Supplementary Information for

N-acylamino-pyridine-2,6-dione based heterocyclic dyes and their oxidative ring-degradation under alkaline condition

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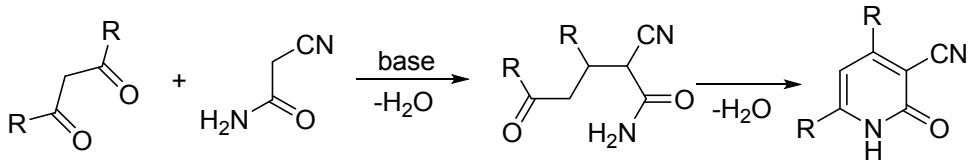
Table SI1 Dyeing performance evaluation data of dyes **4**–**6**, together with five commercially available C.I. Disperse Yellow dyes (114, 119, 126, 211 and 241) for comparison.

Name	Sublimation fastness	Washing fastness			Dipping fastness			Light fastness	K/S_{max}
		CA	N	T	CA	N	T		
Dye **4**	5	5	5	5	5	5	5	6~7	24.50
Dye **5**	5	5	5	5	5	5	5	6~7	24.28
Dye **6**	5	5	5	5	5	5	5	6~7	24.63
C.I. Yellow 114	4	4~5	4~5	5	4	3~4	4~5	6~7	24.06
C.I. Yellow 119	2	4	3~4	5	4~5	4~5	4~5	6~7	25.61
C.I. Yellow 126	4	4~5	4~5	5	4	3~4	4~5	6~7	26.49
C.I. Yellow 211	2~3	4	3~4	5	4~5	4~5	4~5	6~7	27.97
C.I. Yellow 241	2	3~4	3~4	4~5	4~5	4~5	4~5	6~7	27.41

CA: cellulose acetate; N: nylon; T: terylene



Scheme SI1. Conventional synthetic approach for pyridine-2,6-dione derivatives in industry.

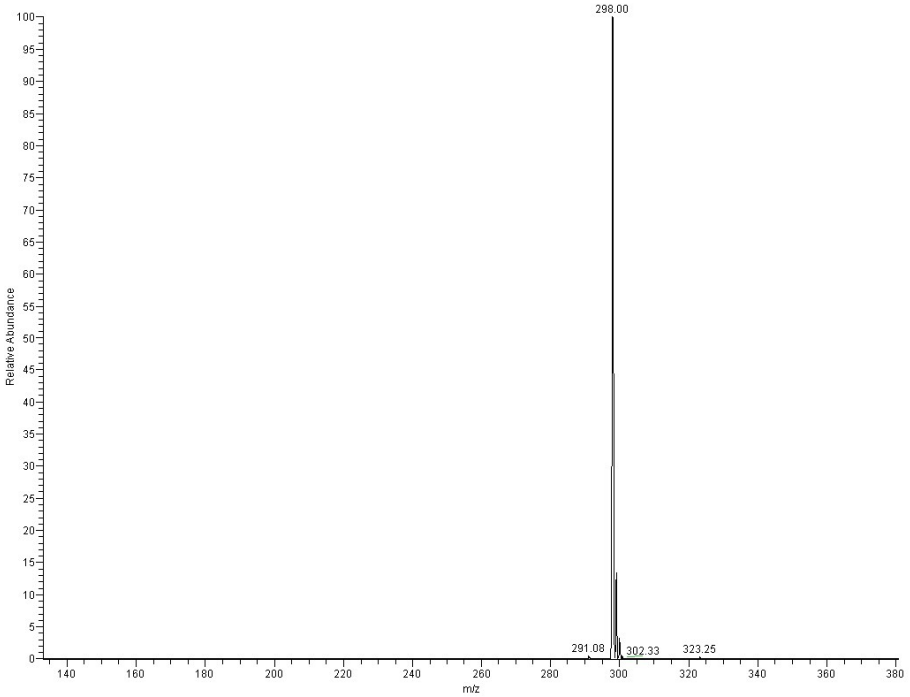


Fig. SI1. ESI–MS diagram of compound **1**.

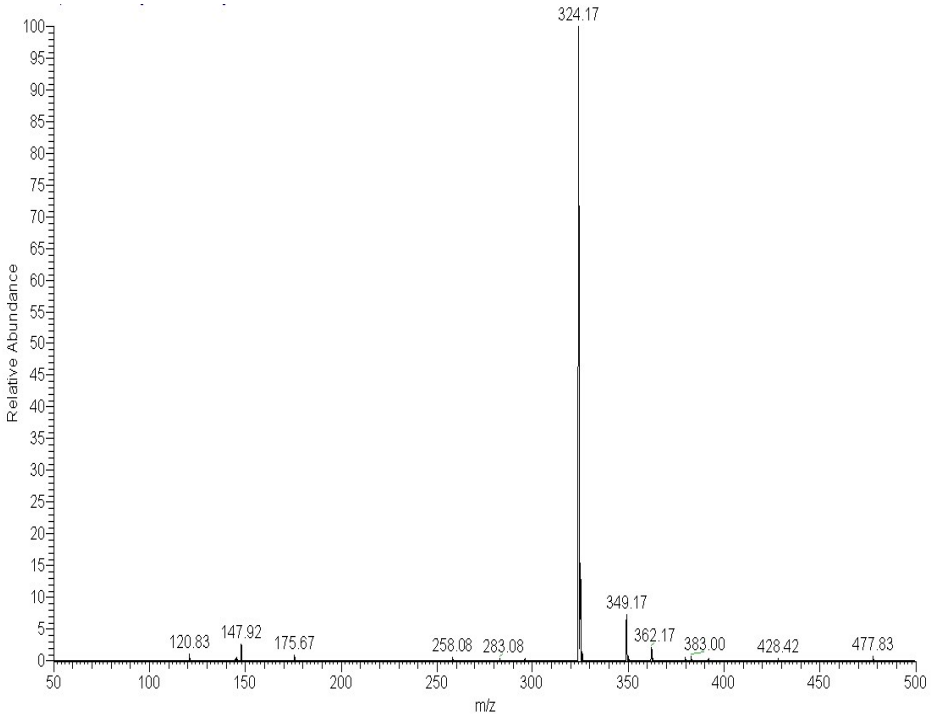


Fig. SI2. ESI–MS diagram of compound **2**.

