

Electronic Supplementary Information (ESI) for

**Carbazole based compounds containing aldehyde and cyanoacetic acid:
optical properties and application in photopolymerization**

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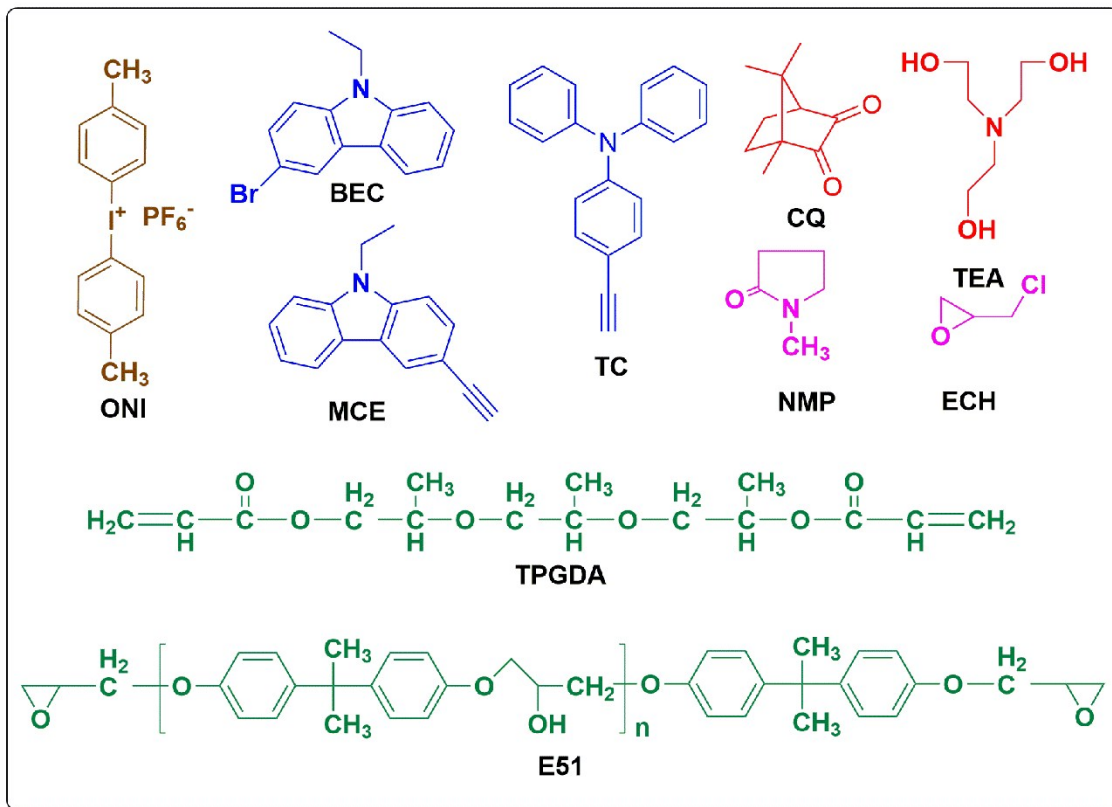


