

Supporting Information

Copper-catalyzed Direct Synthesis of Diaryl 1,2-Diketones from Aryl Iodides and Propiolic Acids

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Korea,

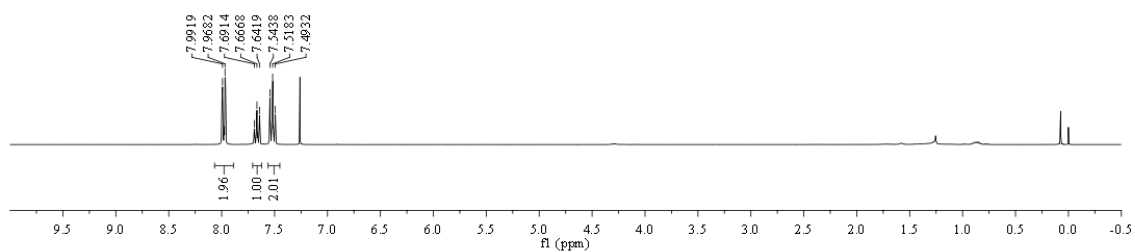
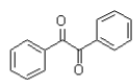
sunwoo@chonnam.ac.kr

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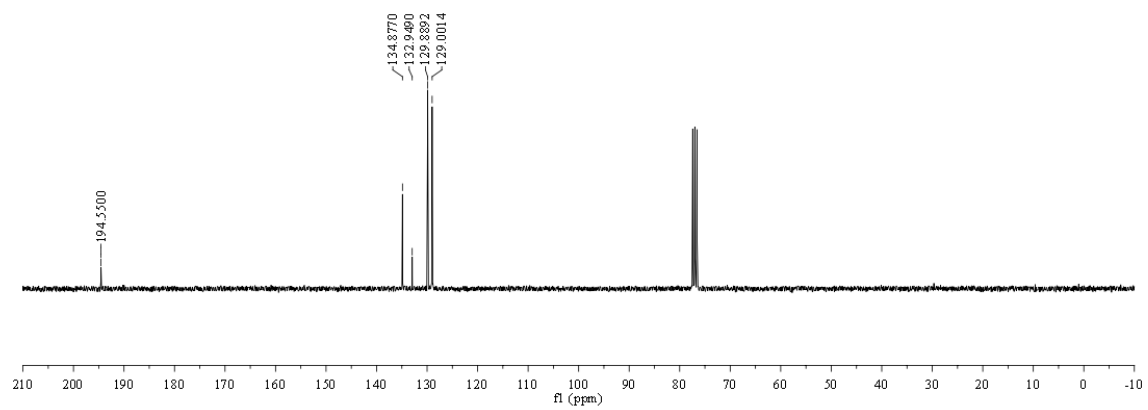
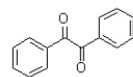
Spectroscopic Data

S2-S26

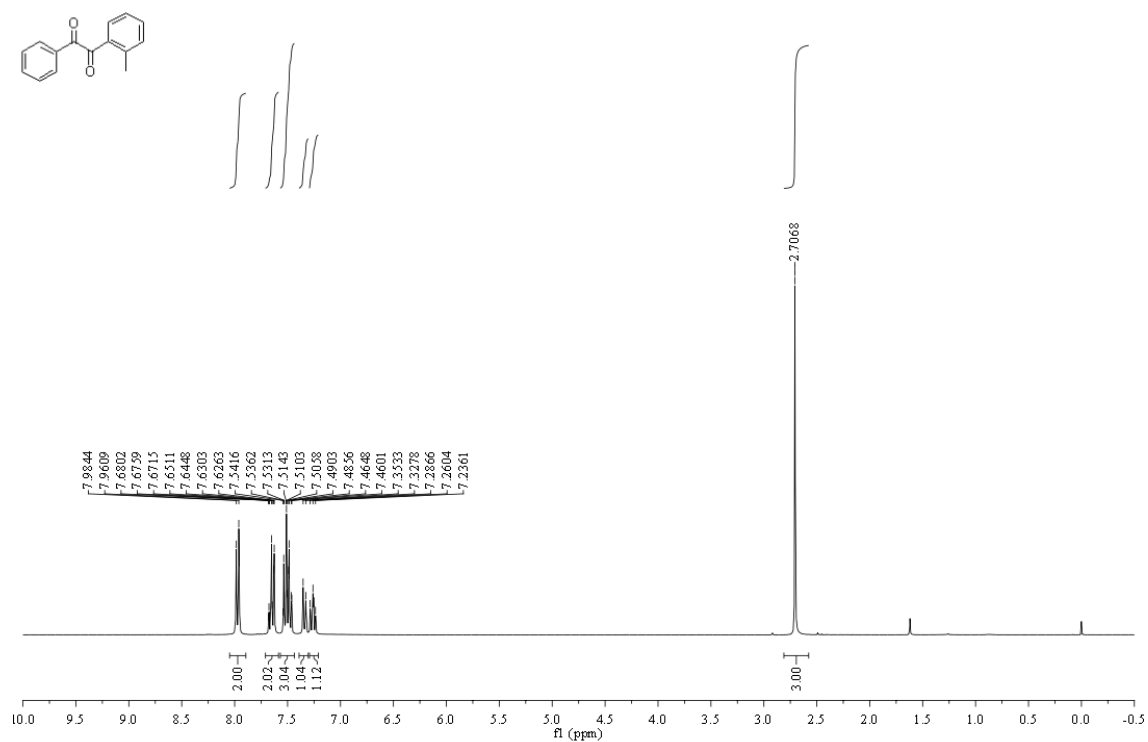
^1H NMR, Benzil (**3a**)



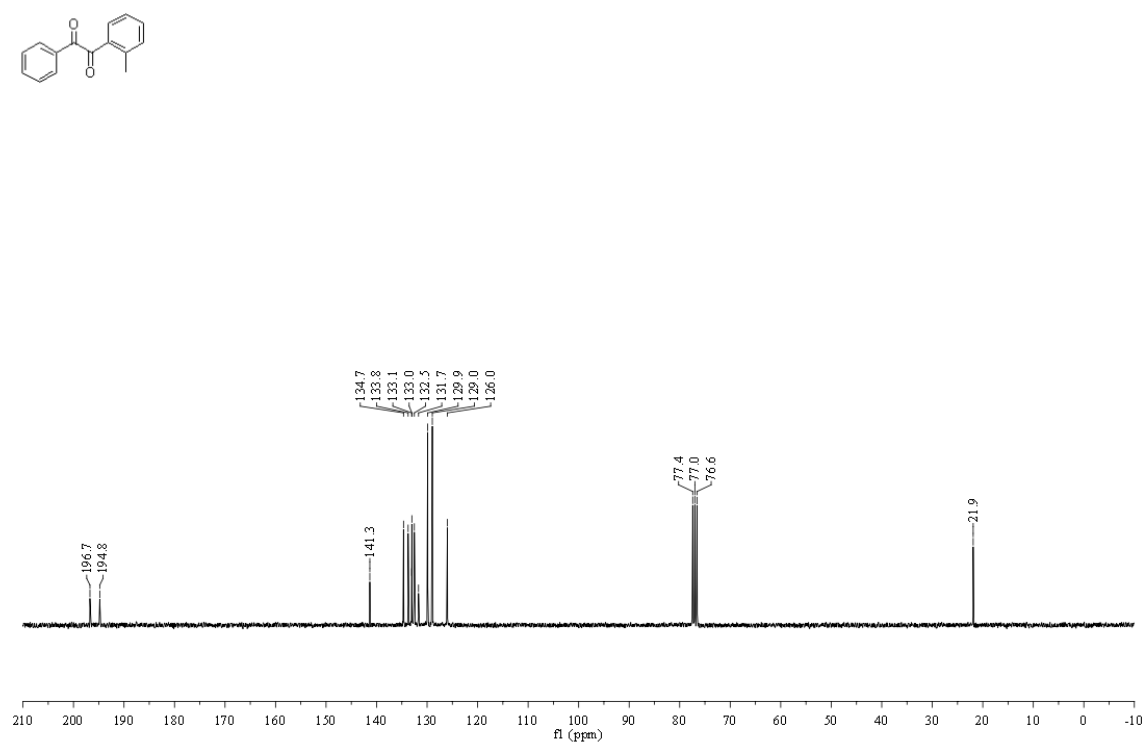
$^{13}\text{C}\{^1\text{H}\}$ NMR, Benzil (**3a**)



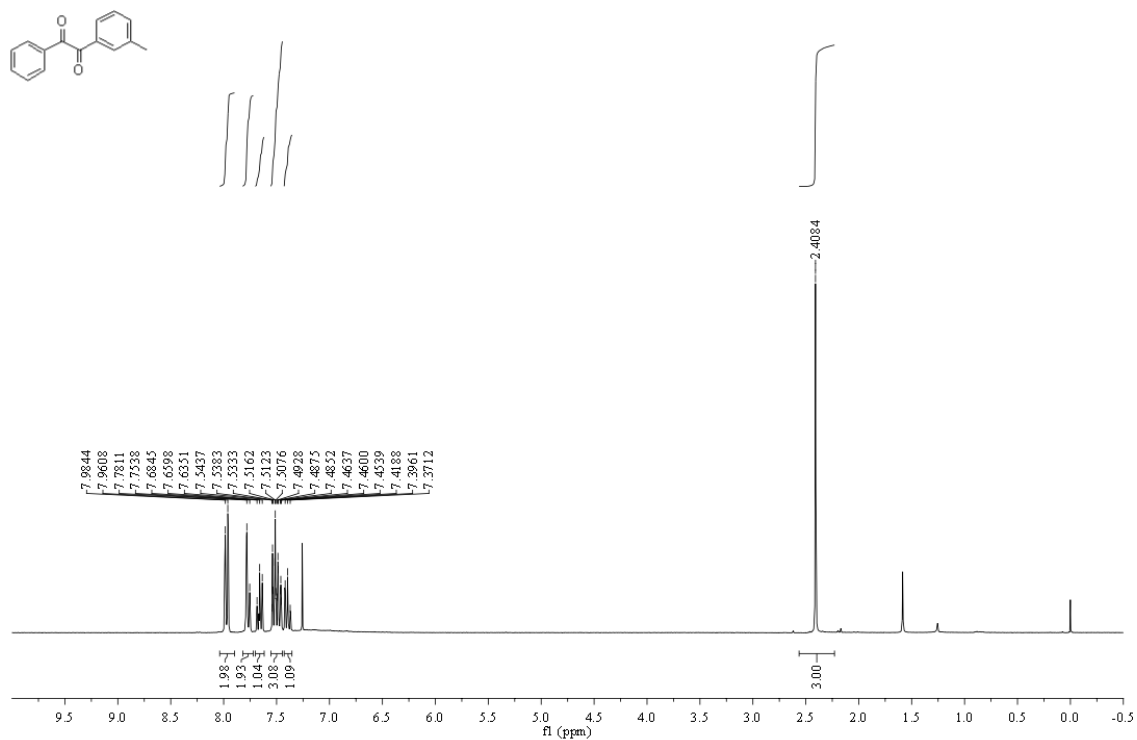
^1H NMR, 1-Phenyl-2-*o*-tolylethane-1,2-dione (**3b**)



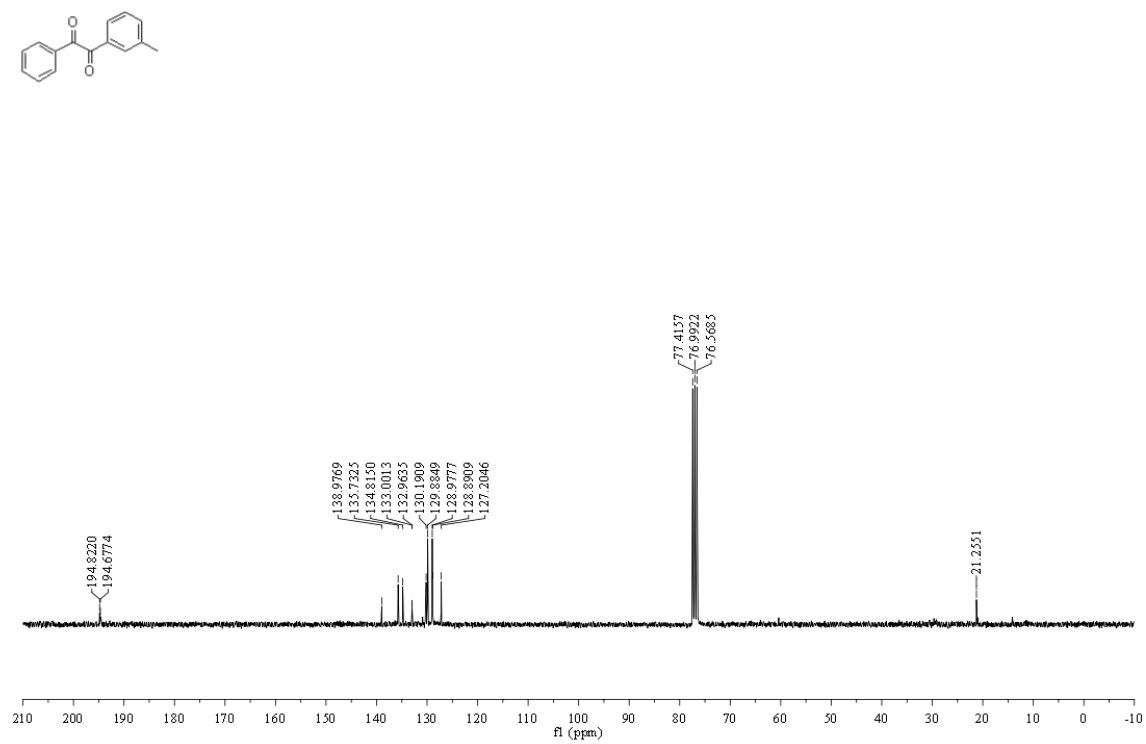
$^{13}\text{C}\{^1\text{H}\}$ NMR, 1-Phenyl-2-*o*-tolylethane-1,2-dione (**3b**)



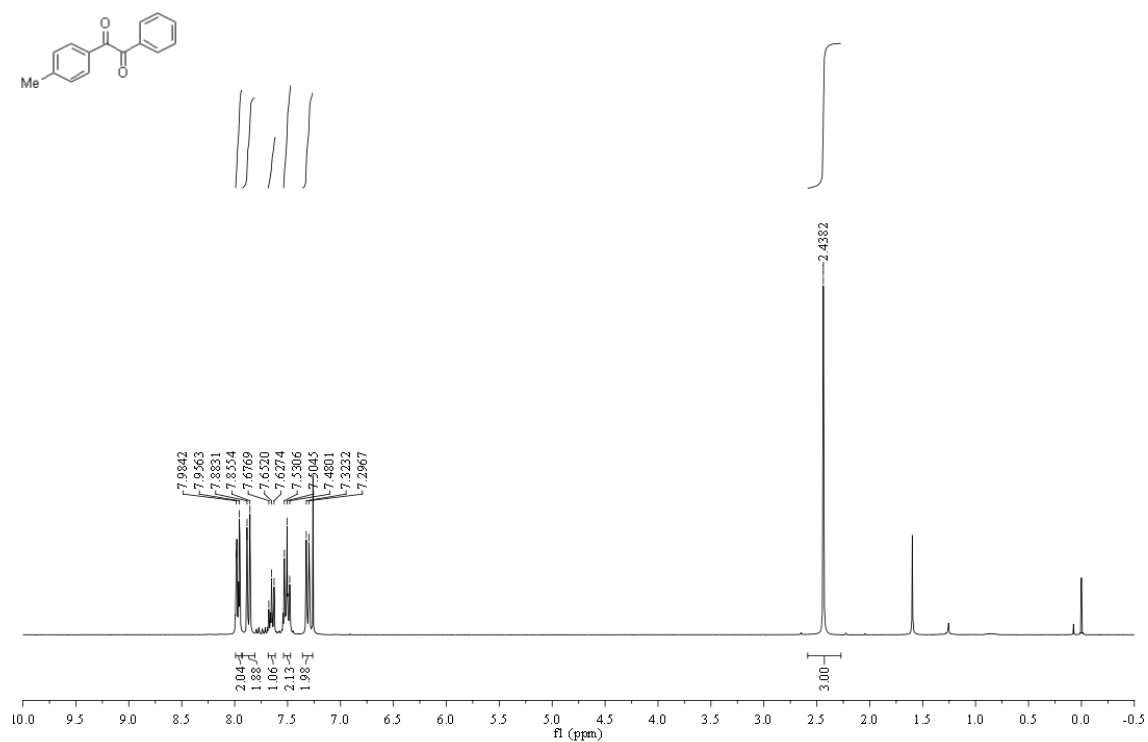
^1H NMR, 1-Phenyl-2-*m*-tolylethane-1,2-dione (**3c**)



