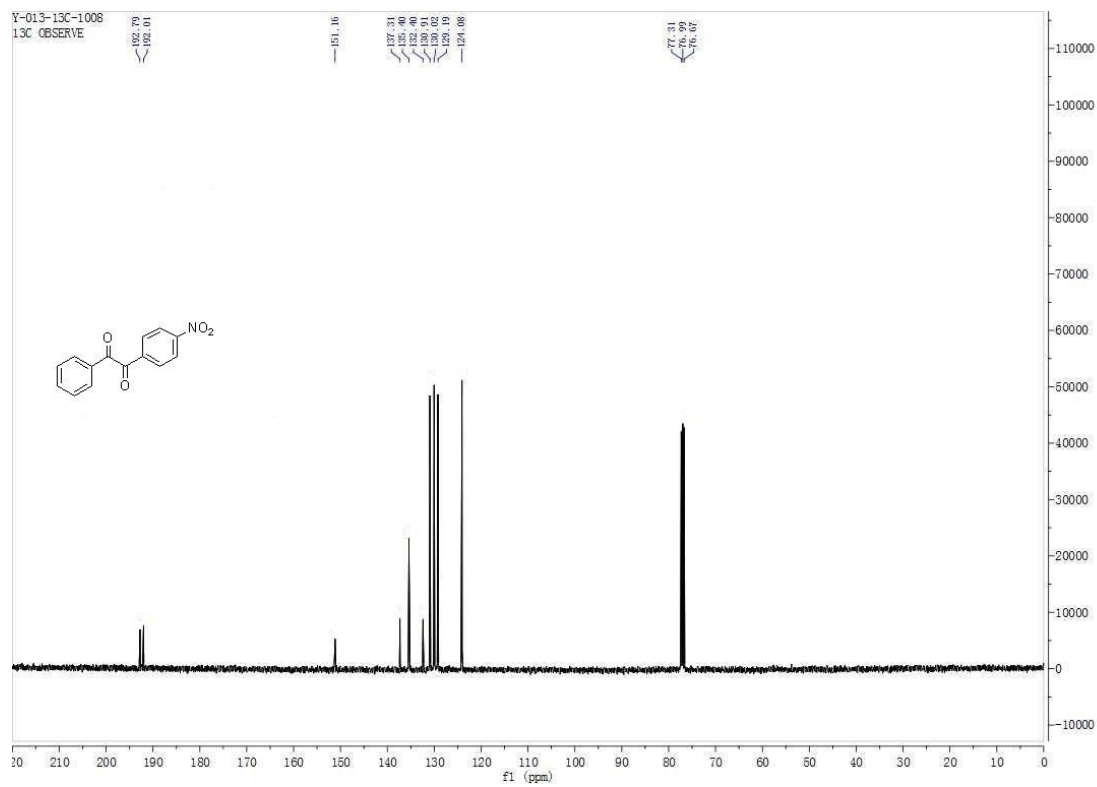


Fig 48. ^{13}C NMR of 1-(4-nitrophenyl)-2-phenylethane-1,2-dione