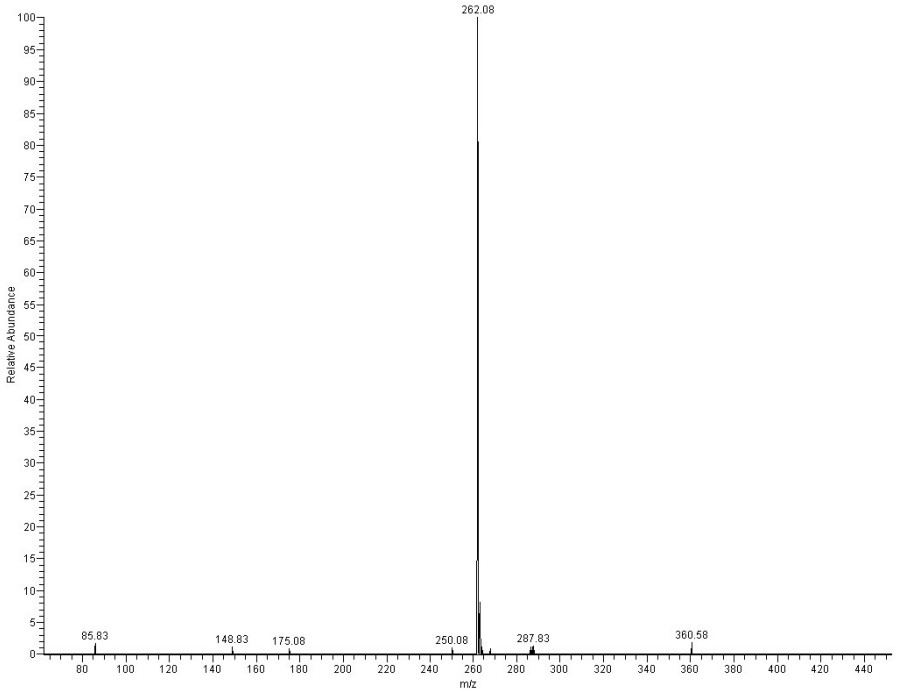


Fig. SI3. ESI–MS diagram of compound **3**.

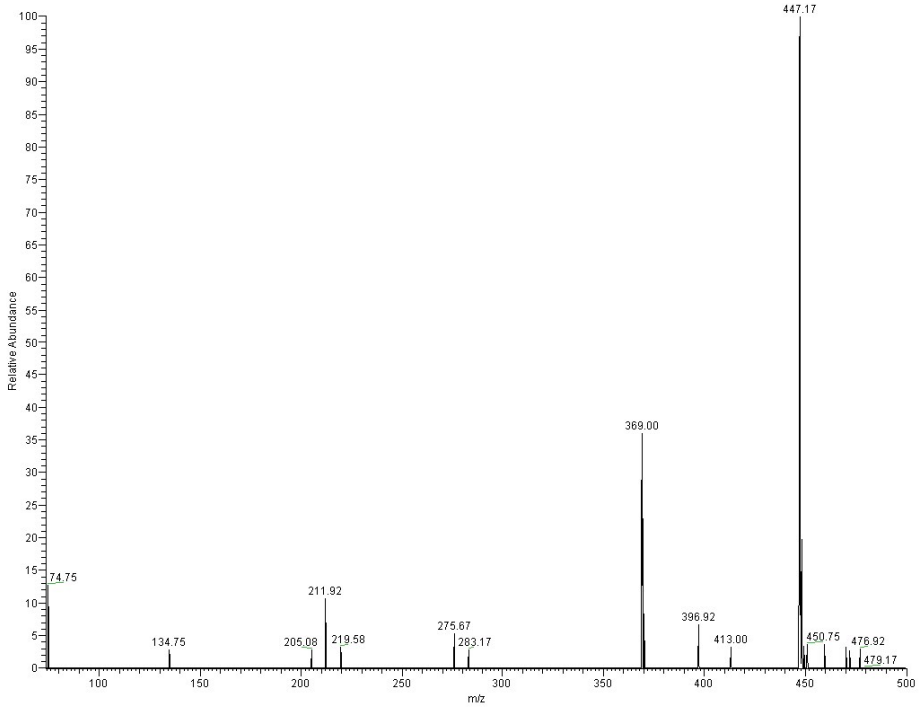


Fig. SI4. ESI–MS diagram of compound **4**.

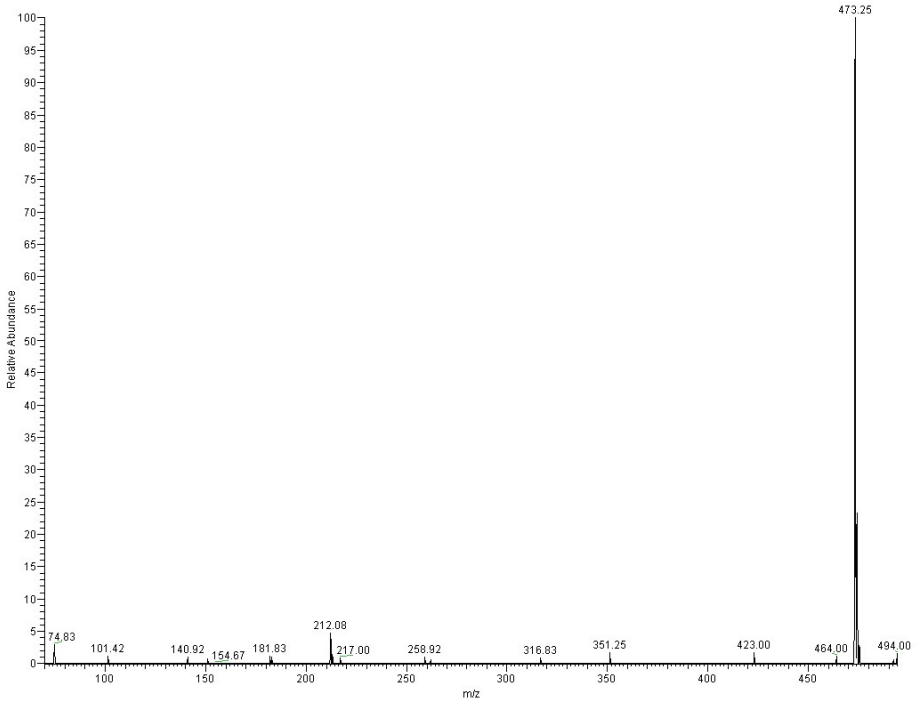


Fig. SI5. ESI–MS diagram of compound **5**.

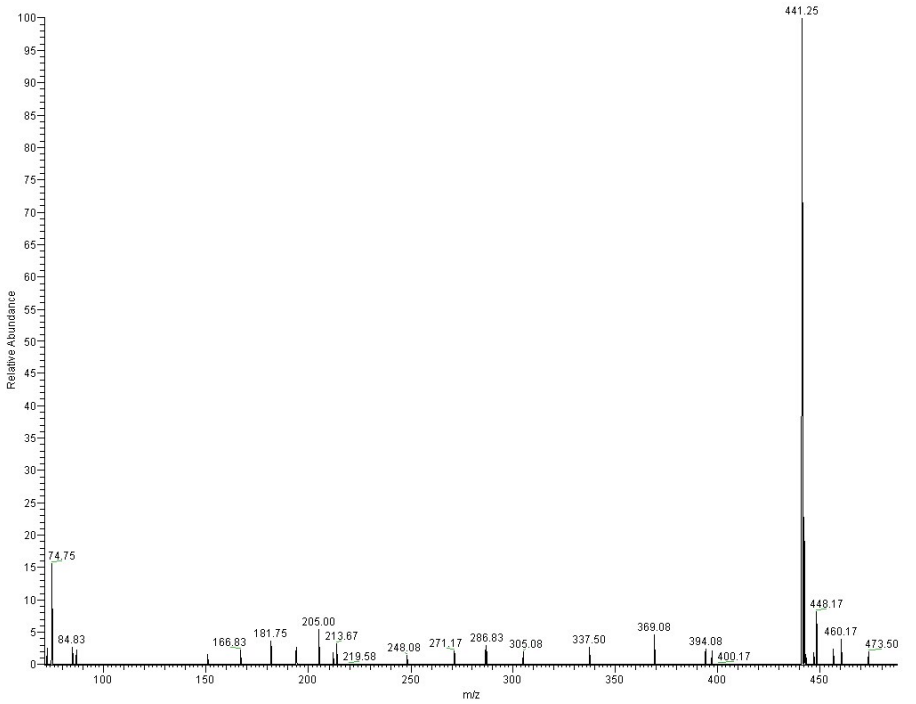


Fig. SI6. ESI–MS diagram of compound **6**.