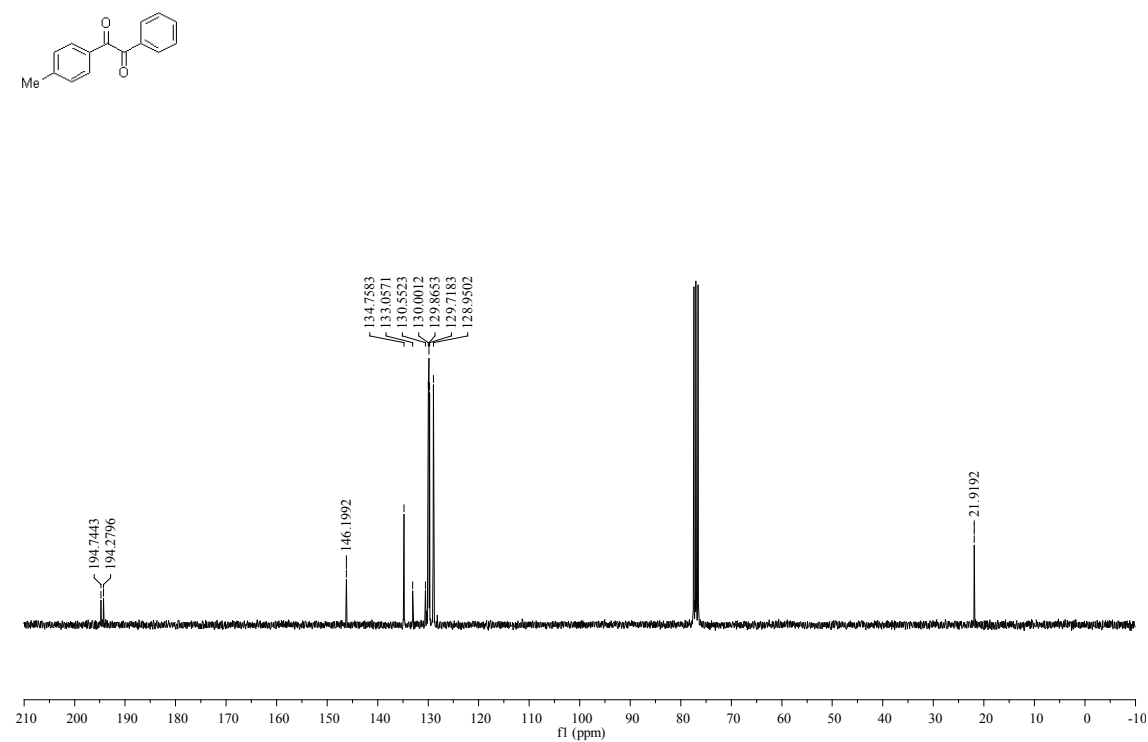
$^{13}\text{C}\{^1\text{H}\}$ NMR, 1-Phenyl-2-*m*-tolylethane-1,2-dione (**3c**)



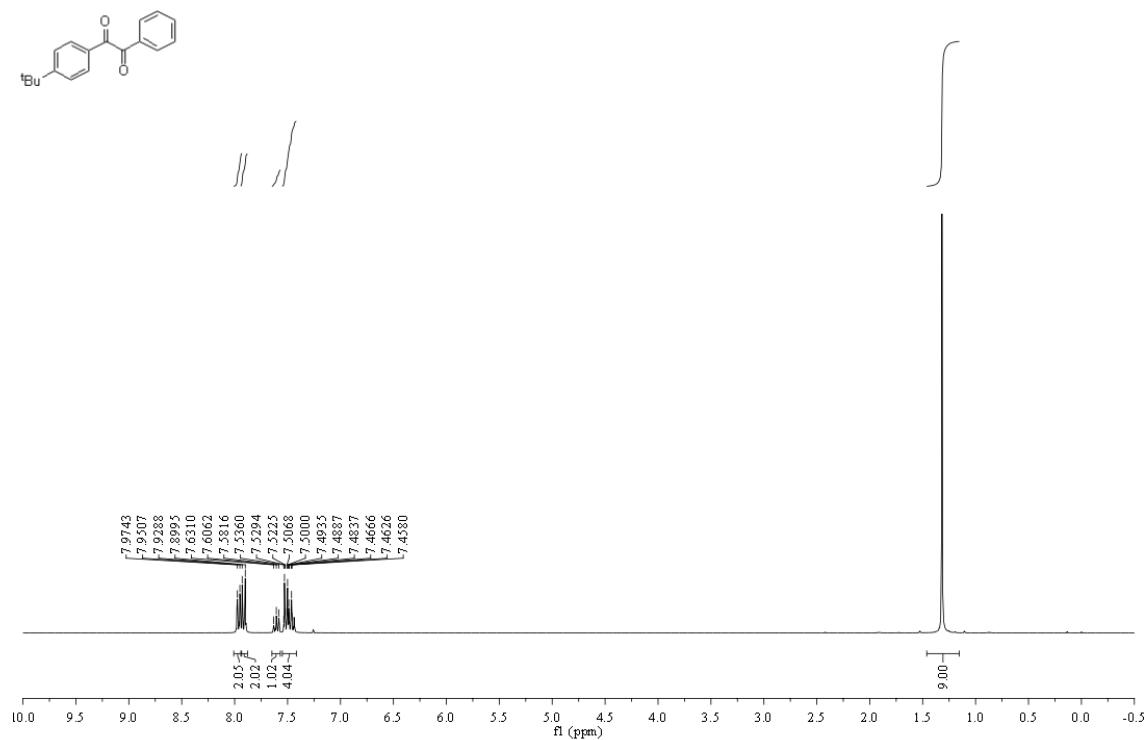
^1H NMR, 1-Phenyl-2-*p*-tolylethane-1,2-dione (**3d**)



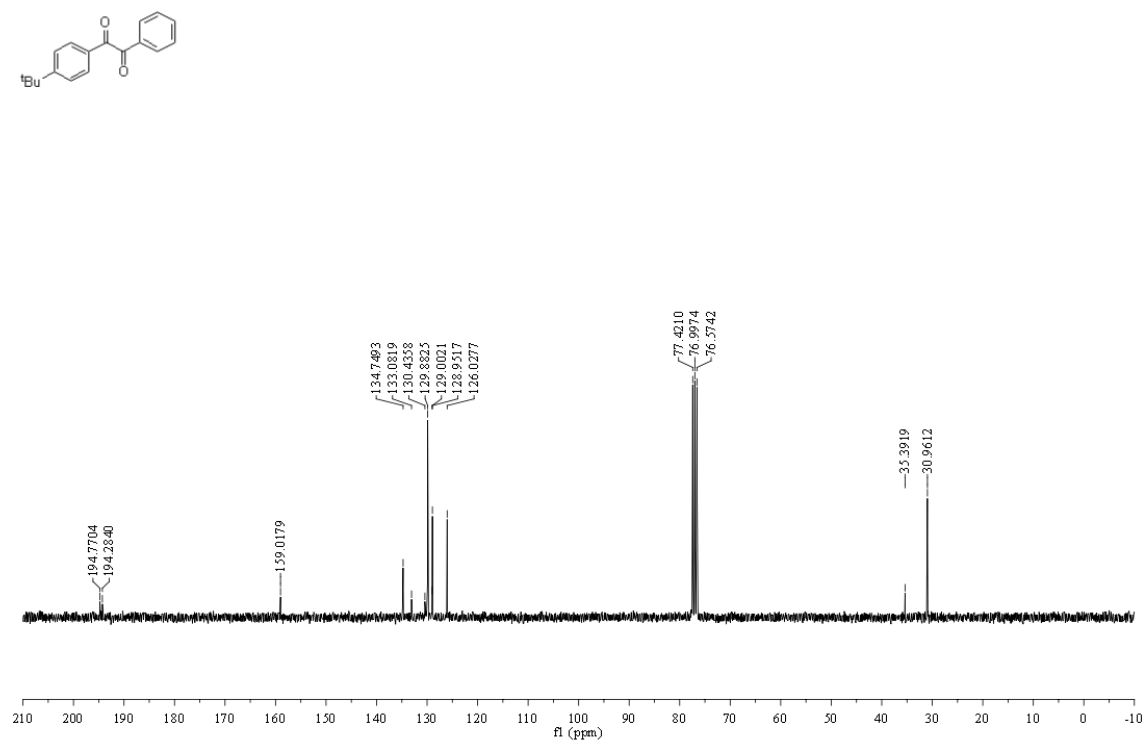
$^{13}\text{C}\{^1\text{H}\}$ NMR, 1-Phenyl-2-*p*-tolylethane-1,2-dione (**3d**)



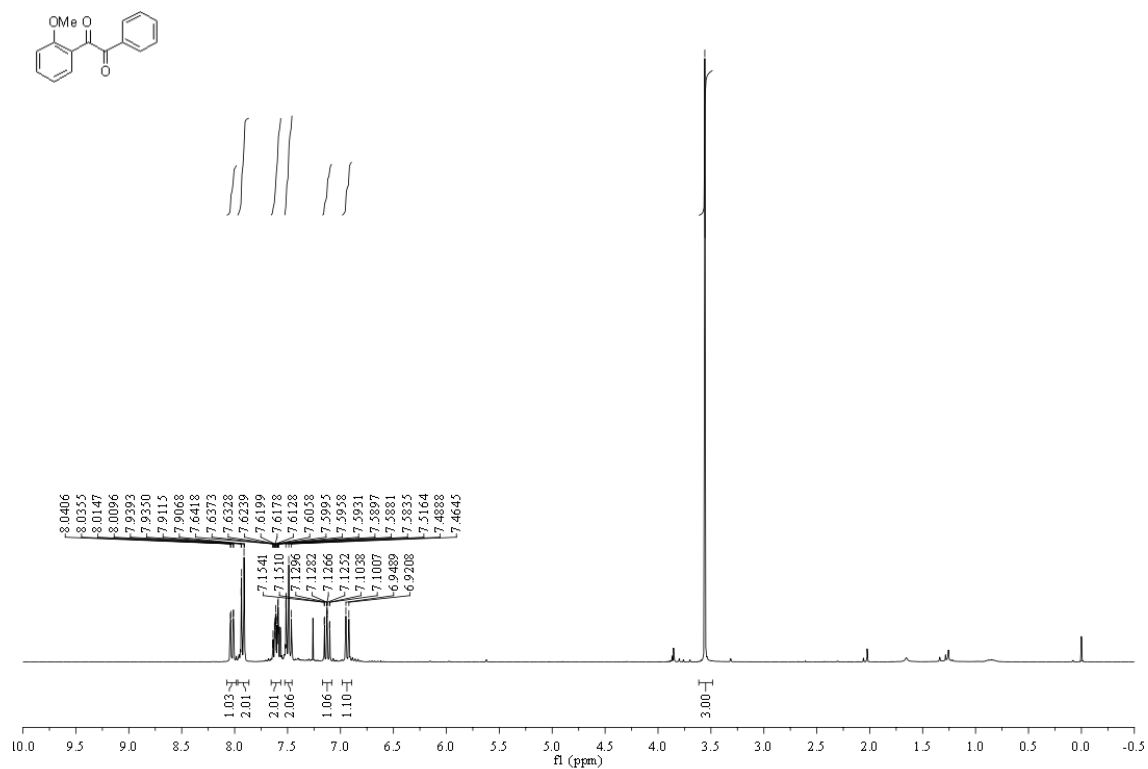
^1H NMR, 1-(4-*tert*-Butylphenyl)-2-phenylethane-1,2-dione (**3e**)



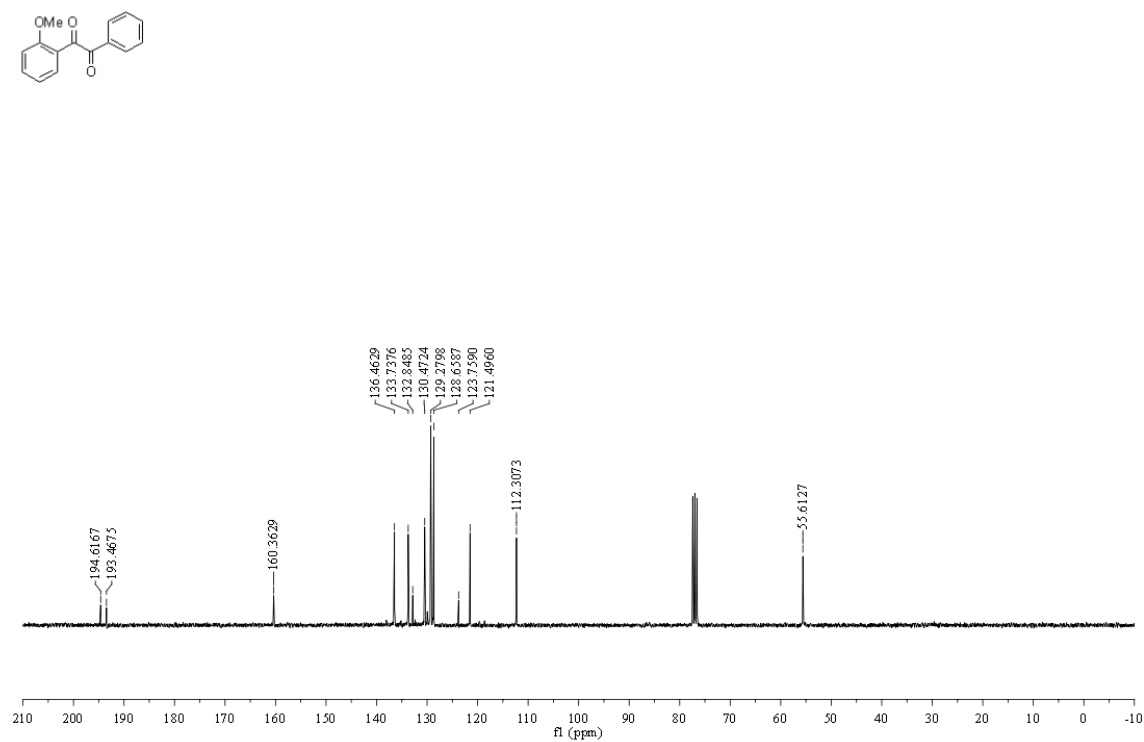
$^{13}\text{C}\{^1\text{H}\}$ NMR, 1-(4-*tert*-Butylphenyl)-2-phenylethane-1,2-dione (**3e**)



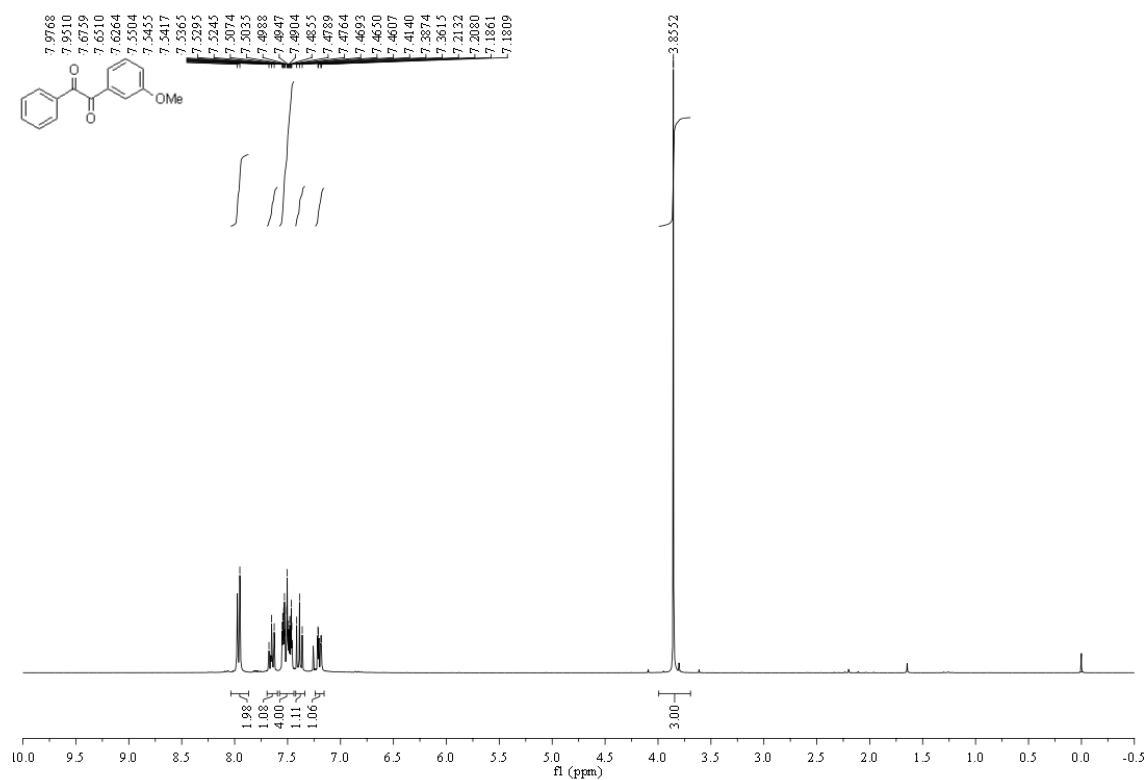
^1H NMR, 1-(2-methoxyphenyl)-2-phenylethane-1,2-dione (**3f**)