Fig. S1 Abbreviations and composites involved in this work

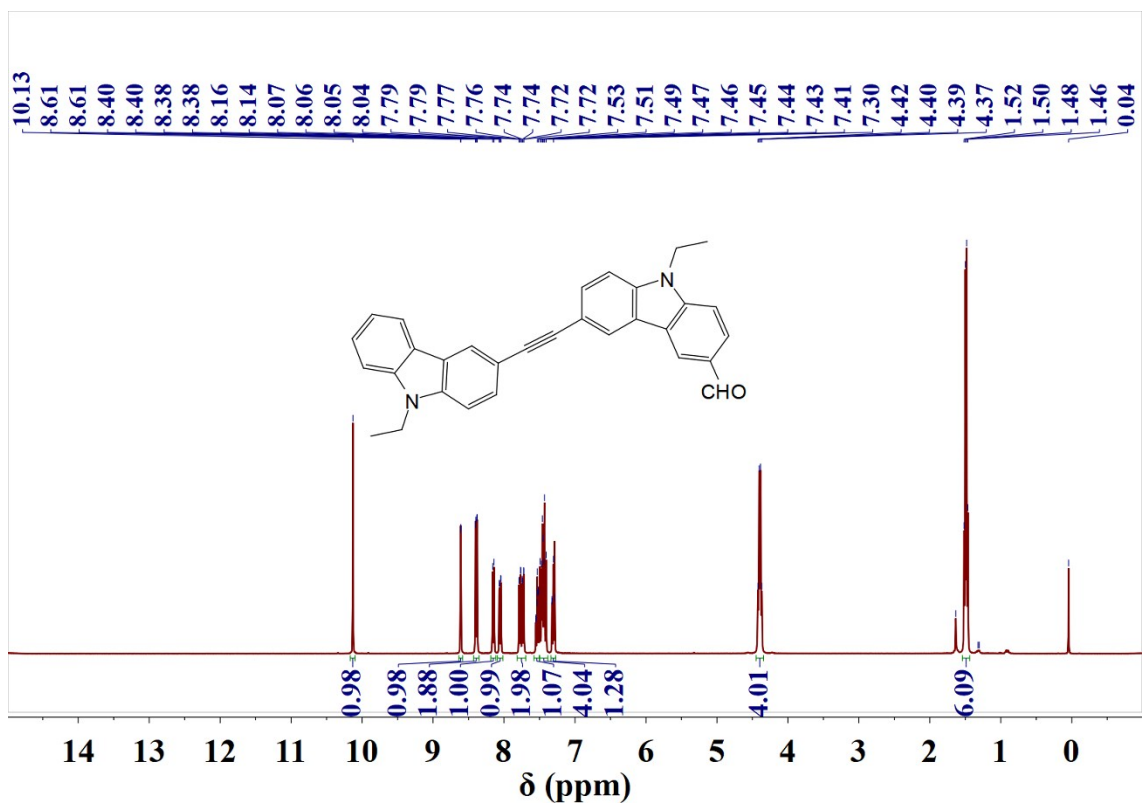


Fig. S2 ^1H NMR Spectrum of CCC in Chloroform-*d*