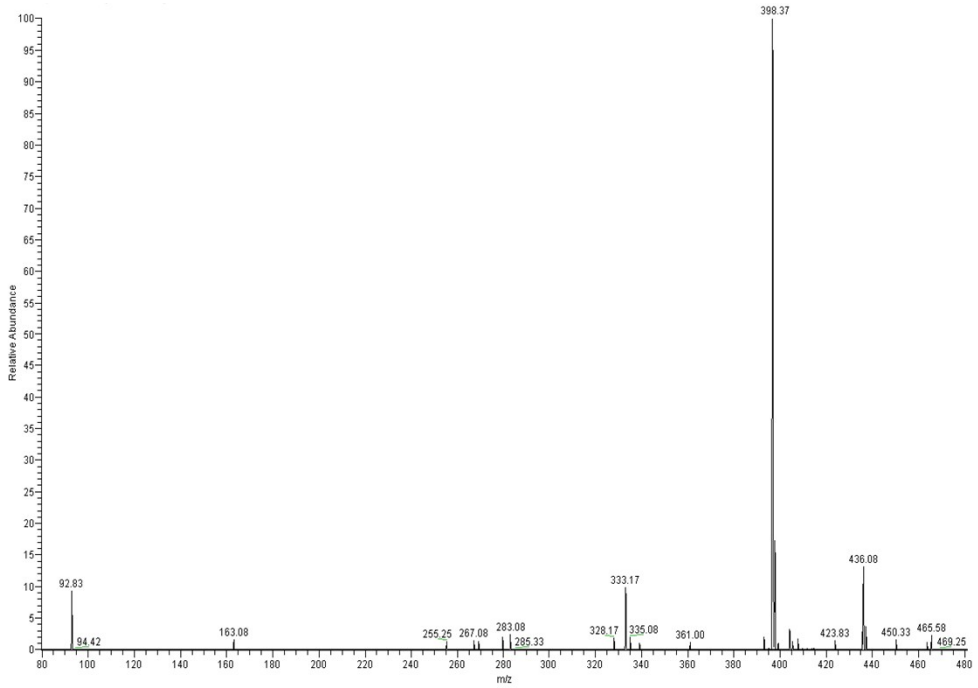


Fig. SI7. ESI–MS diagram of compound **7**.

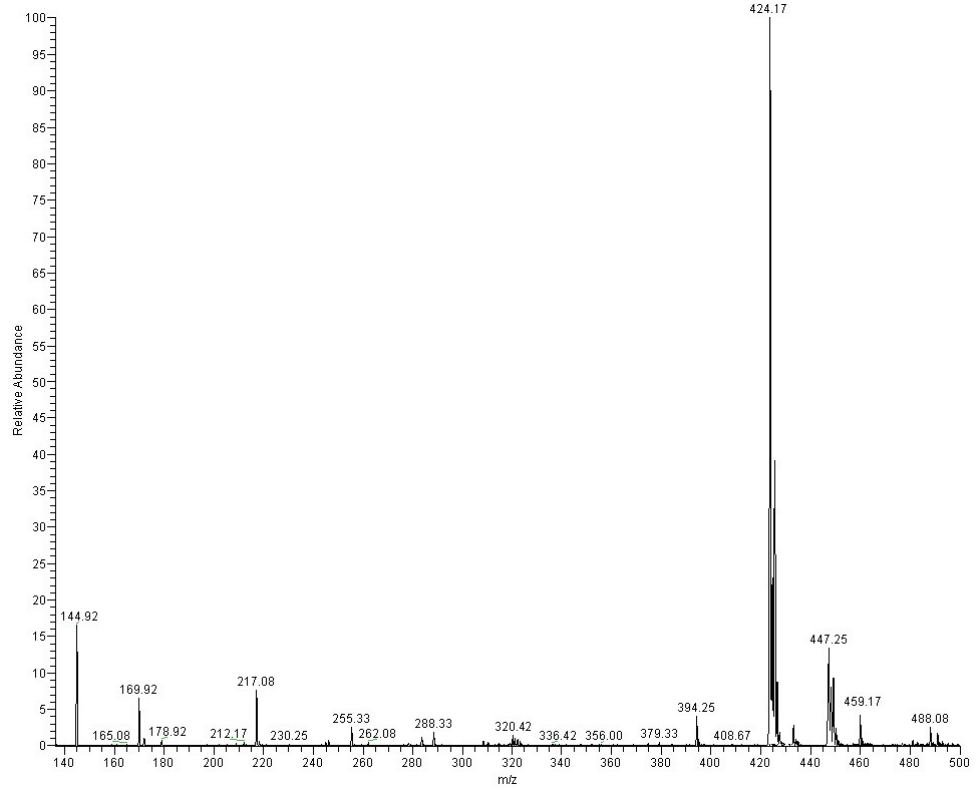


Fig. SI8. ESI–MS diagram of compound **8**.

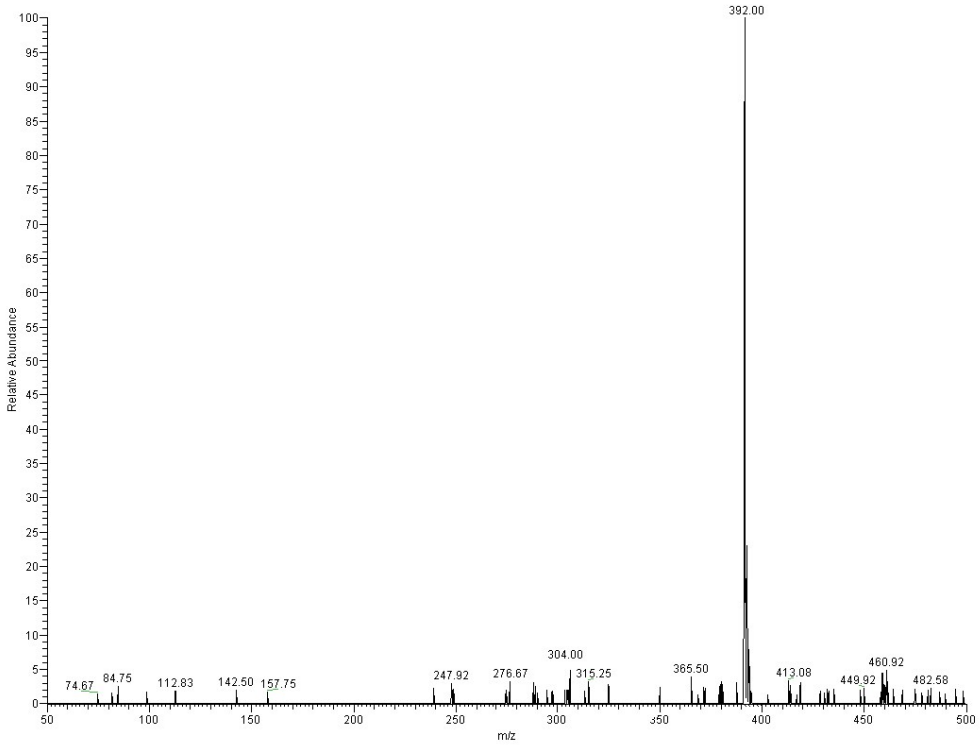


Fig. SI9. ESI–MS diagram of compound **9**.