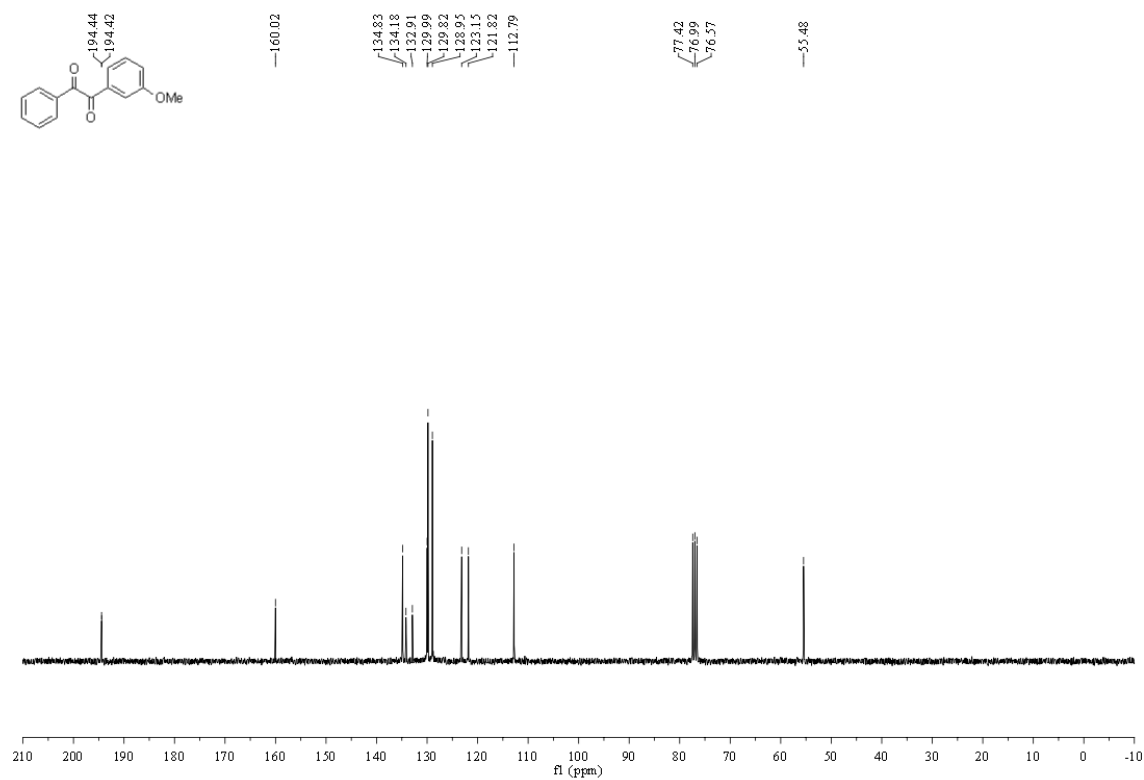
$^{13}\text{C}\{^1\text{H}\}$ NMR, 1-(2-methoxyphenyl)-2-phenylethane-1,2-dione (**3f**)



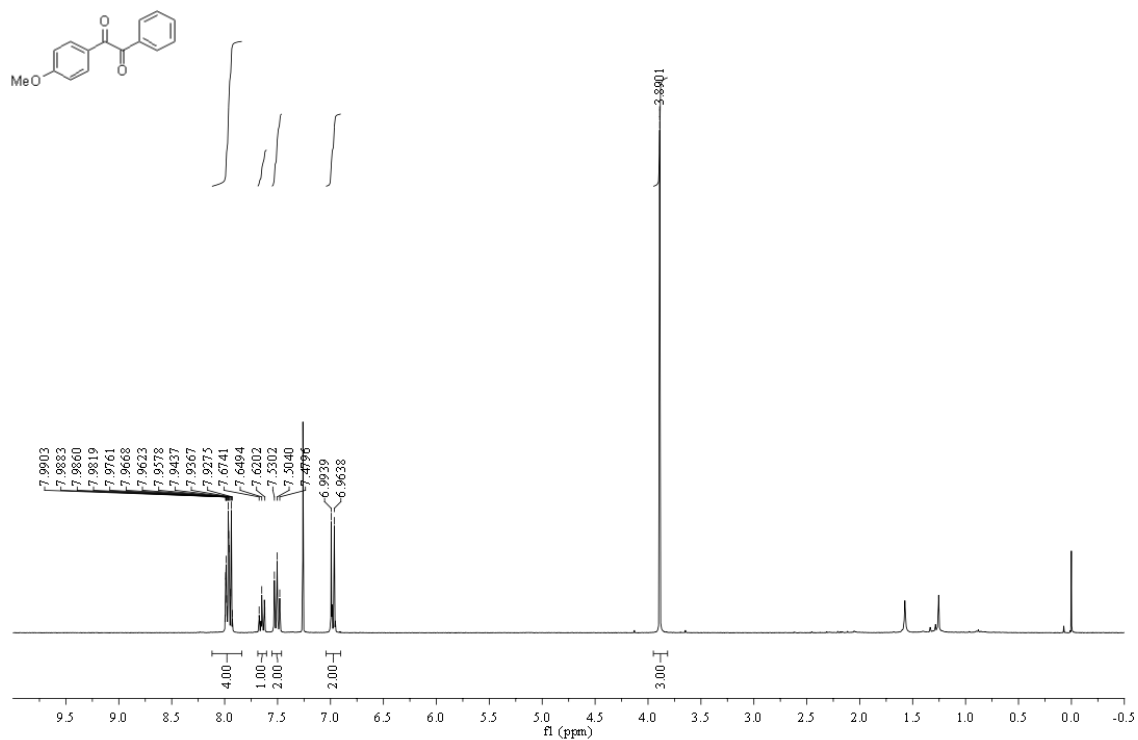
^1H NMR, 1-(3-Methoxyphenyl)-2-phenylethane-1,2-dione (**3g**)



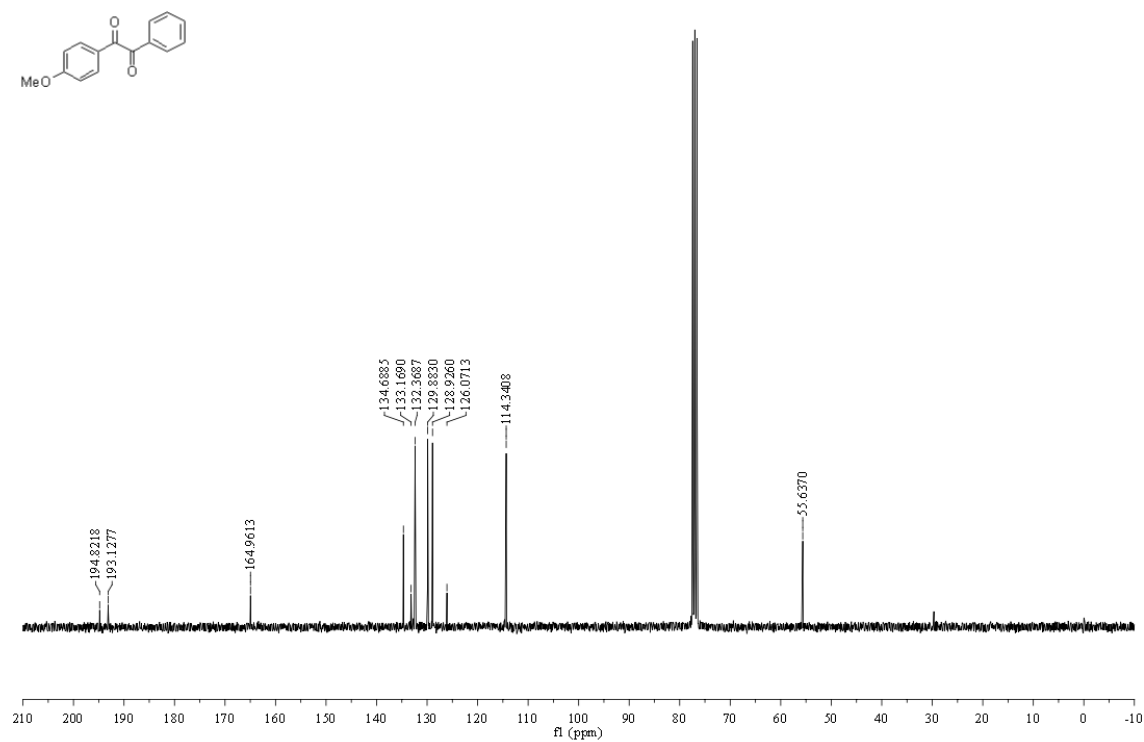
$^{13}\text{C}\{^1\text{H}\}$ NMR, 1-(3-Methoxyphenyl)-2-phenylethane-1,2-dione (**3g**)



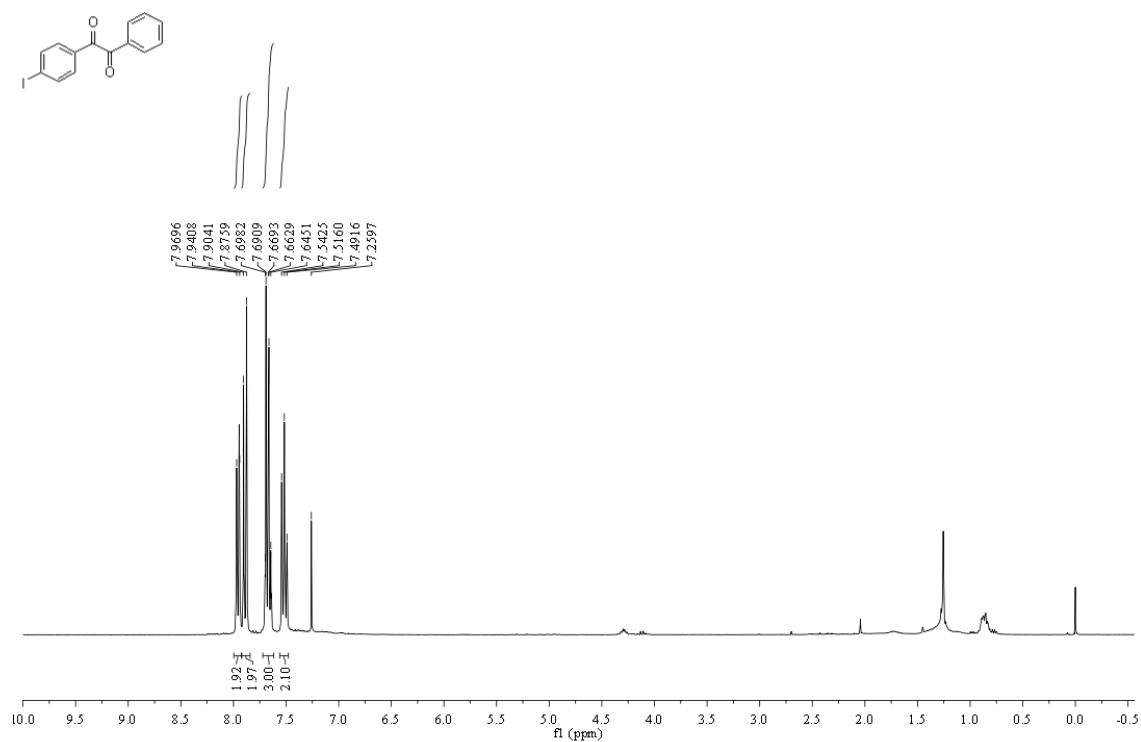
^1H NMR, 1-(4-Methoxyphenyl)-2-phenylethane-1,2-dione (**3h**)



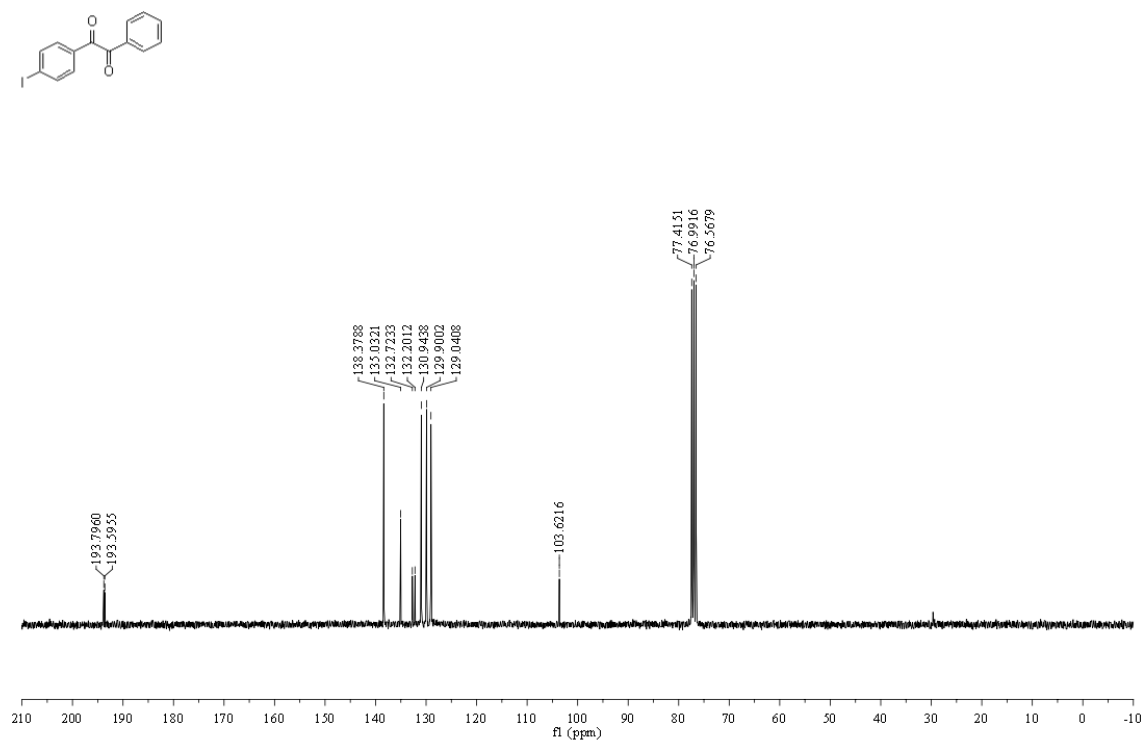
$^{13}\text{C}\{^1\text{H}\}$ NMR, 1-(4-Methoxyphenyl)-2-phenylethane-1,2-dione (**3h**)



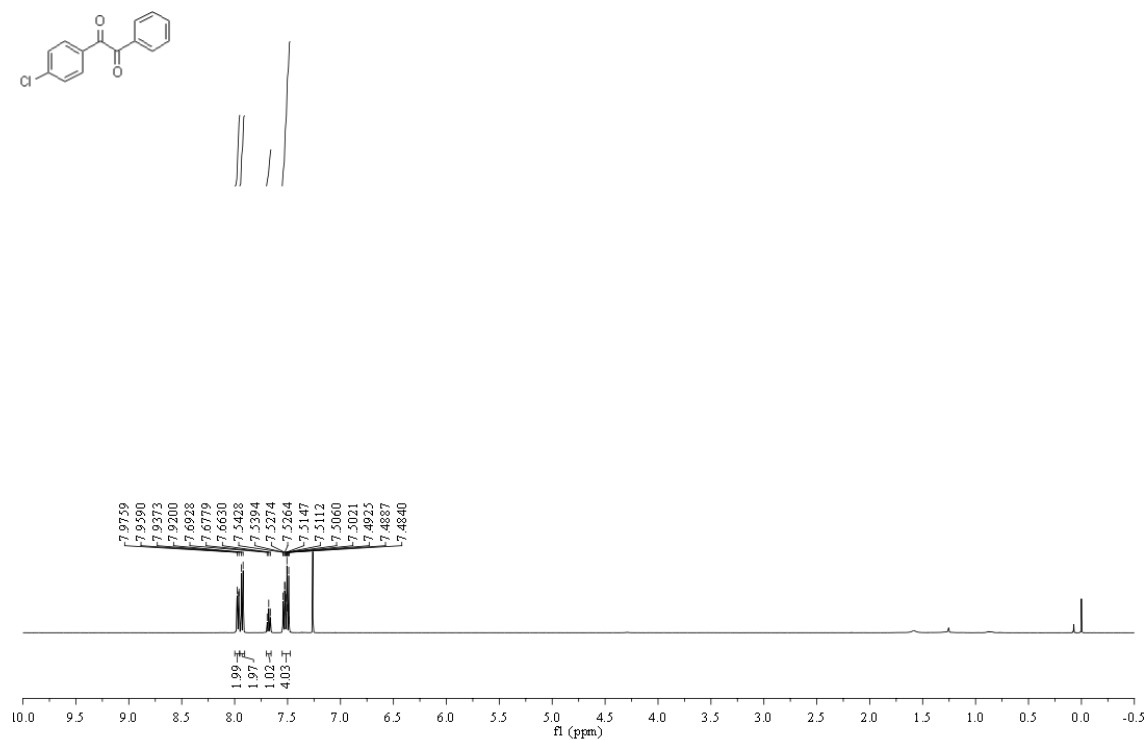
^1H NMR, 1-(4-Iodophenyl)-2-phenylethane-1,2-dione (**3i**)