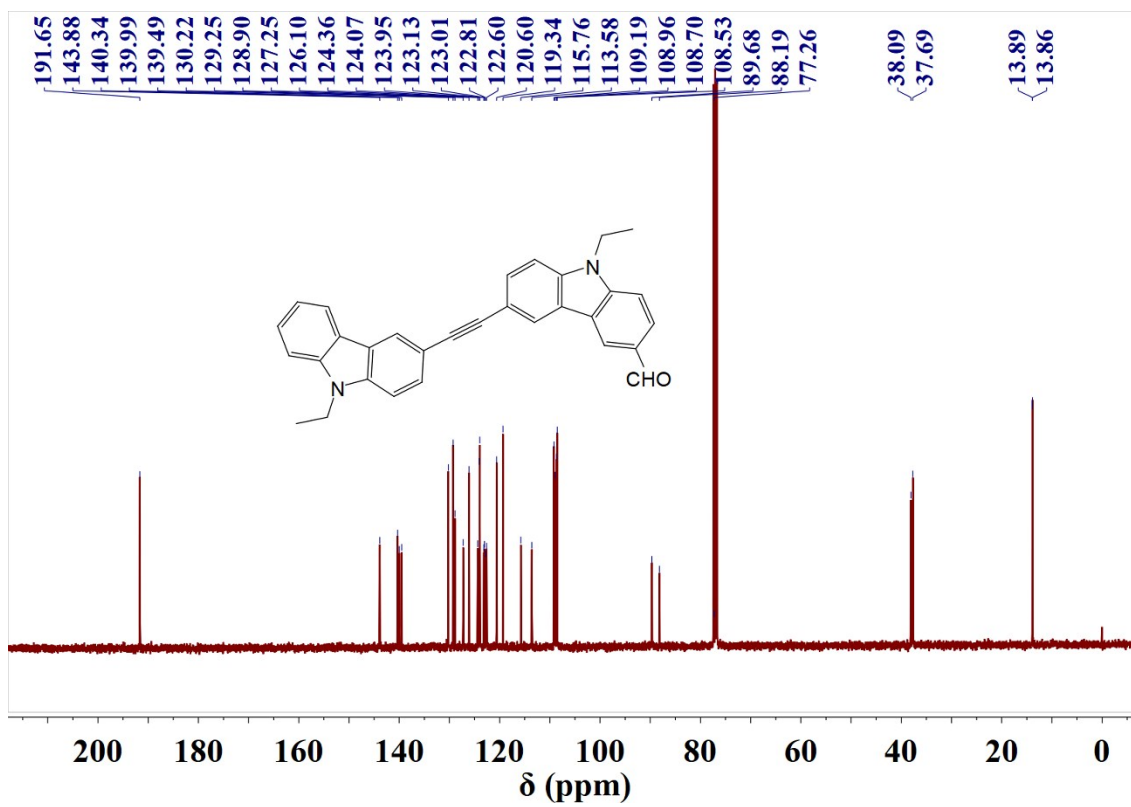


Fig. S3 ^{13}C NMR Spectrum of CCC in Chloroform-*d*

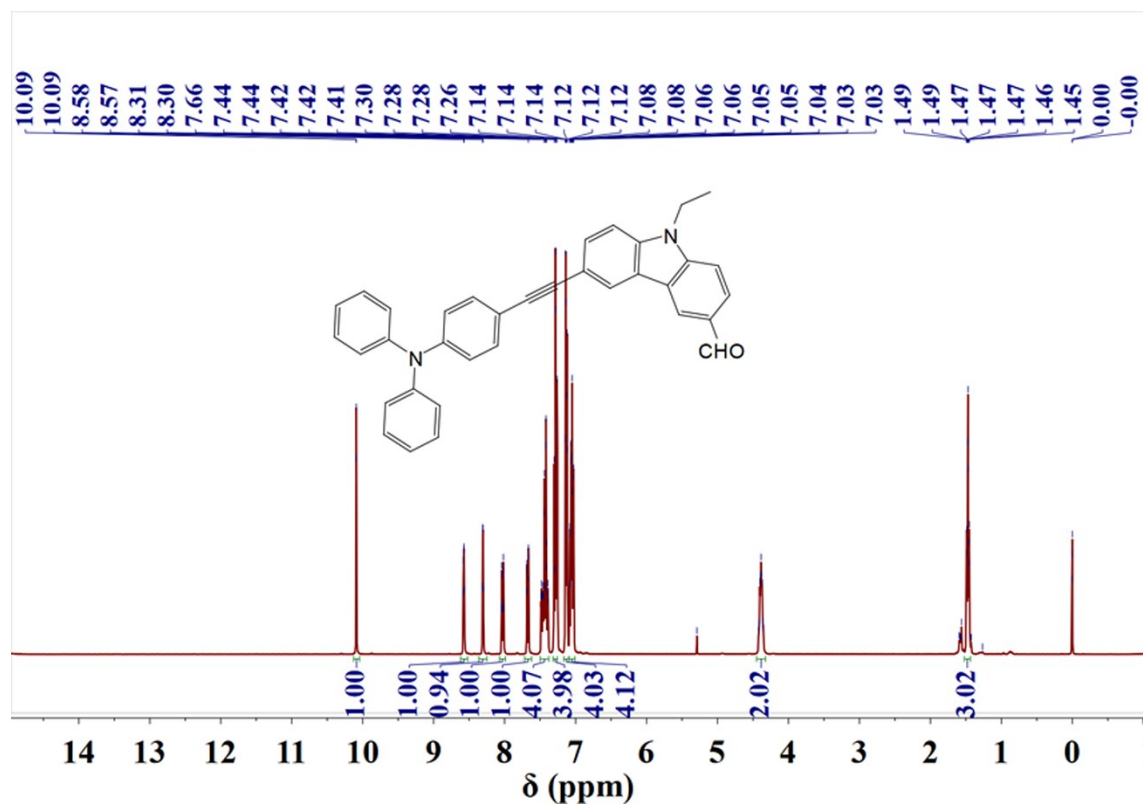


Fig. S4 ^1H NMR Spectrum of