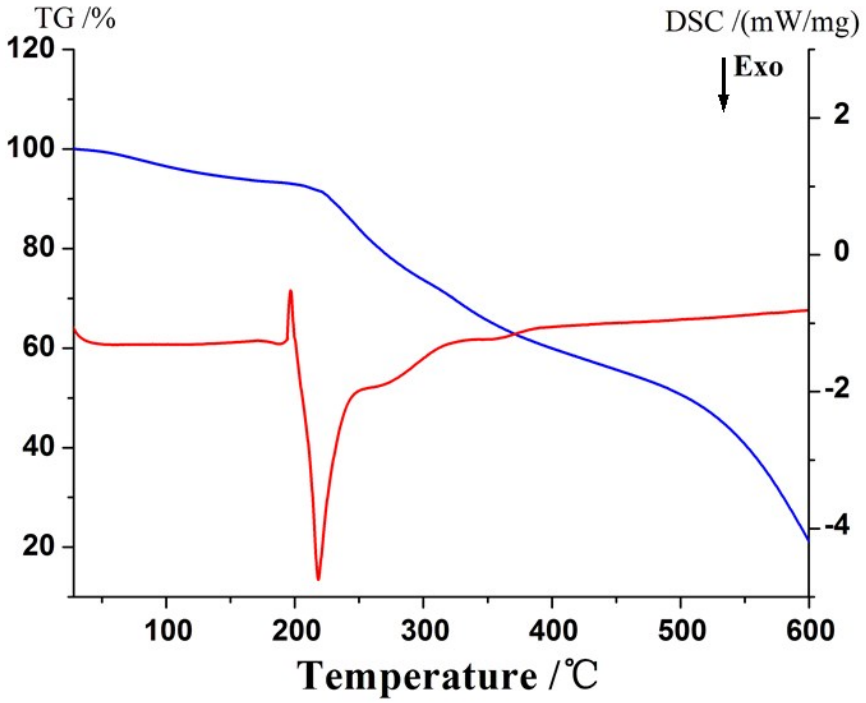


Fig. SI10. TGA–DSC diagram of compound **4**.

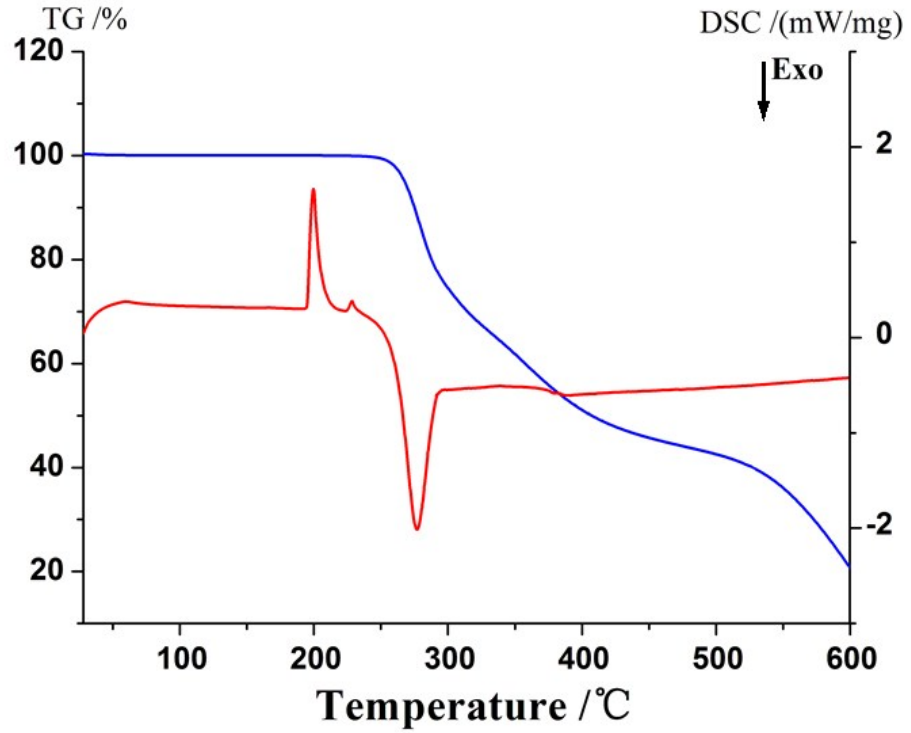


Fig. SI11. TGA–DSC diagram of compound **5**.

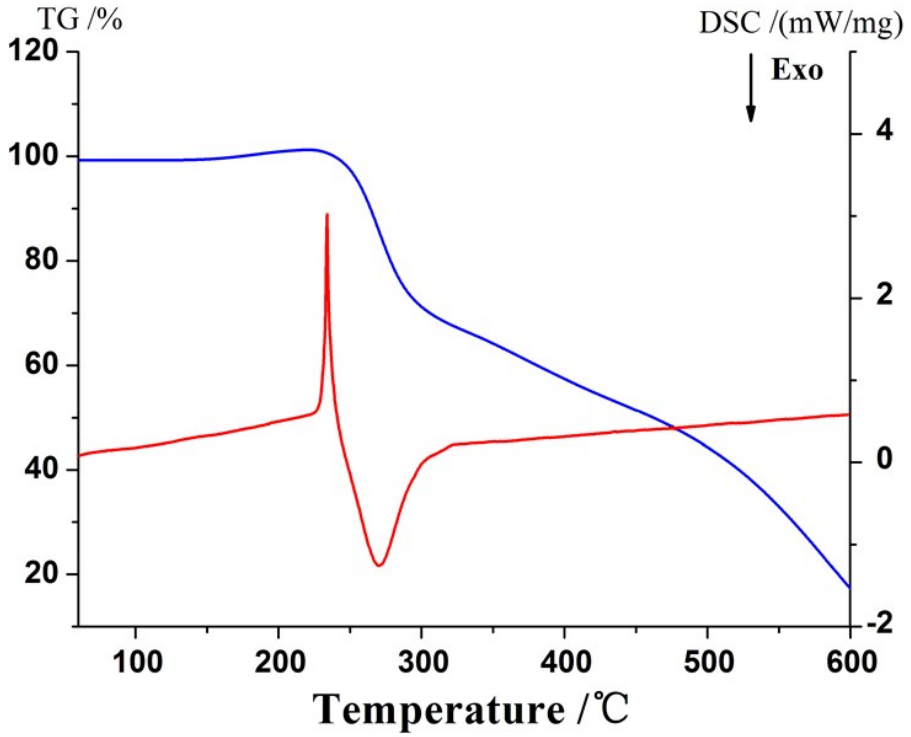


Fig. SI12. TGA–DSC diagram of compound **6**.