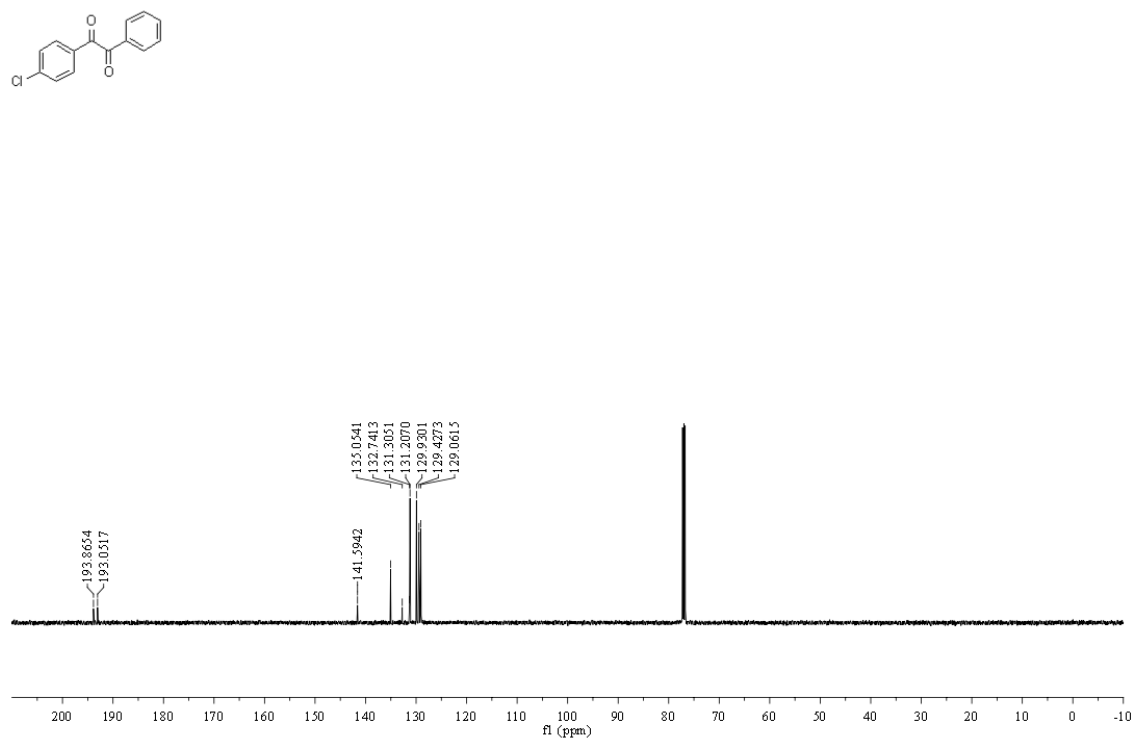
$^{13}\text{C}\{^1\text{H}\}$ NMR, 1-(4-Iodophenyl)-2-phenylethane-1,2-dione (**3i**)



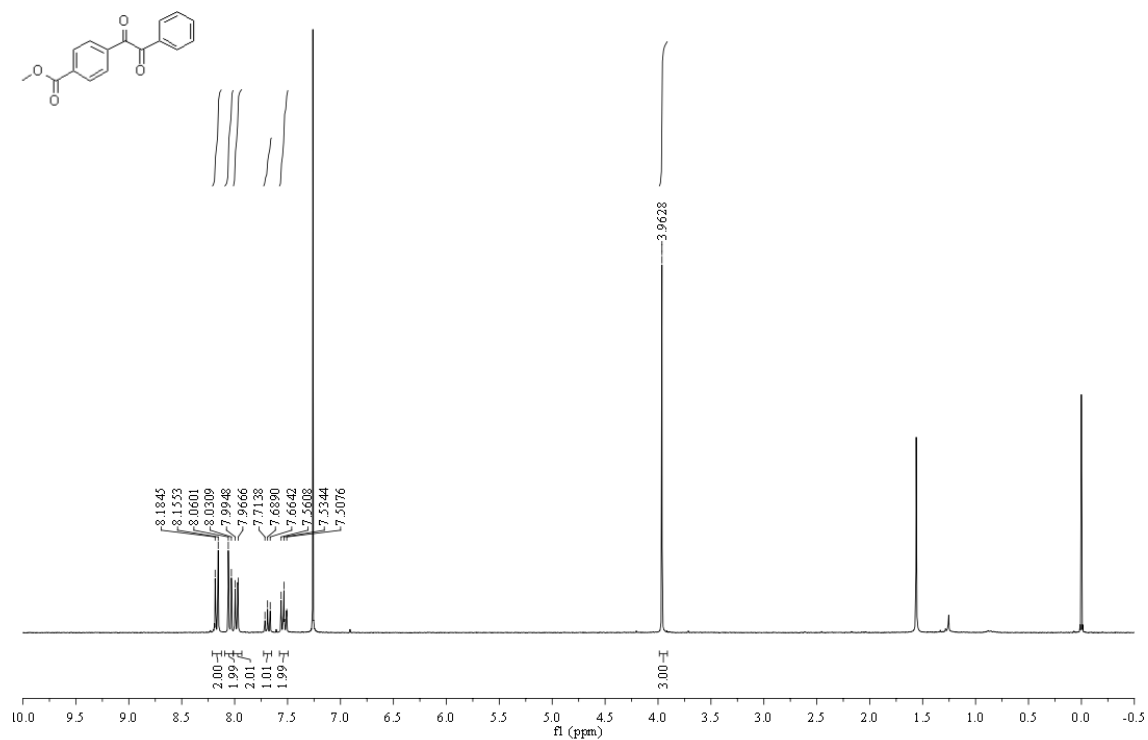
^1H NMR, 1-(4-Chlorophenyl)-2-phenylethane-1,2-dione (**3j**)



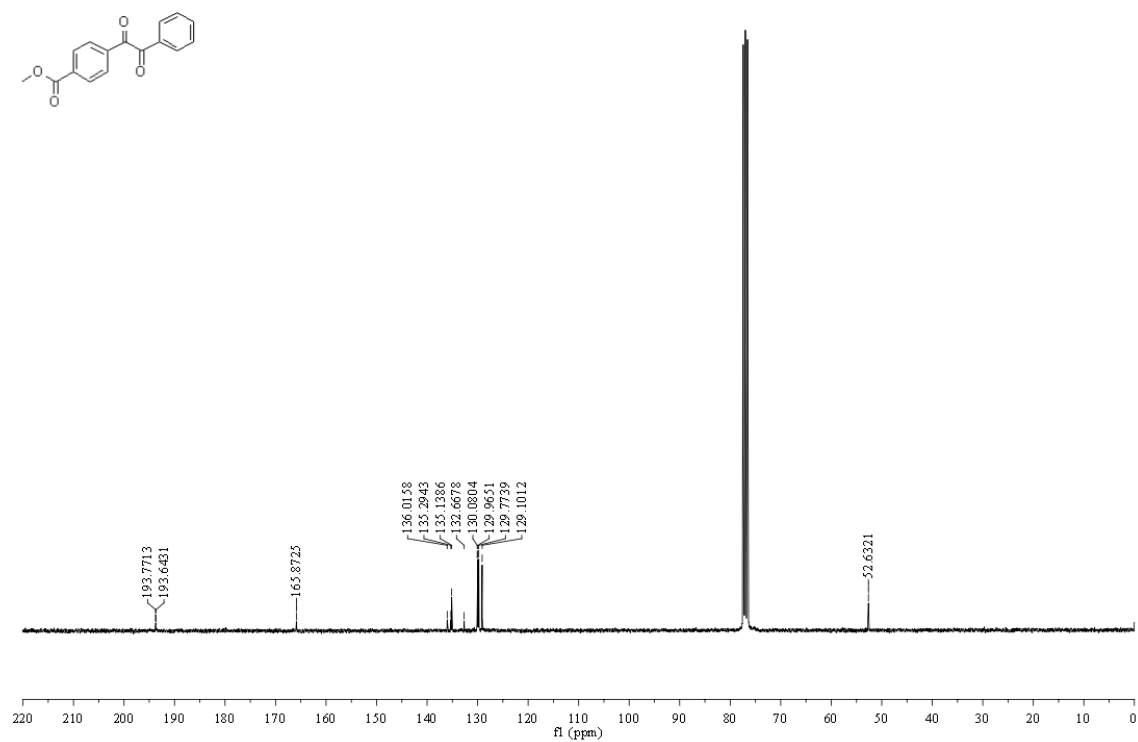
$^{13}\text{C}\{^1\text{H}\}$ NMR, 1-(4-Chlorophenyl)-2-phenylethane-1,2-dione (**3j**)



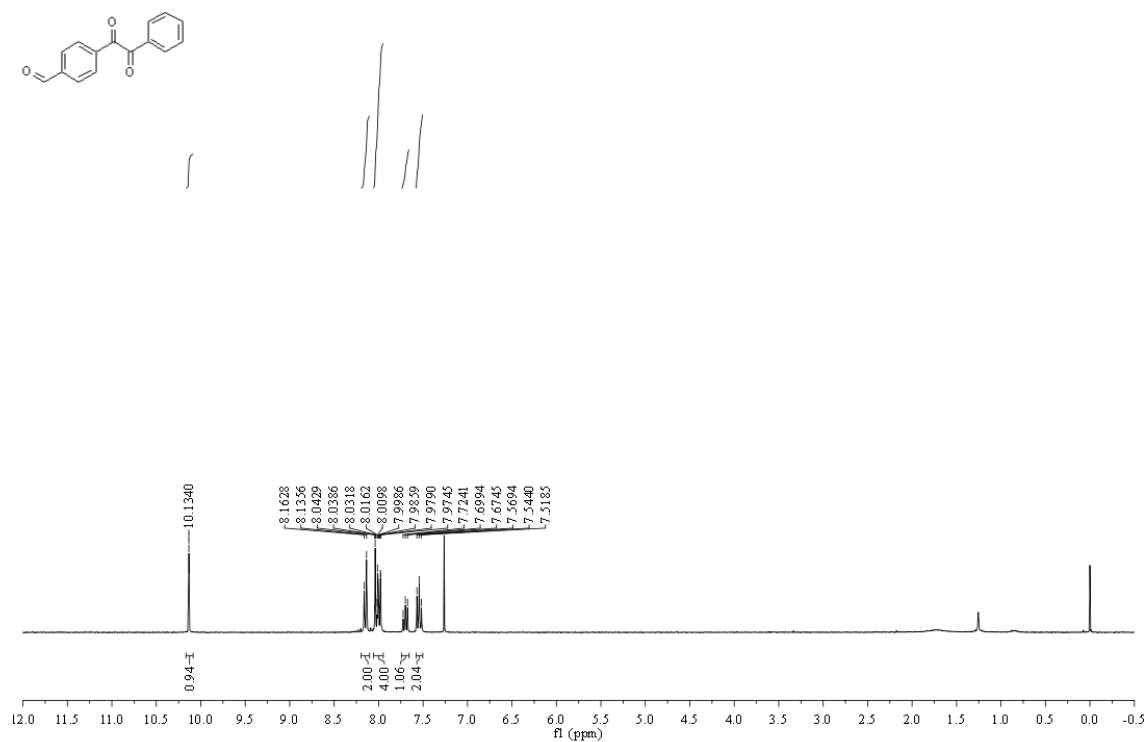
^1H NMR, Methyl 4-(2-oxo-2-phenylacetyl)benzoate (**3k**)



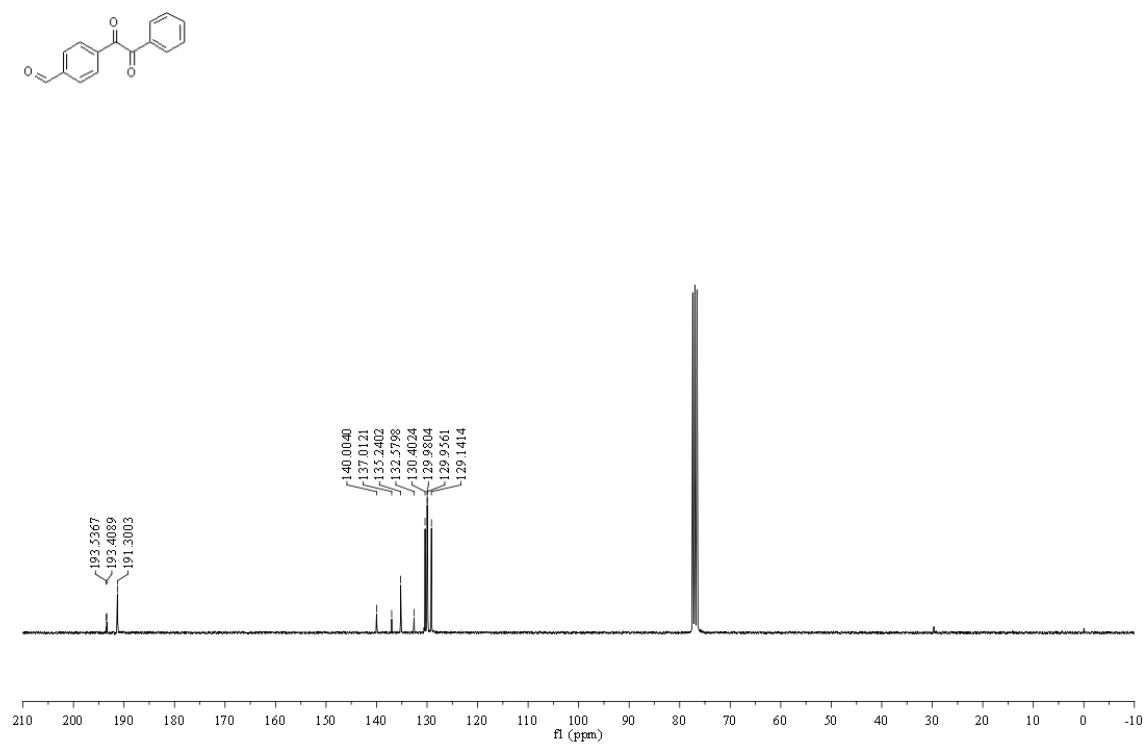
$^{13}\text{C}\{^1\text{H}\}$ NMR, Methyl 4-(2-oxo-2-phenylacetyl)benzoate (**3k**)



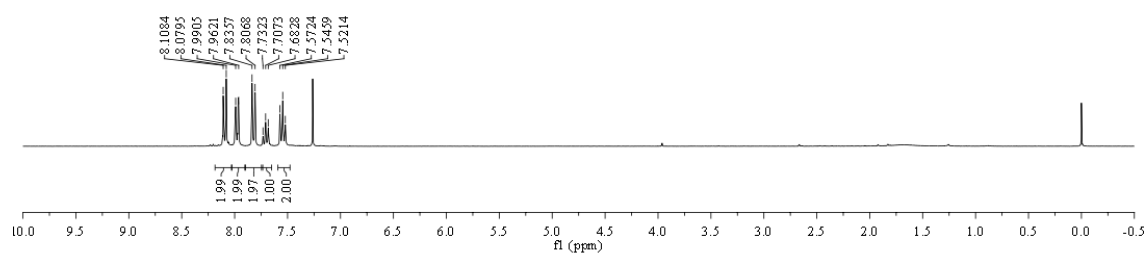
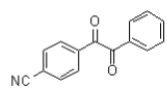
¹H NMR, 4-(2-Oxo-2-phenylacetyl)benzaldehyde (**3I**)