TCC in in Chloroform-*d*

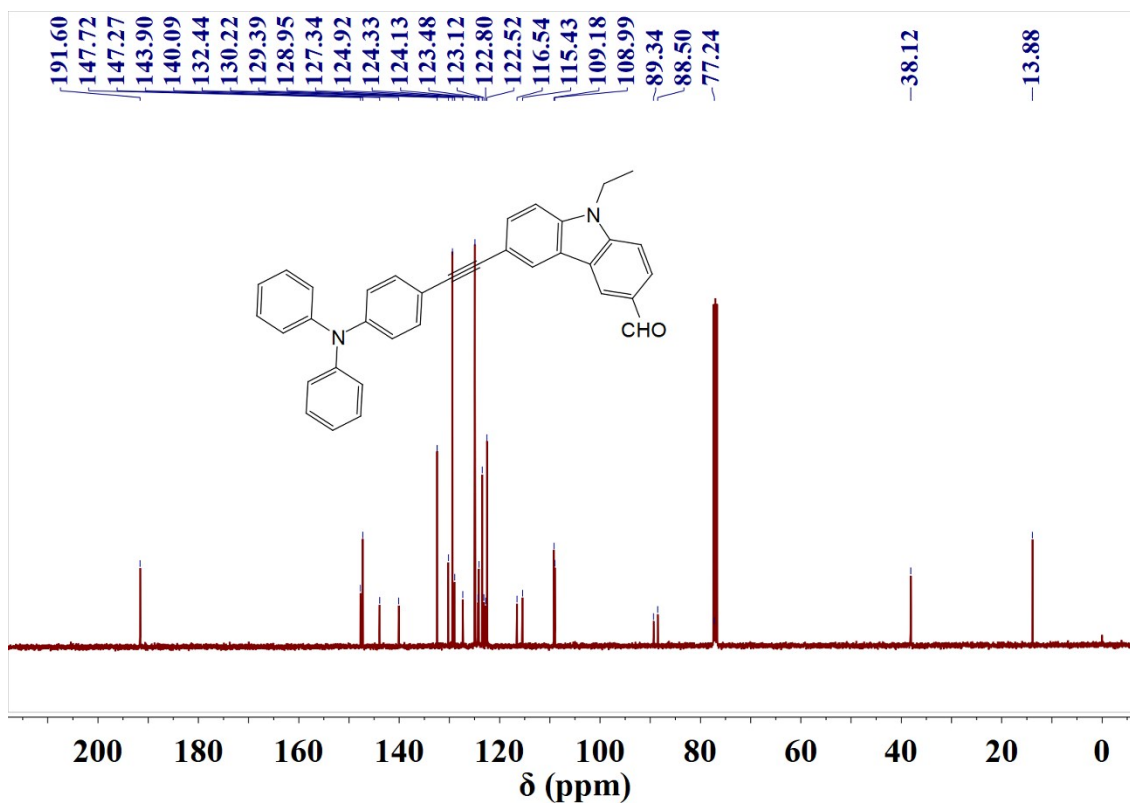


Fig. S5 ^{13}C NMR Spectrum of TCC in in Chloroform-*d*

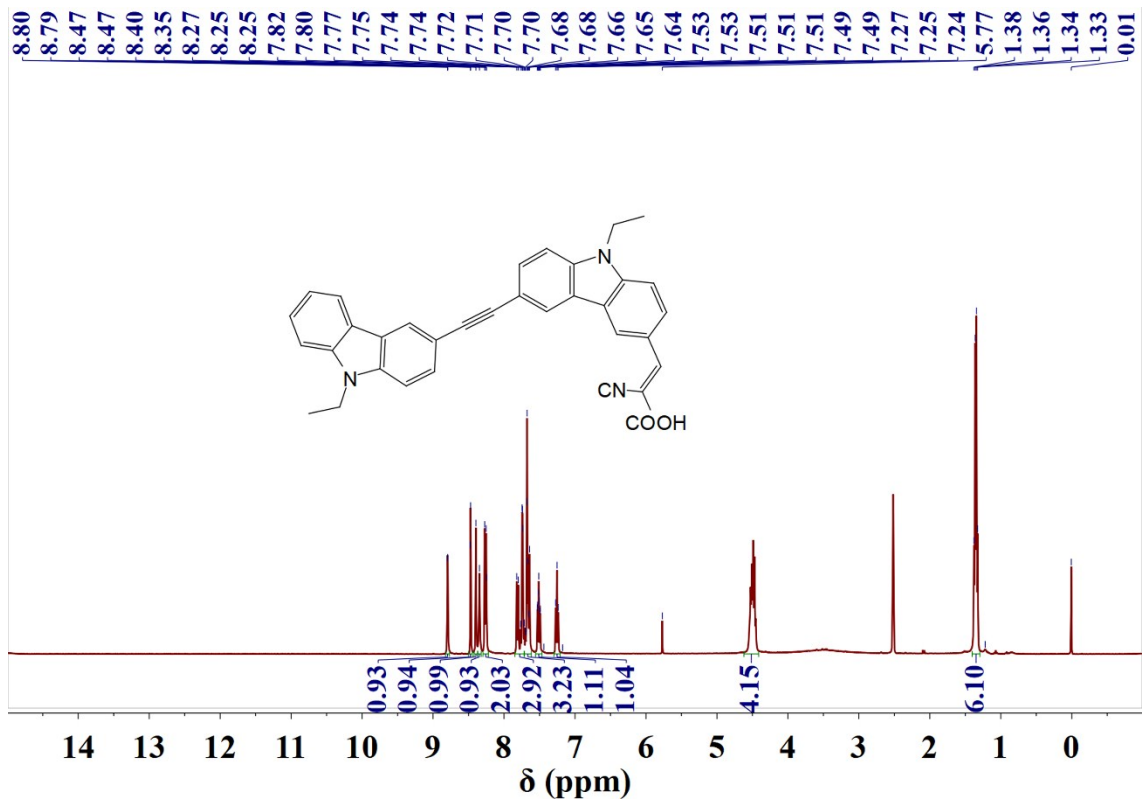