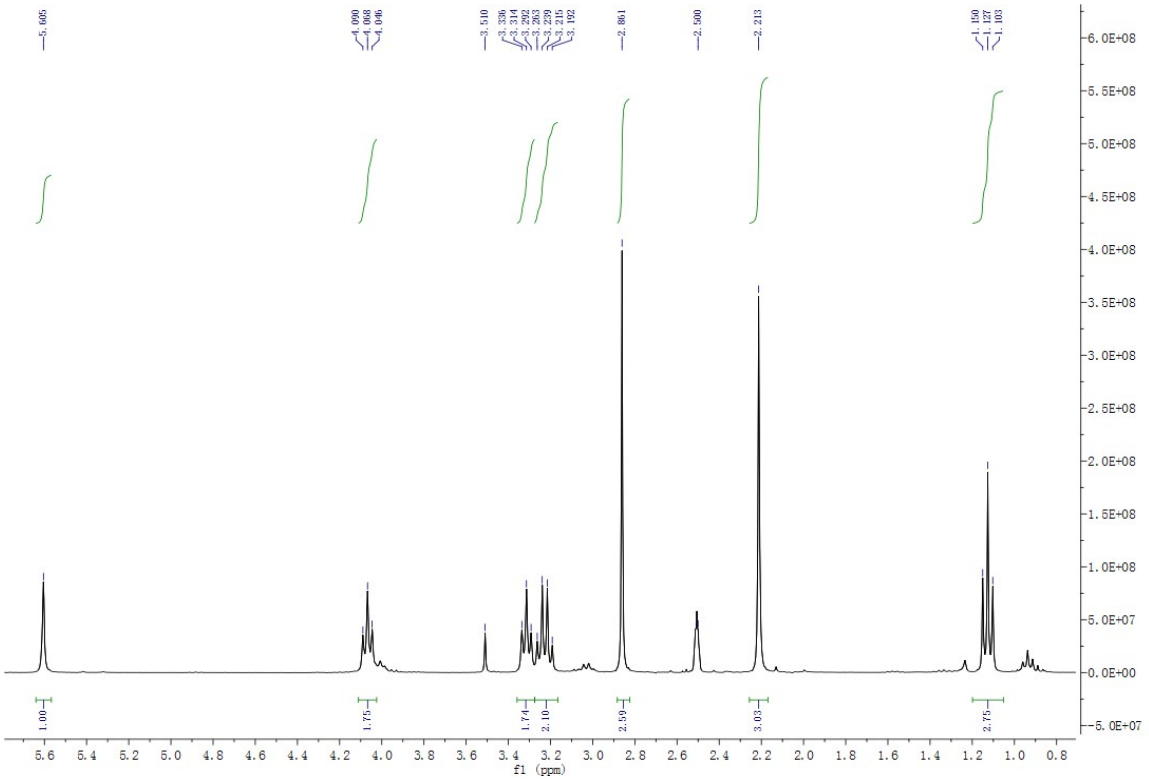


Fig. SI13. ^{1}H NMR diagram of compound **1**.

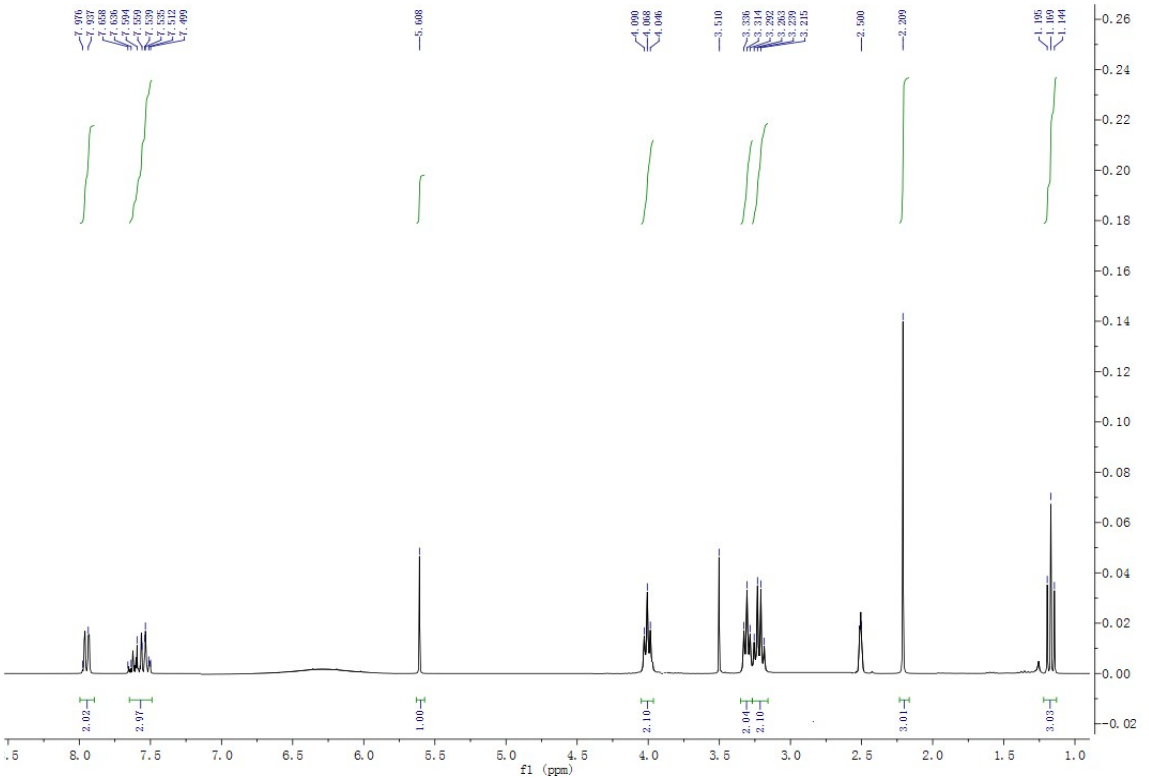


Fig. SI14. ^{1}H NMR diagram of compound **2**.