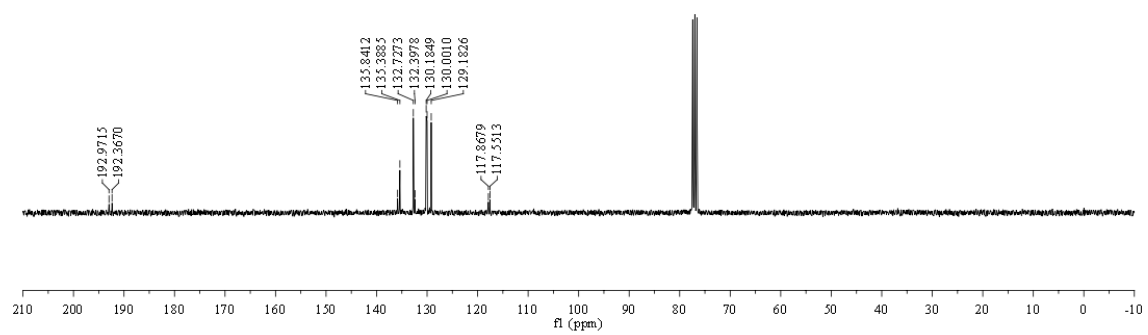
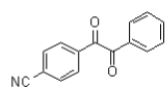
¹³C{¹H} NMR, 4-(2-Oxo-2-phenylacetyl)benzaldehyde (**3I**)



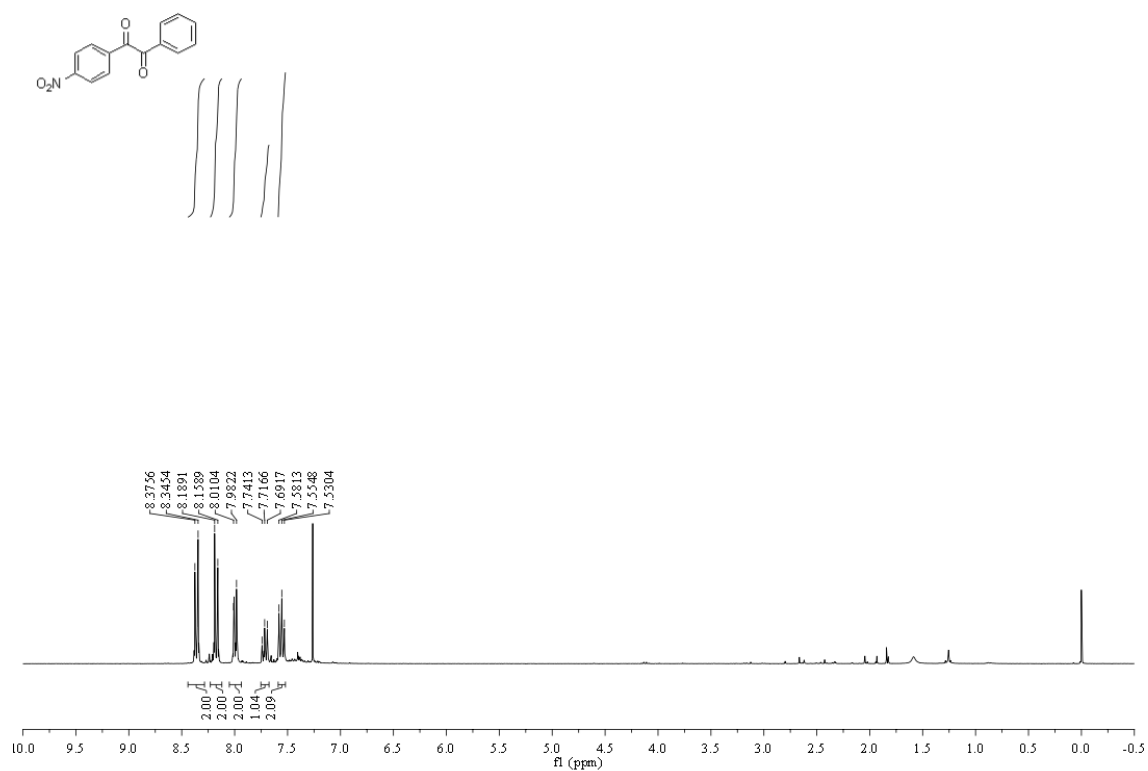
^1H NMR, 4-(2-Oxo-2-phenylacetyl)benzonitrile (**3m**)



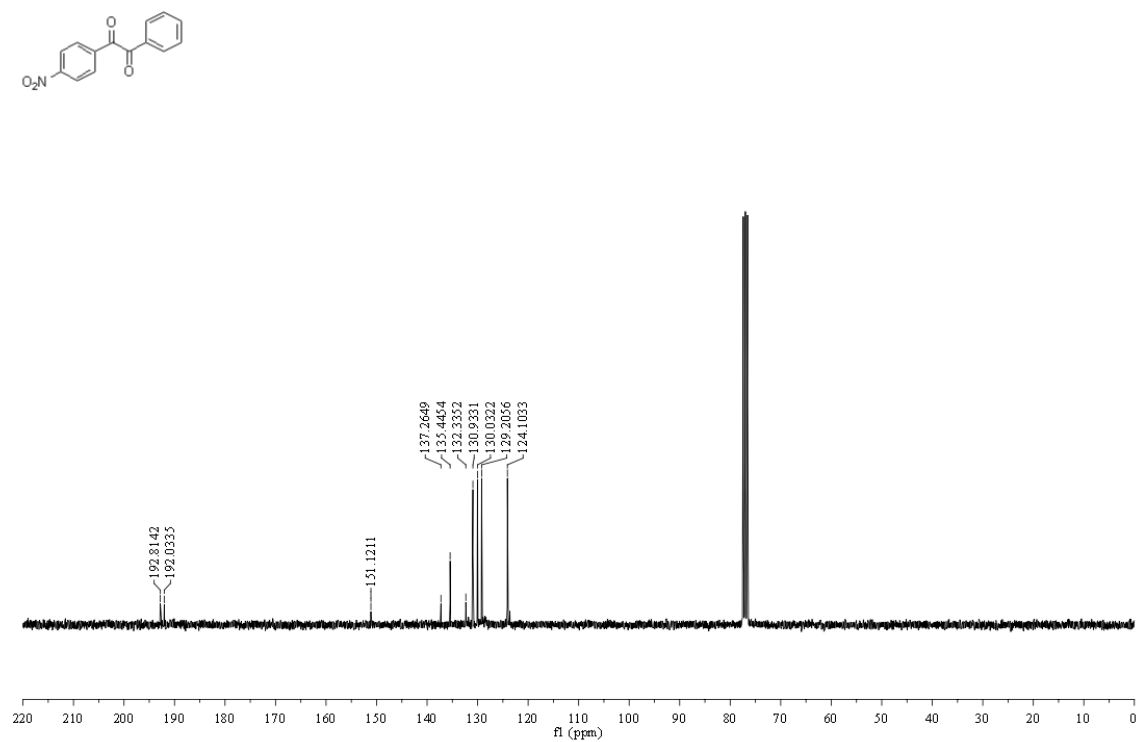
$^{13}\text{C}\{^1\text{H}\}$ NMR, 4-(2-Oxo-2-phenylacetyl)benzonitrile (**3m**)



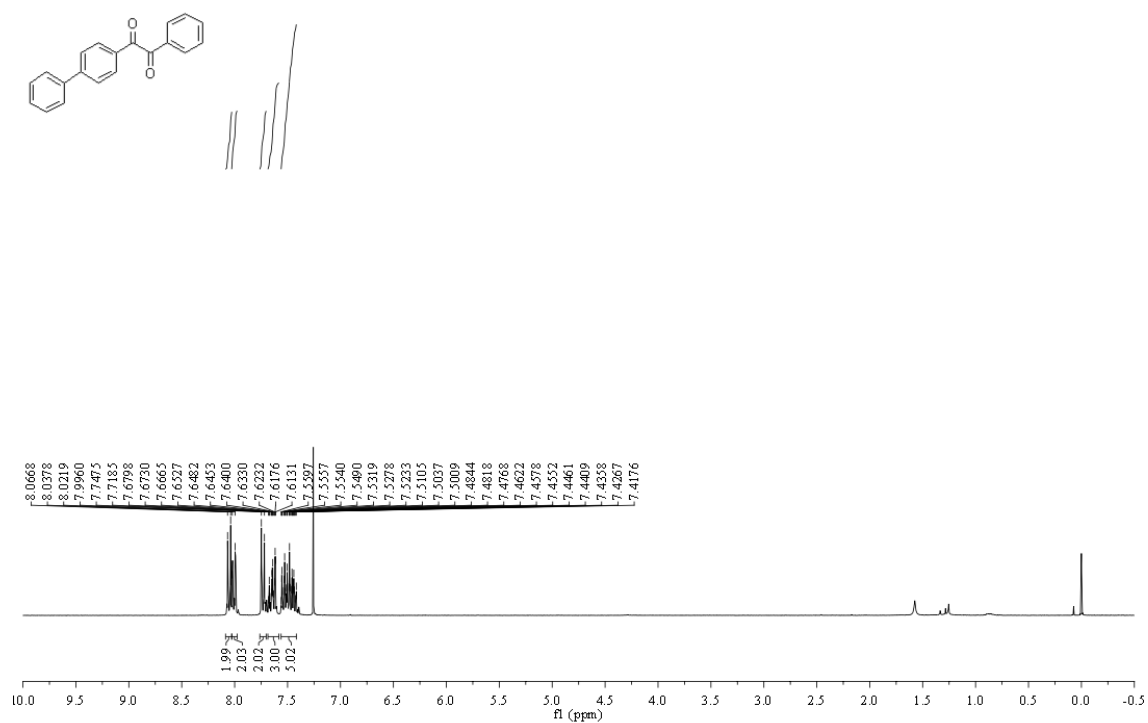
^1H NMR, 1-(4-Nitrophenyl)-2-phenylethane-1,2-dione (**3n**)



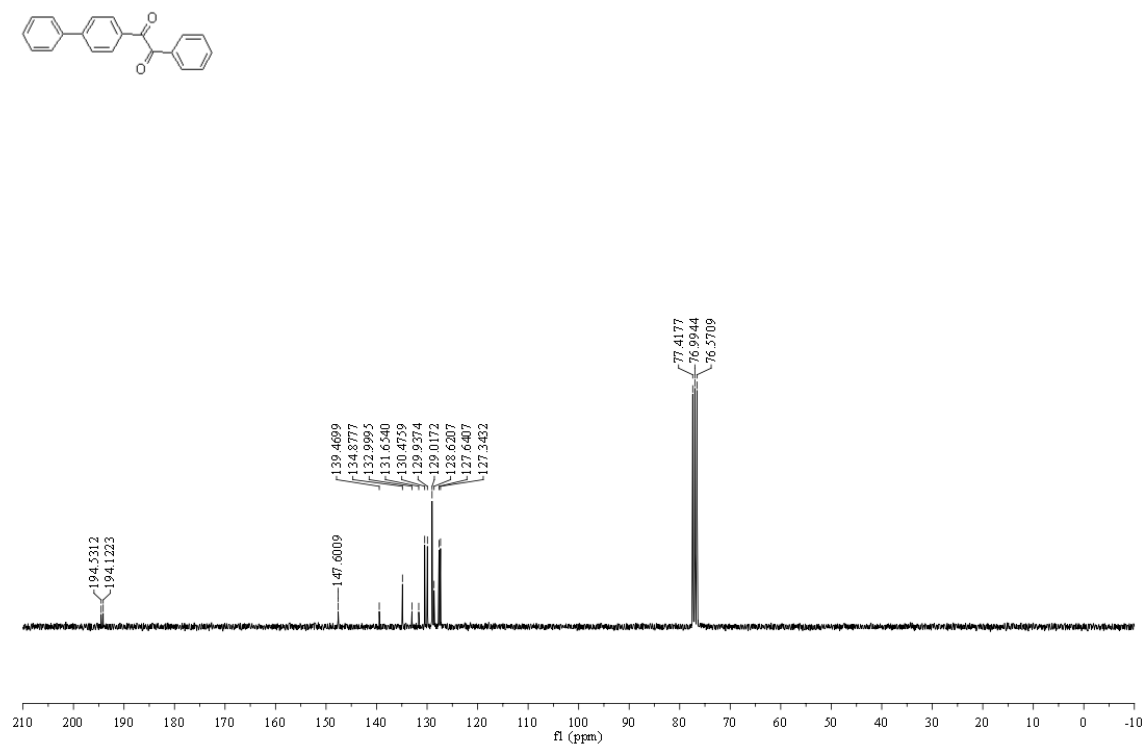
$^{13}\text{C}\{^1\text{H}\}$ NMR, 1-(4-Nitrophenyl)-2-phenylethane-1,2-dione (**3n**)



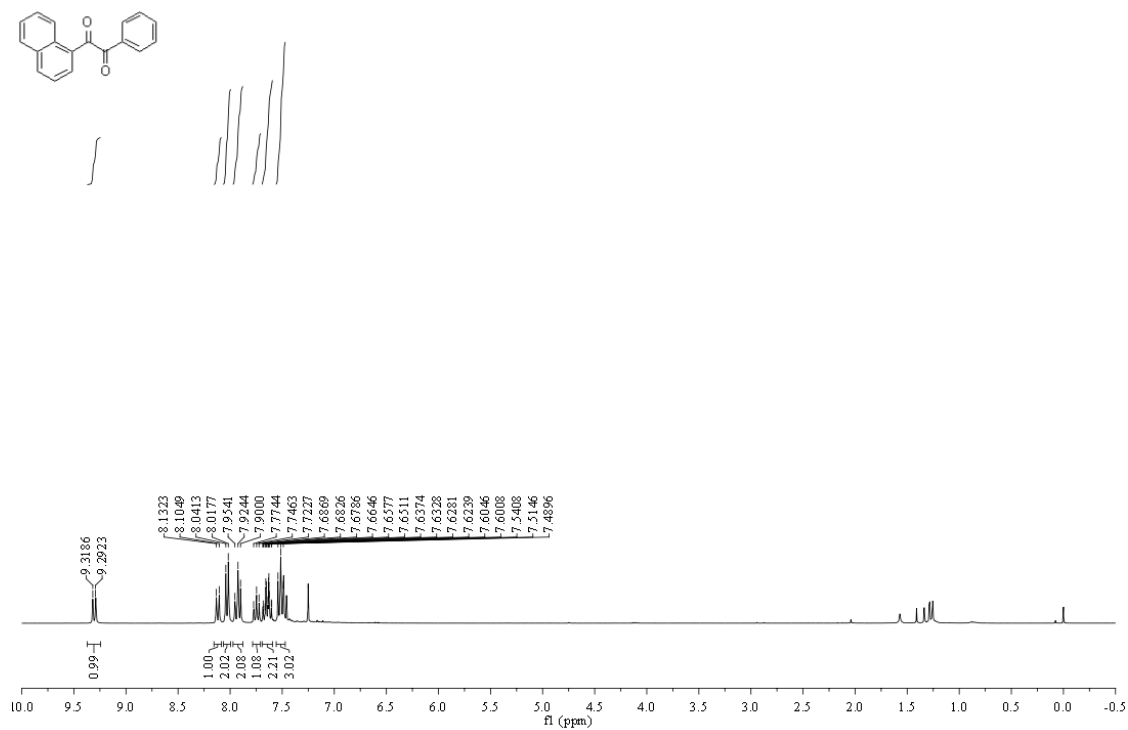
^1H NMR, 1-(Biphenyl-4-yl)-2-phenylethane-1,2-dione (**3o**)



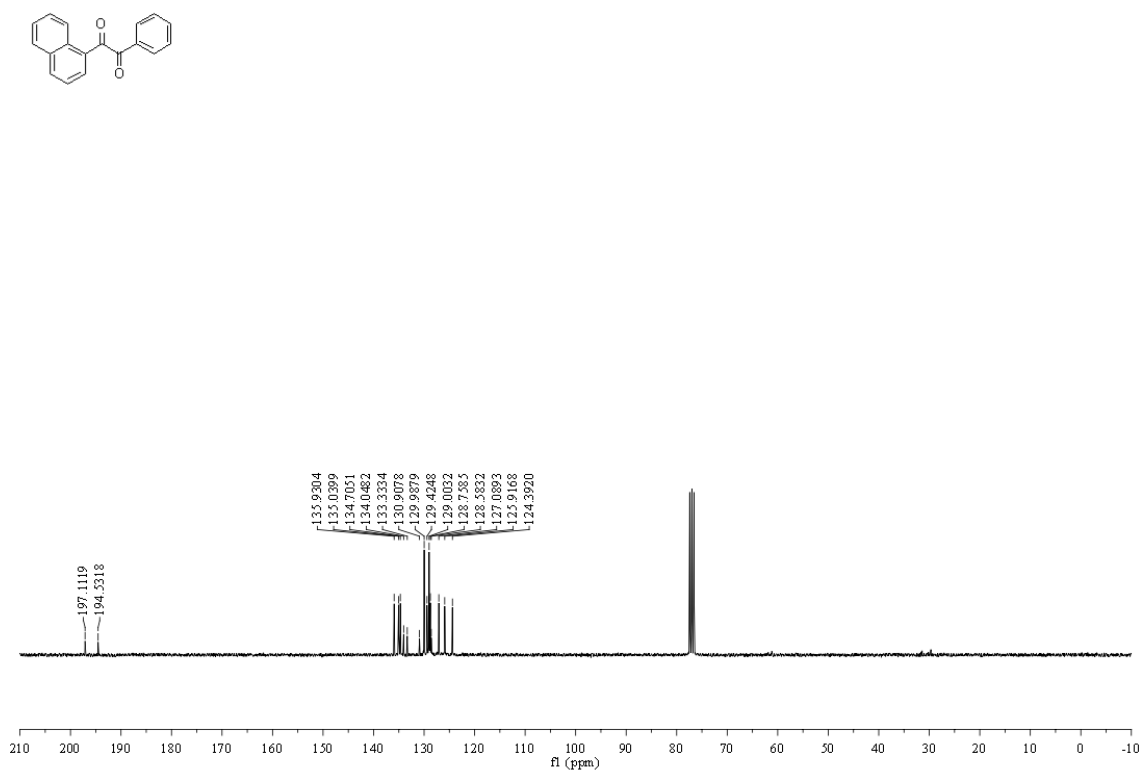
$^{13}\text{C}\{^1\text{H}\}$ NMR, 1-(Biphenyl-4-yl)-2-phenylethane-1,2-dione (**3o**)



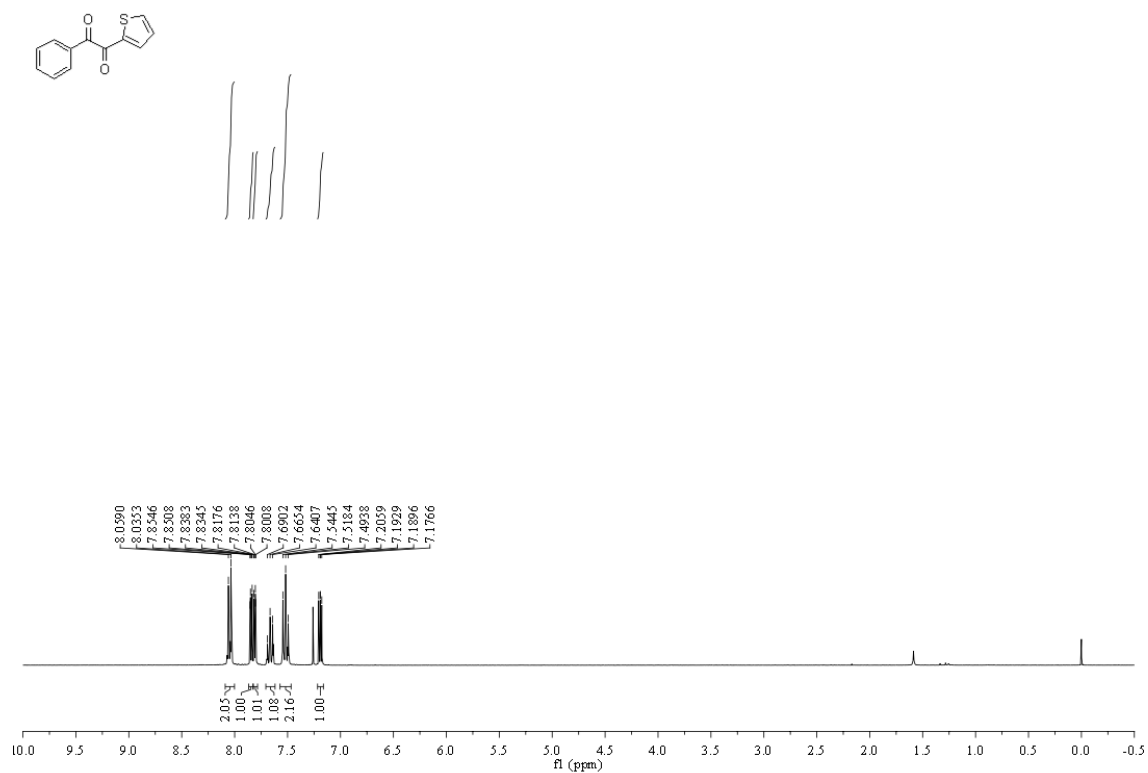
¹H NMR, 1-(Naphthalen-1-yl)-2-phenylethane-1,2-dione (**3p**)



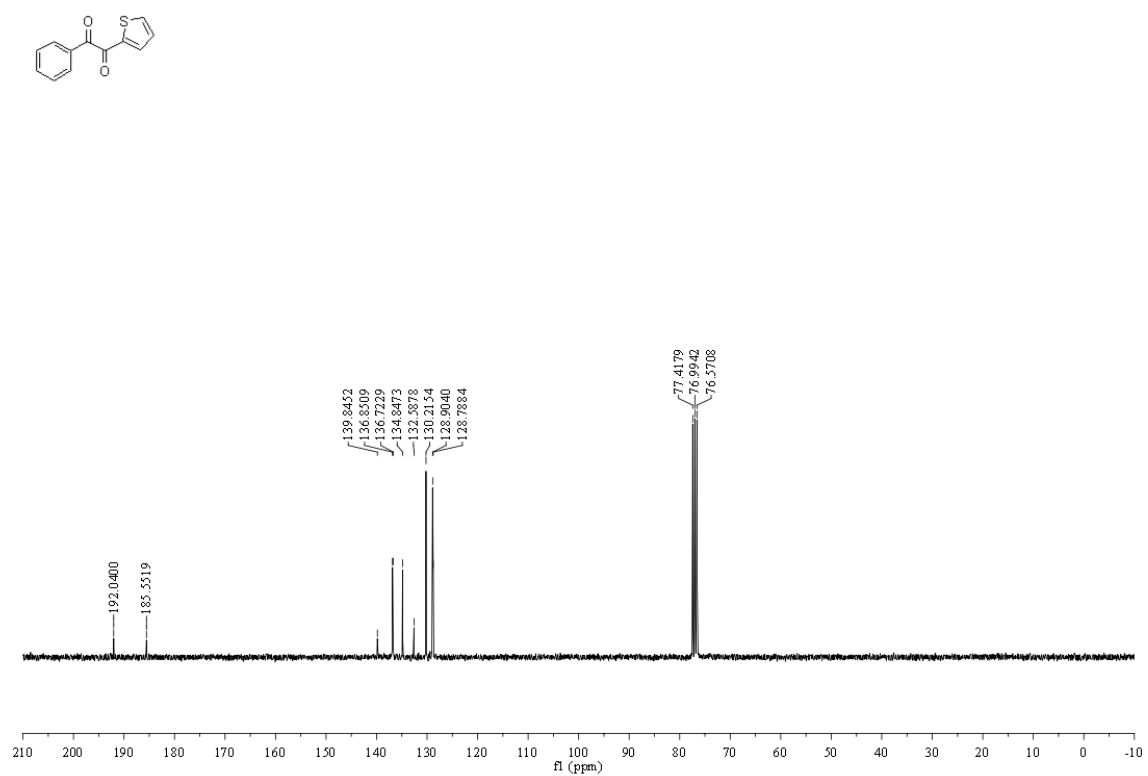
¹³C NMR, 1-(Naphthalen-1-yl)-2-phenylethane-1,2-dione (**3p**)



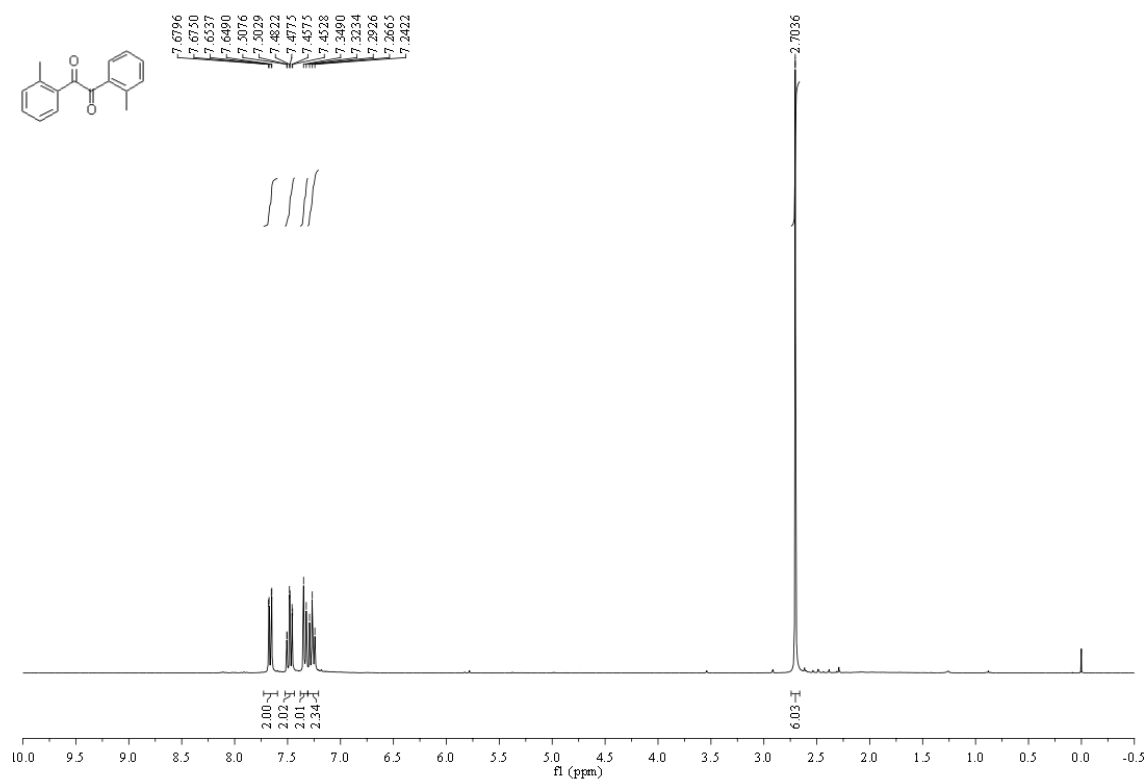
^1H NMR, 1-Phenyl-2-(thiophen-2-yl)ethane-1,2-dione (**3q**)



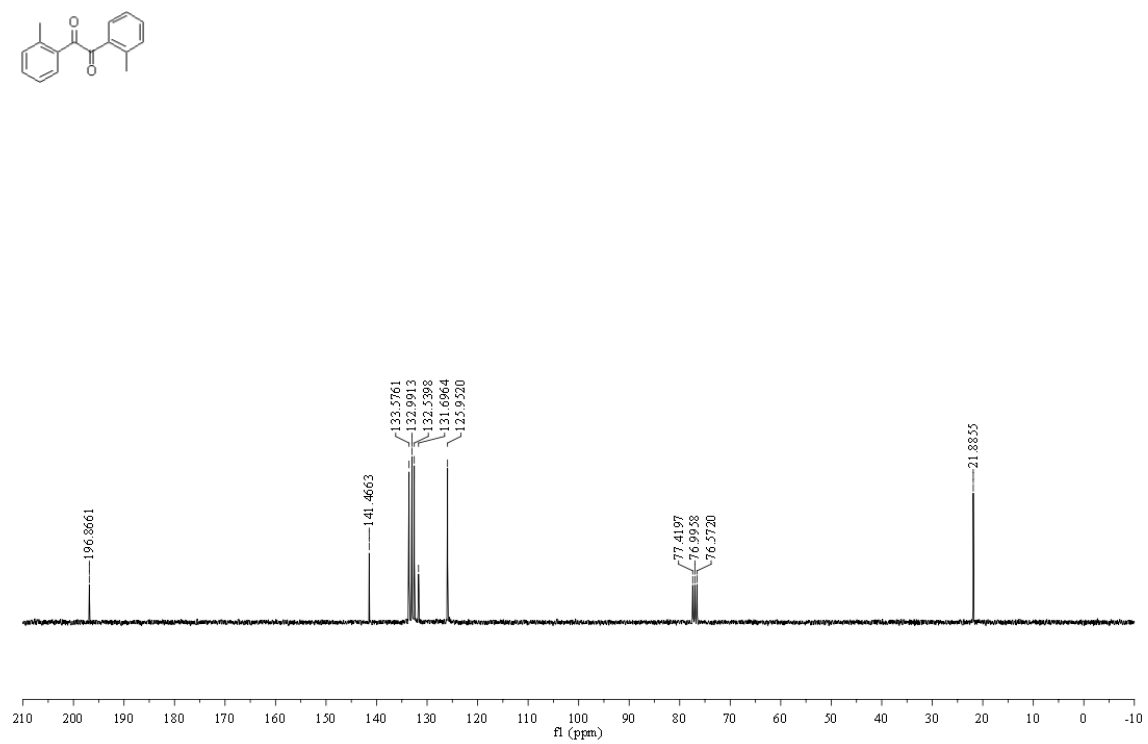
^{13}C NMR, 1-Phenyl-2-(thiophen-2-yl)ethane-1,2-dione (**3q**)



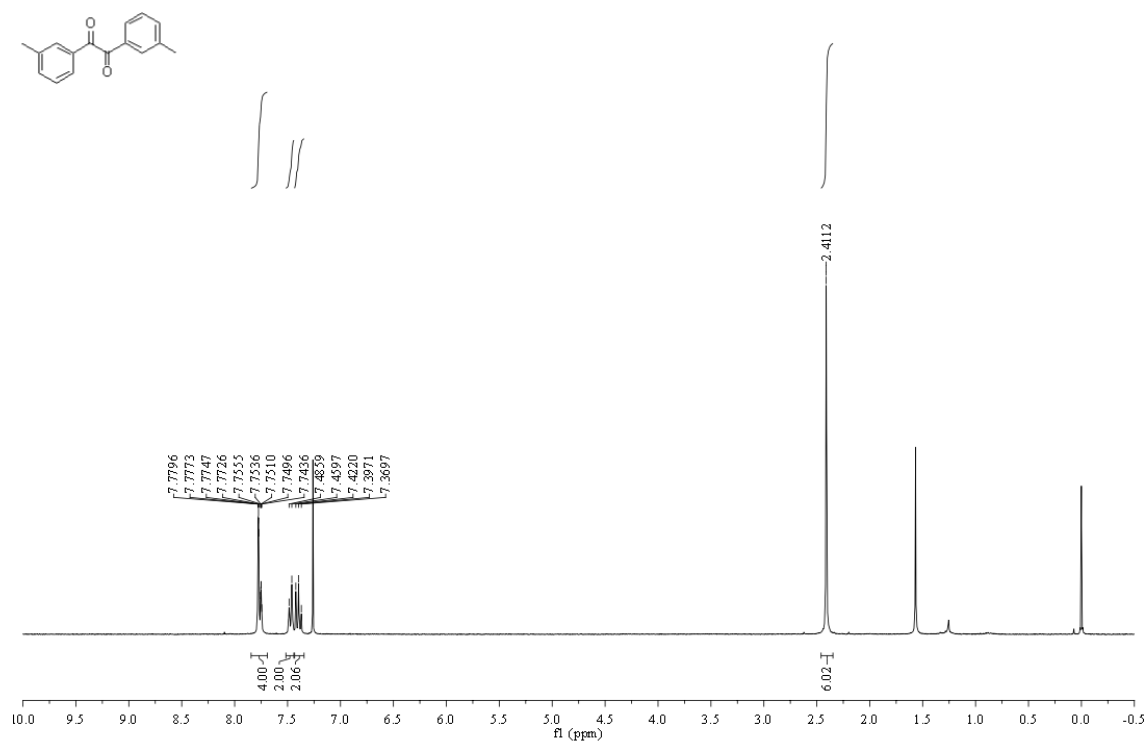
¹H NMR, 1,2-Di-*o*-tolylethane-1,2-dione (**4b**)