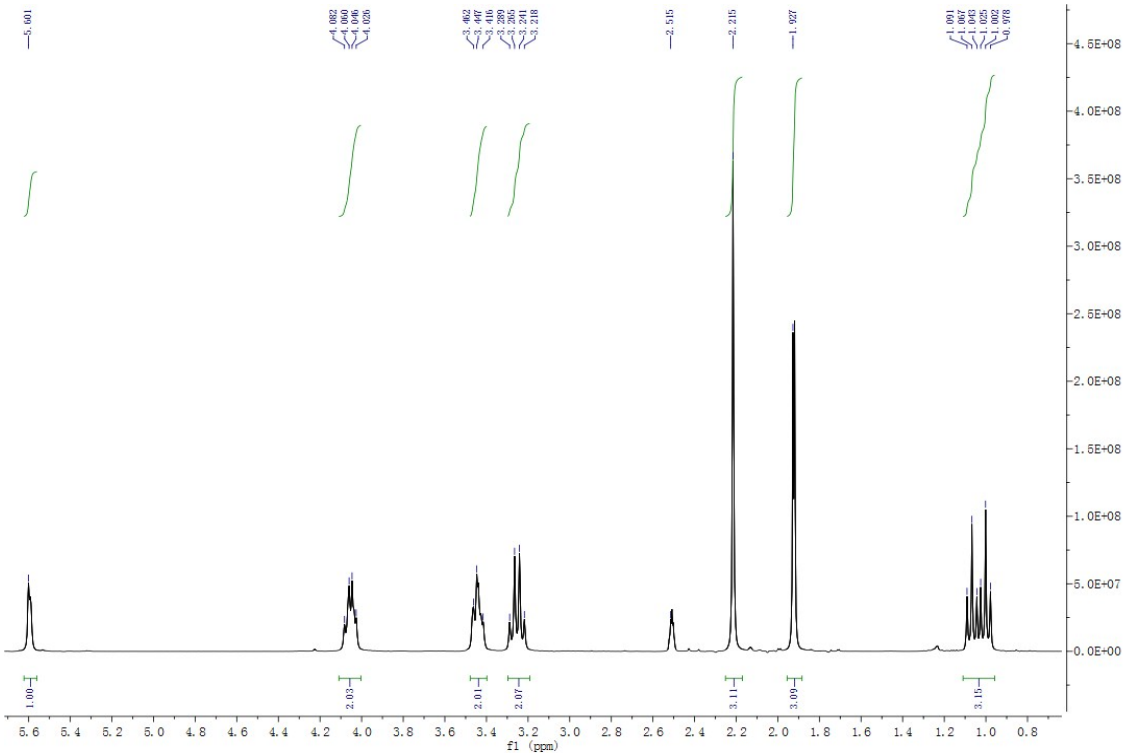


Fig. SI15. ^{1}H NMR diagram of compound **3**.

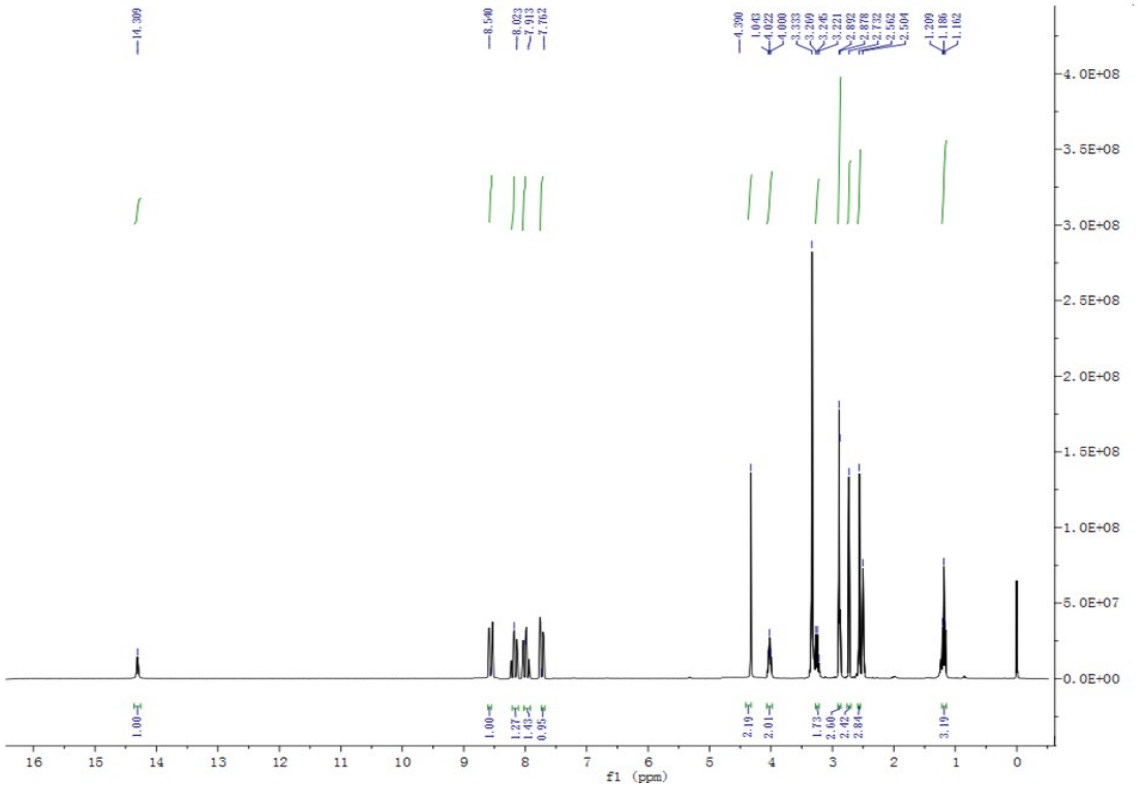


Fig. SI16. ^{1}H NMR diagram of compound **4**.

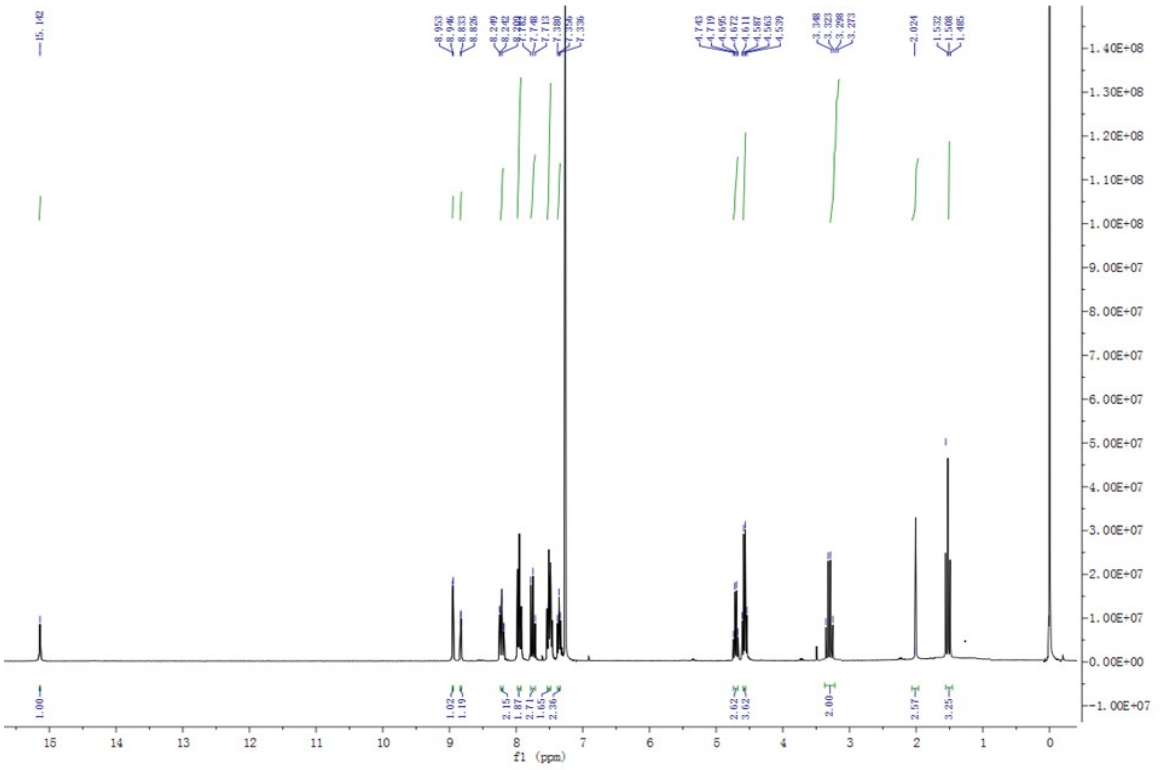


Fig. SI17. ^{1}H NMR diagram of compound **5**.