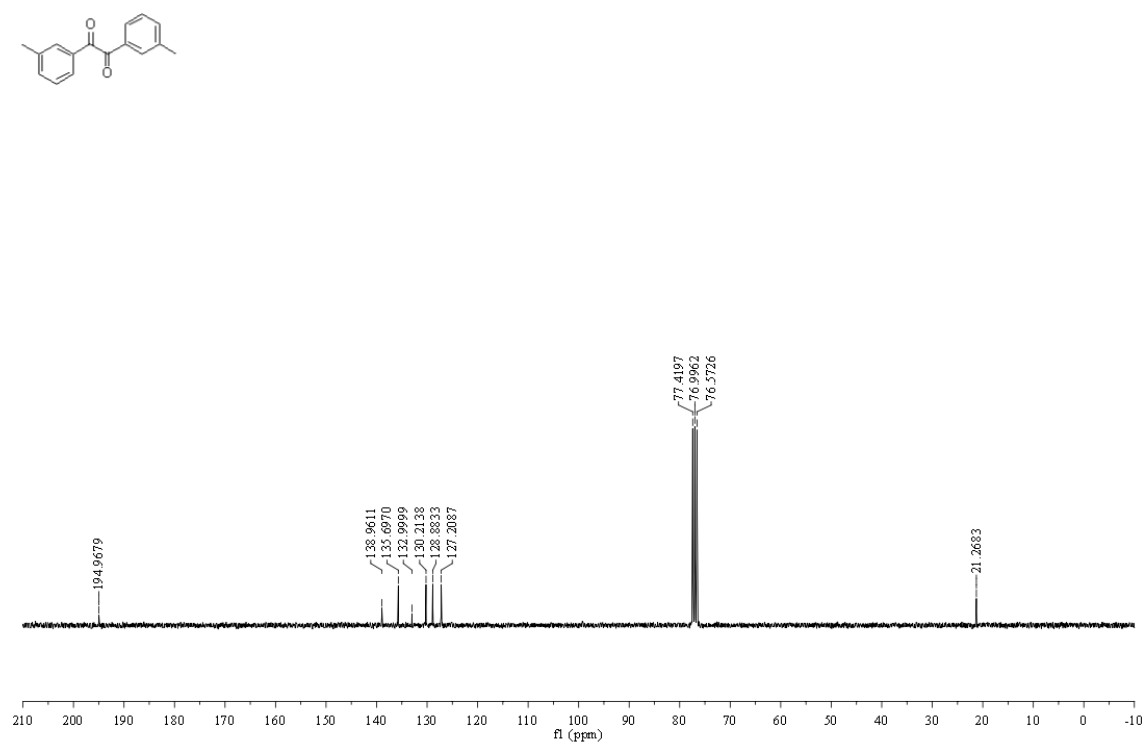
¹³C NMR, 1,2-Di-*o*-tolylethane-1,2-dione (**4b**)



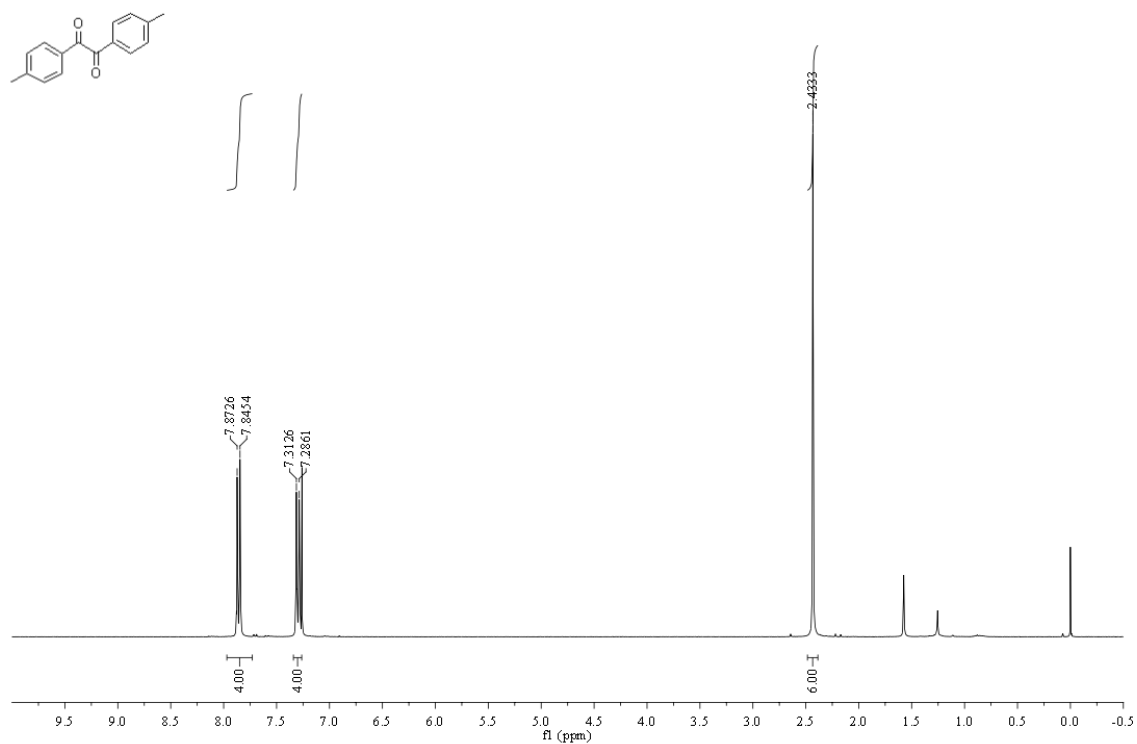
¹H NMR, 1,2-Di-*m*-tolylethane-1,2-dione (**4c**)



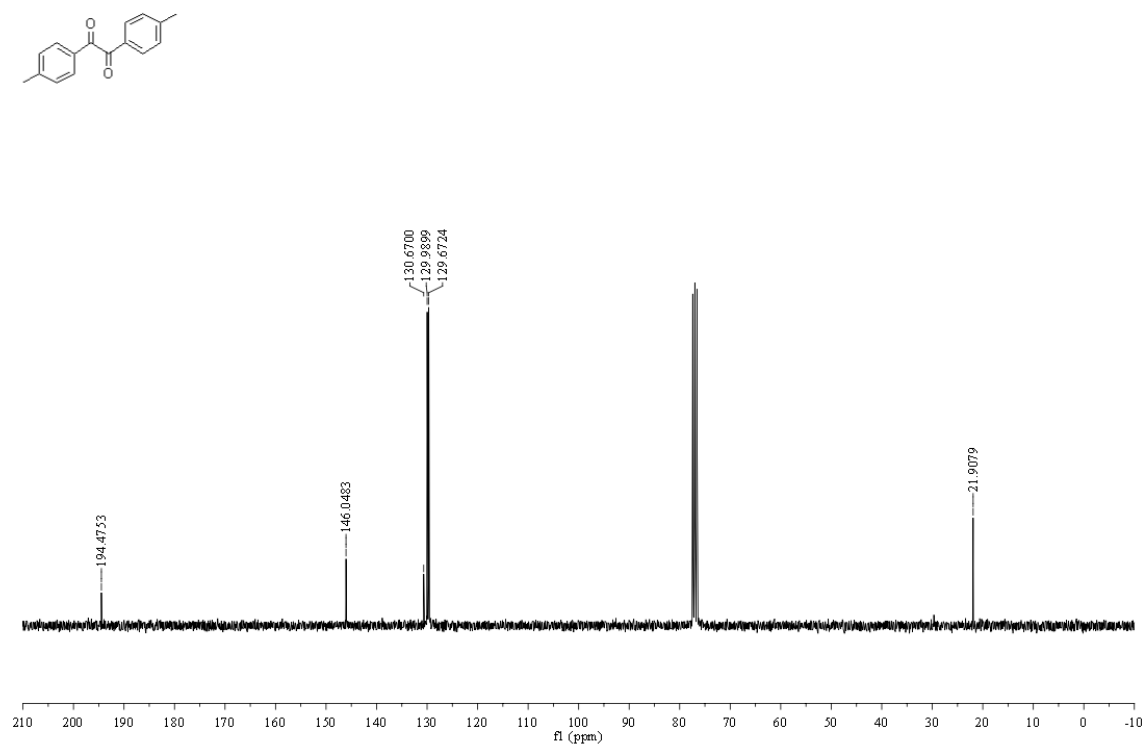
¹³C NMR, 1,2-Di-*m*-tolylethane-1,2-dione (**4c**)



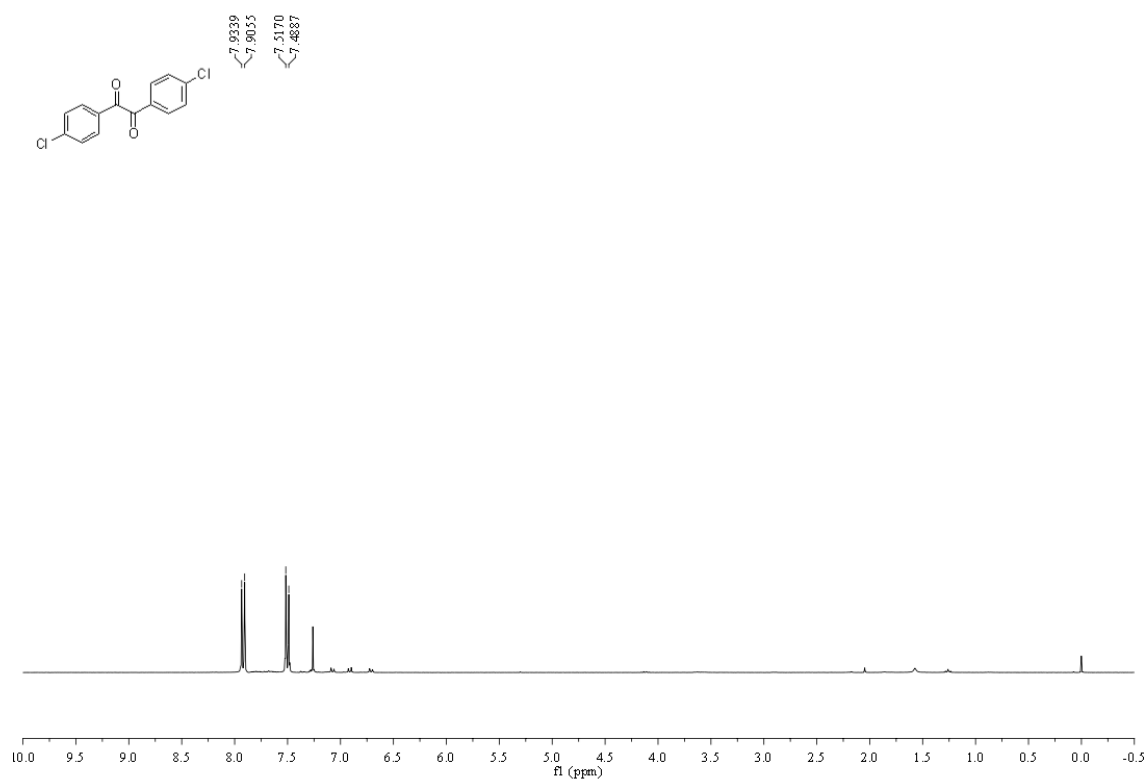
^1H NMR, 1,2-Di-*p*-tolylethane-1,2-dione (**4d**)



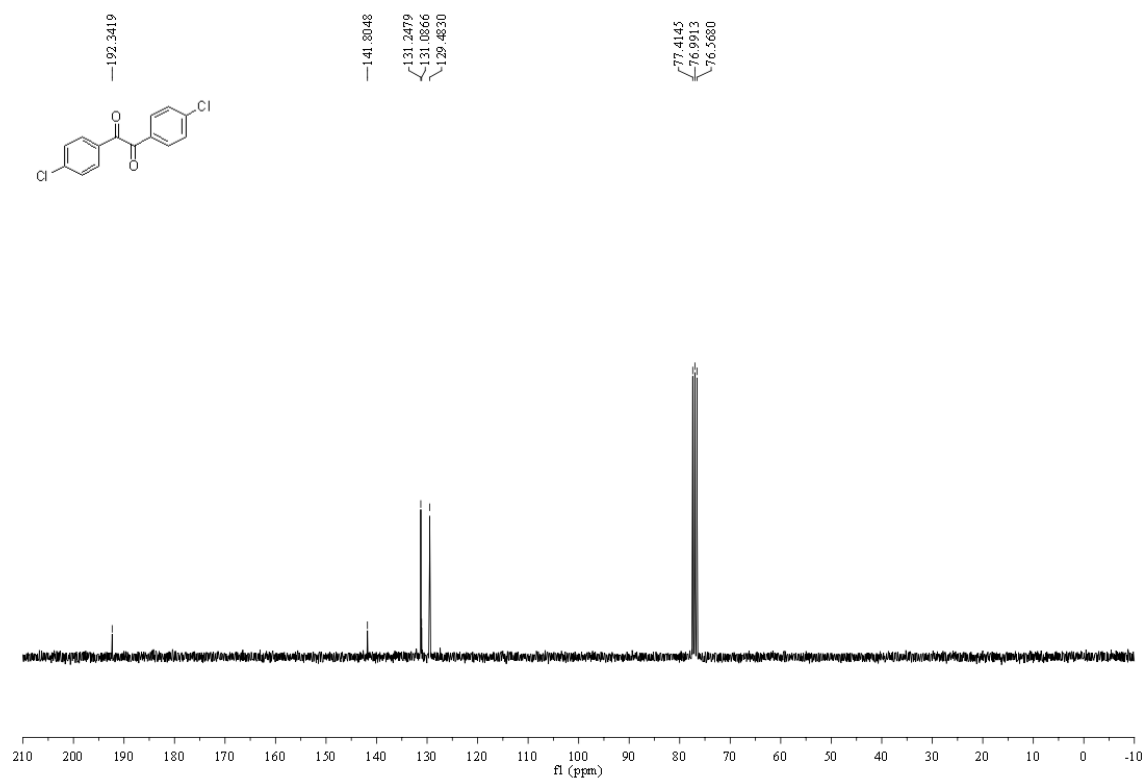
^{13}C NMR, 1,2-Di-*p*-tolylethane-1,2-dione (**4d**)



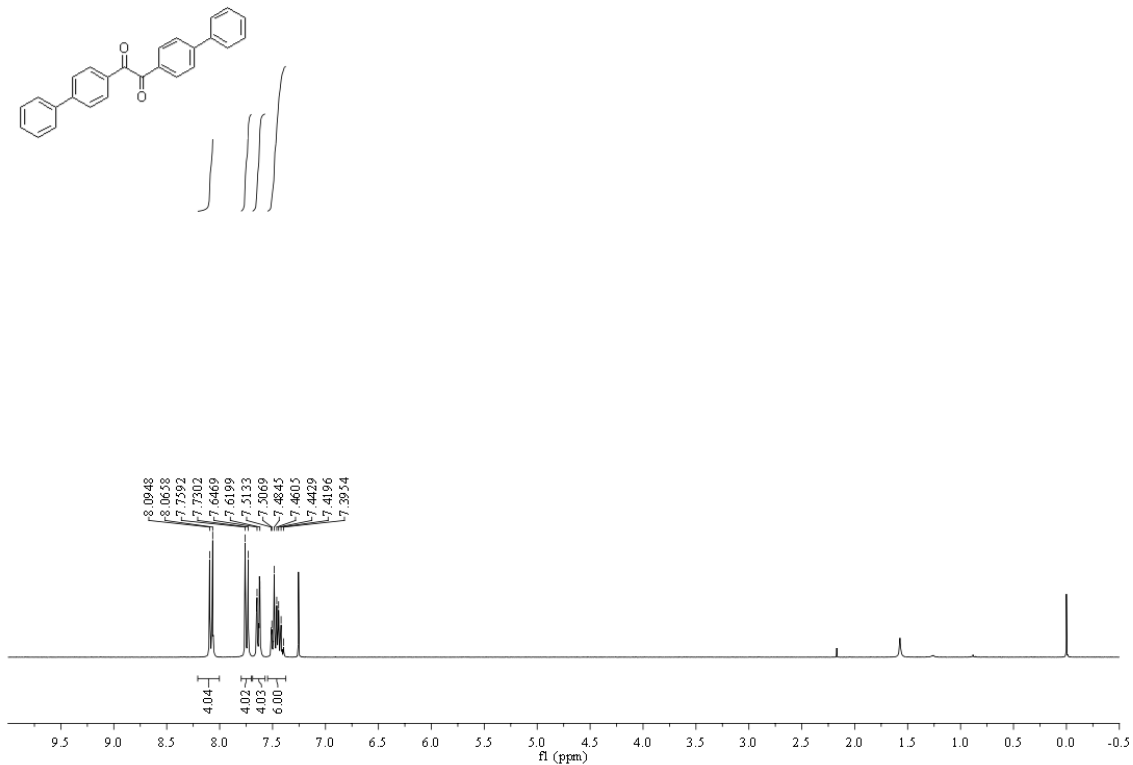
¹H NMR, 1,2-Bis(4-chlorophenyl)ethane-1,2-dione (**4j**)



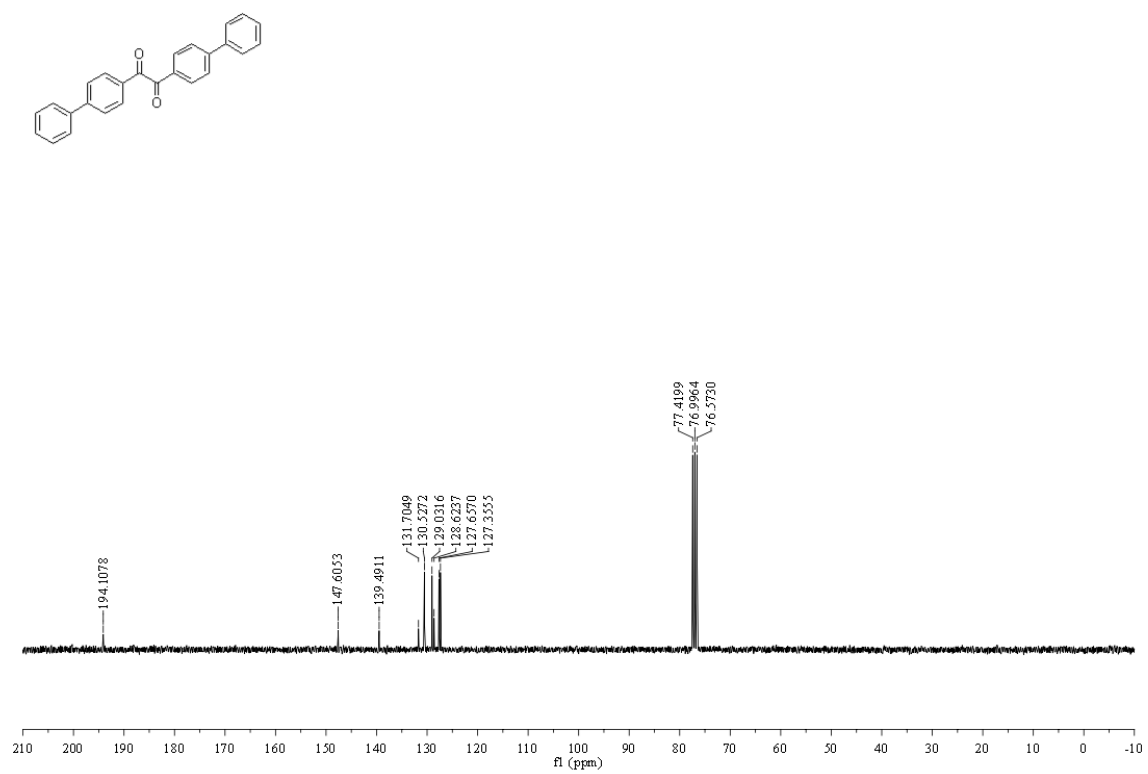
¹³C NMR, 1,2-Bis(4-chlorophenyl)ethane-1,2-dione (**4j**)



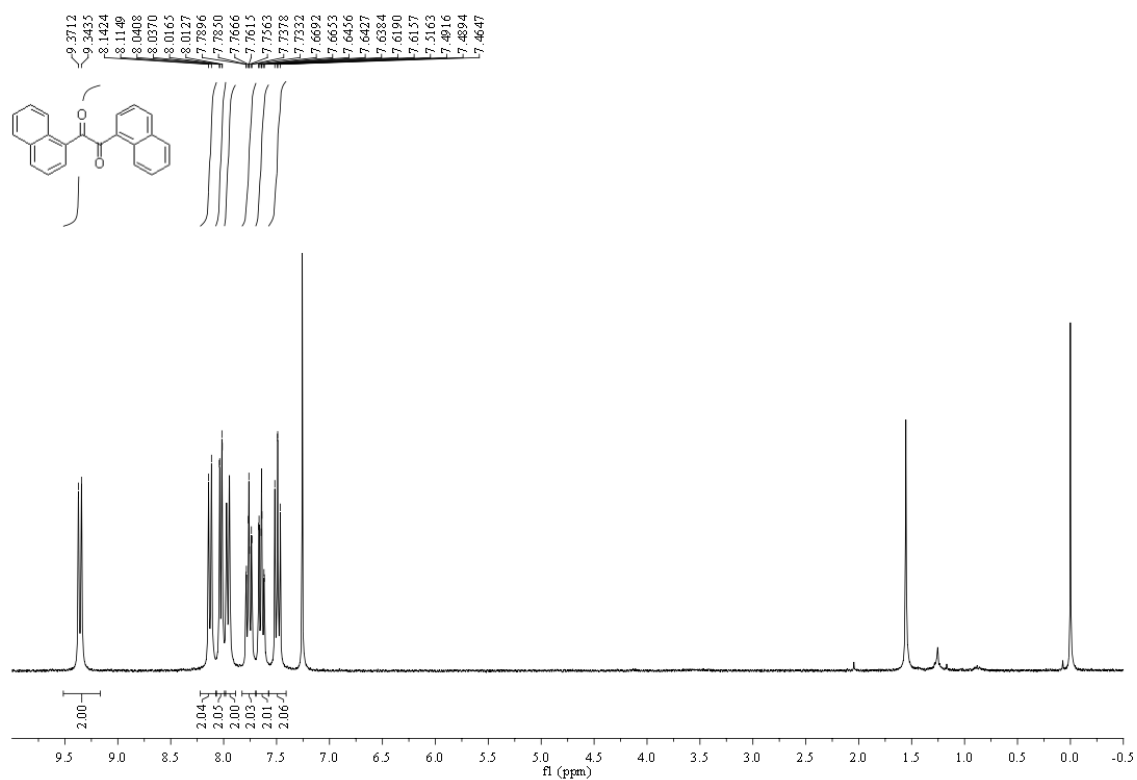
¹H NMR, 1,2-Di(biphenyl-4-yl)ethane-1,2-dione (**4o**)



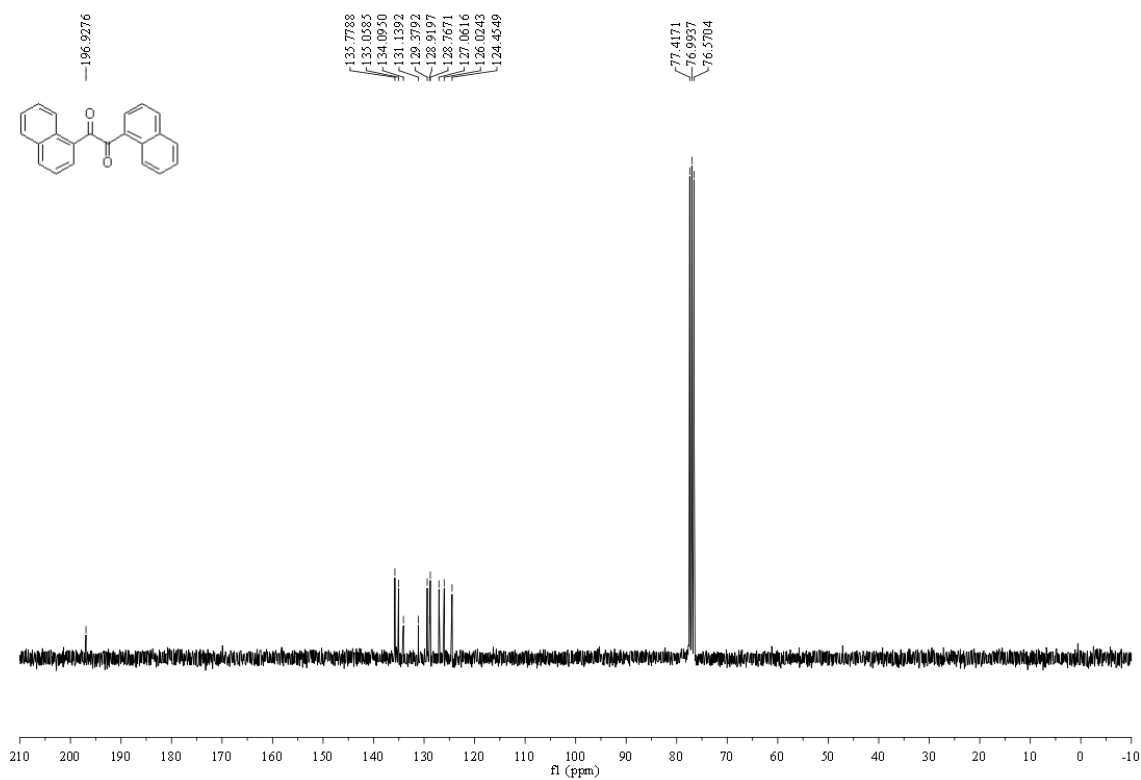
¹³C NMR, 1,2-Di(biphenyl-4-yl)ethane-1,2-dione (**4o**)



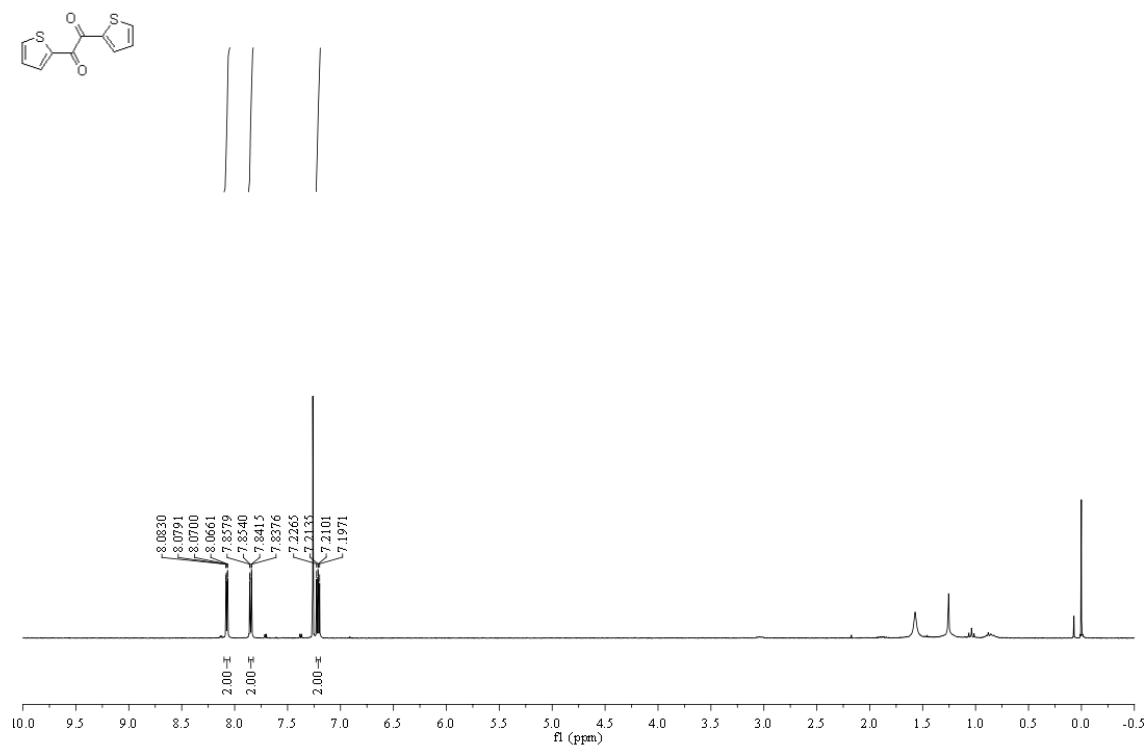
^1H NMR, 1,2-Di(naphthalen-1-yl)ethane-1,2-dione (**4p**)



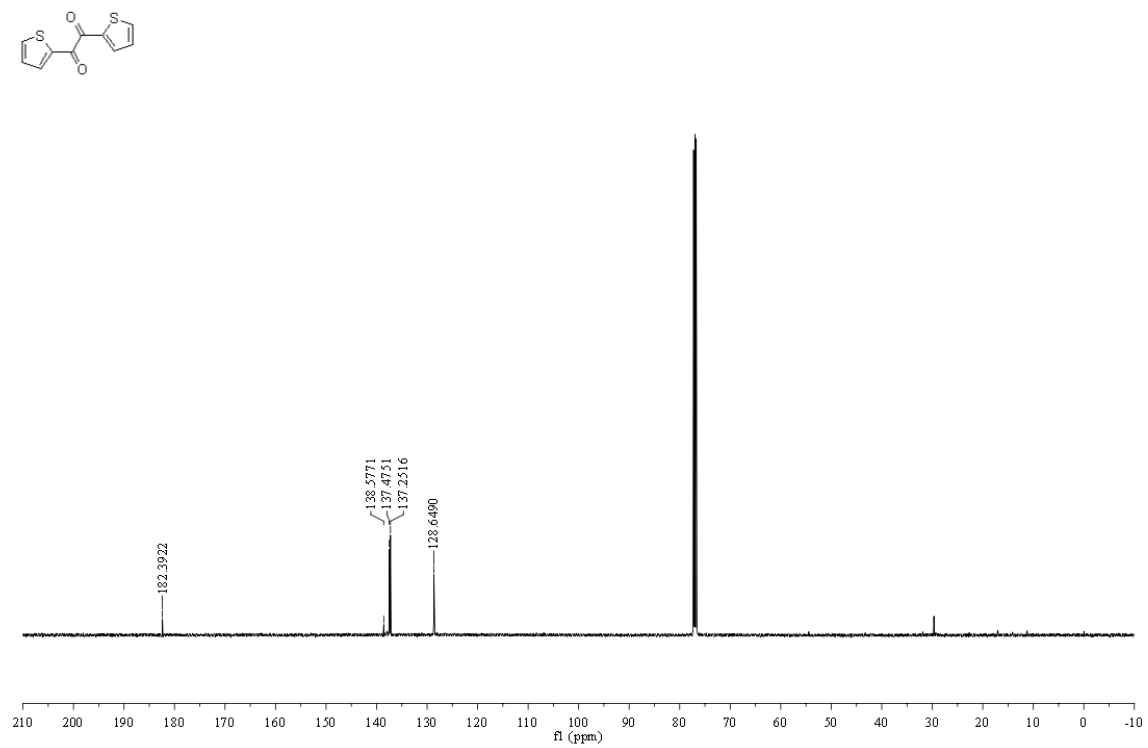
^{13}C NMR, 1,2-Di(naphthalen-1-yl)ethane-1,2-dione (**4p**)



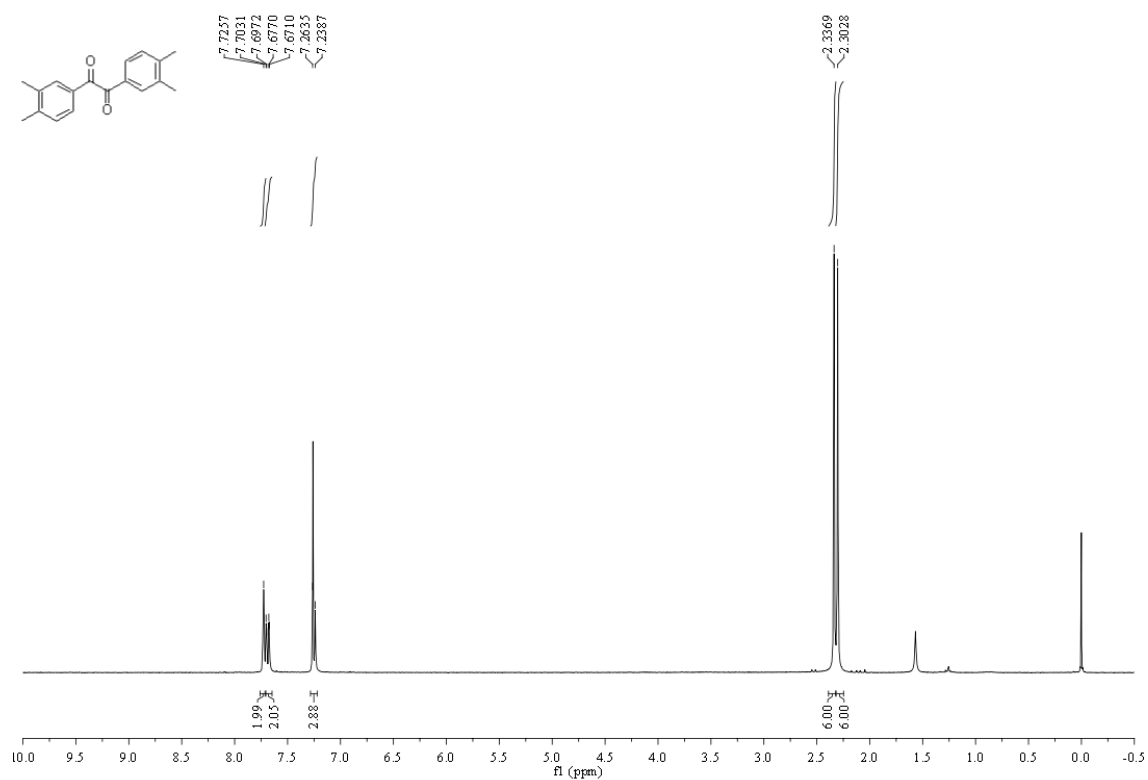
¹H NMR, 1,2-Di(thiophen-2-yl)ethane-1,2-dione (**4q**)



¹³C NMR, 1,2-Di(thiophen-2-yl)ethane-1,2-dione (**4q**)



¹H NMR, 1,2-Bis(3,4-dimethylphenyl)ethane-1,2-dione (**4r**)



¹³C NMR, 1,2-Bis(3,4-dimethylphenyl)ethane-1,2-dione (**4r**)