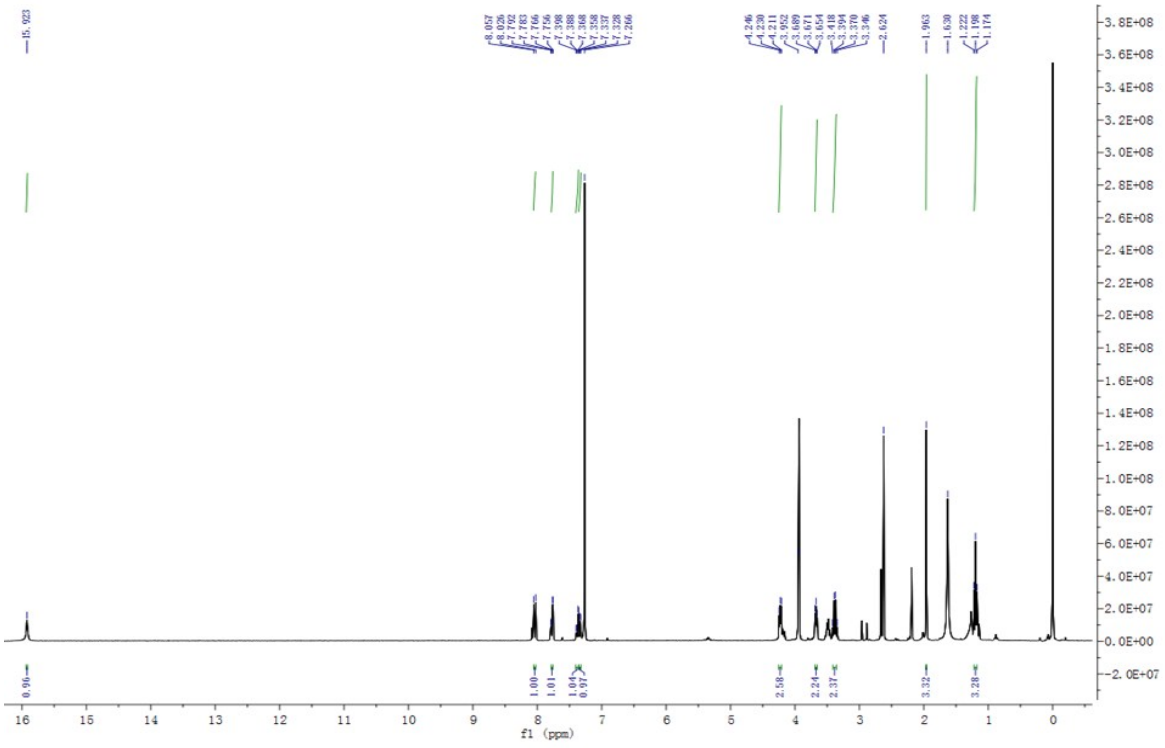


Fig. SI18. ^{1}H NMR diagram of compound **6**.

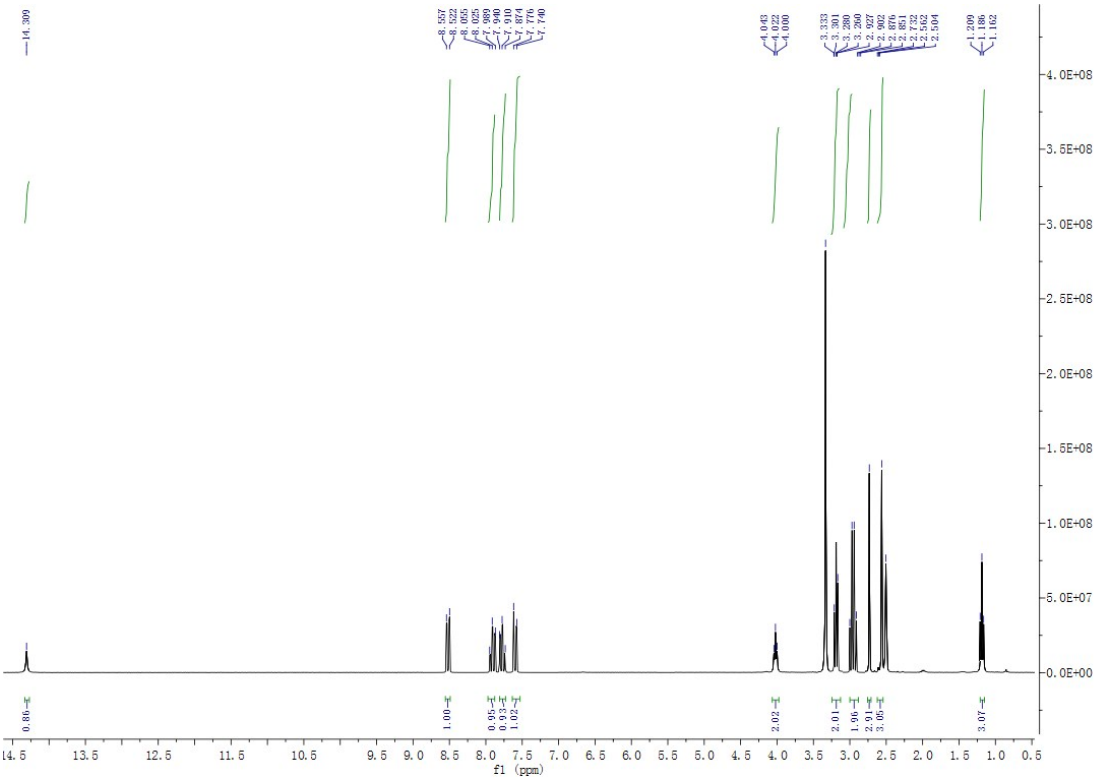


Fig. SI19. ^{1}H NMR diagram of compound **7**.

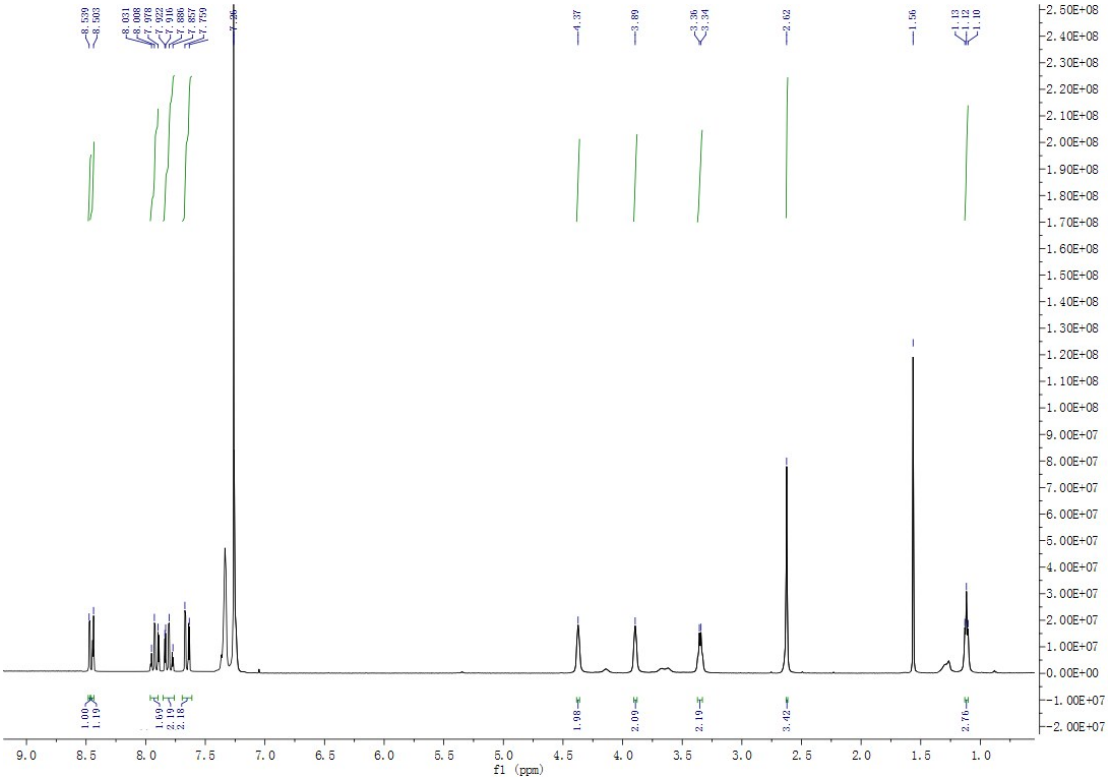


Fig. SI20. ^{1}H NMR diagram of compound **8**.

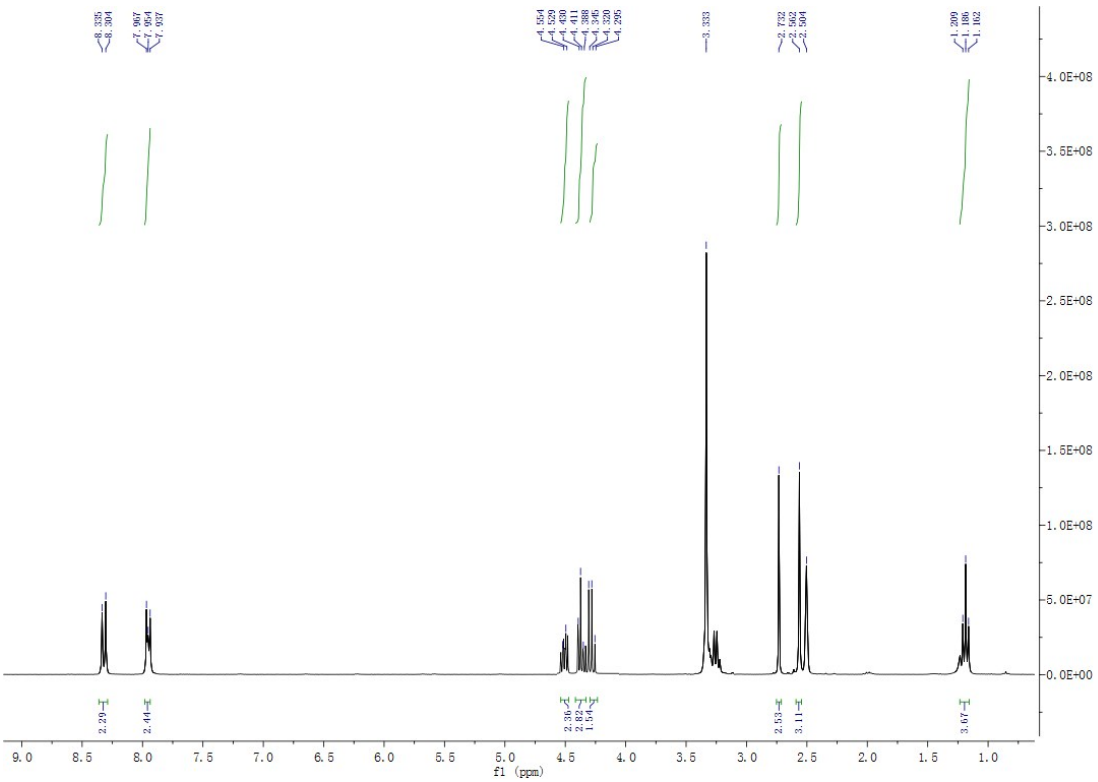


Fig. SI21. ^{1}H NMR diagram of compound **9**.

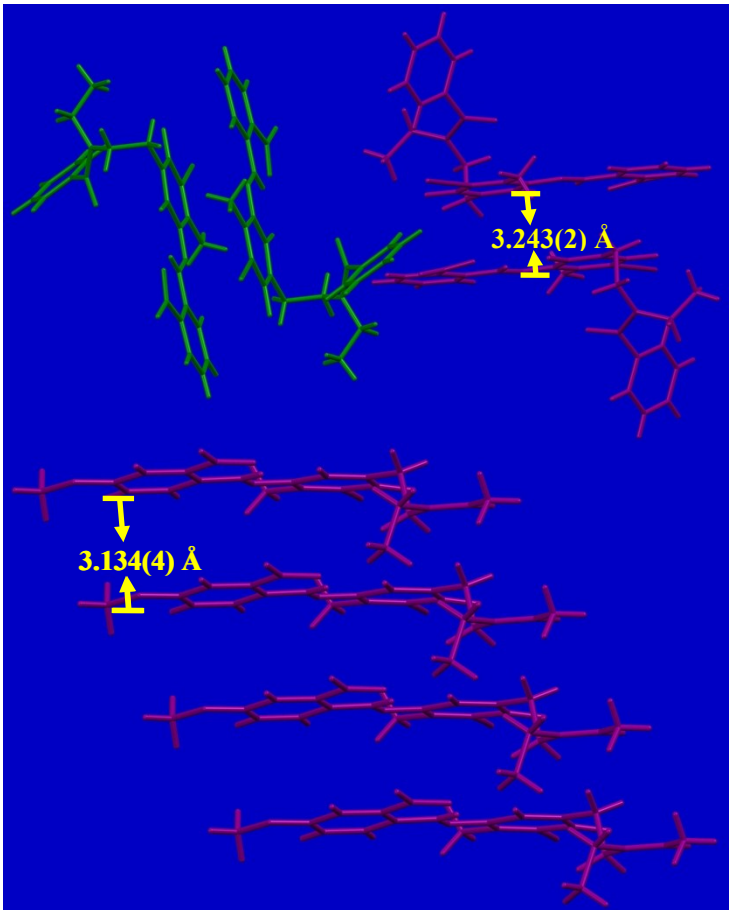


Fig. SI22. Different packing fashions of dyes **4·CH$_3$CN** (top) and **5** (bottom).