Fig. S6 ^1H NMR Spectrum of CCN in $\text{DMSO-}d_6$

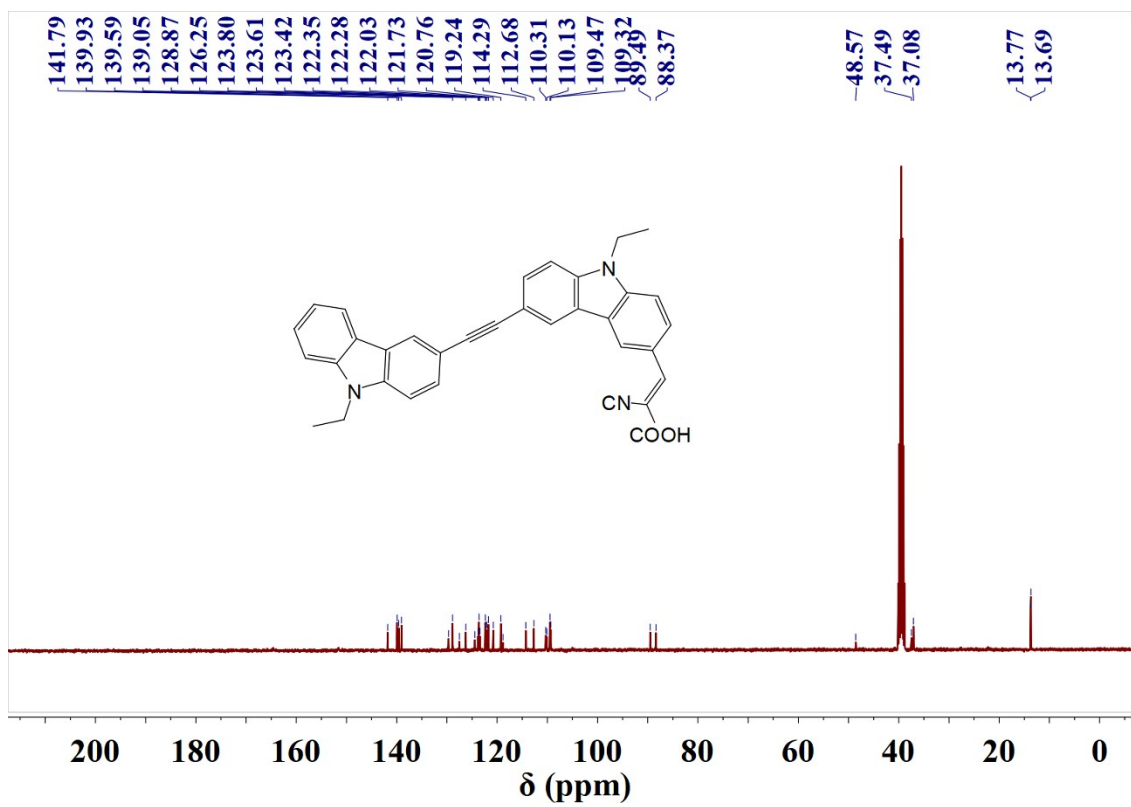


Fig. S7 ^{13}C NMR Spectrum of CCN in $\text{DMSO-}d_6$

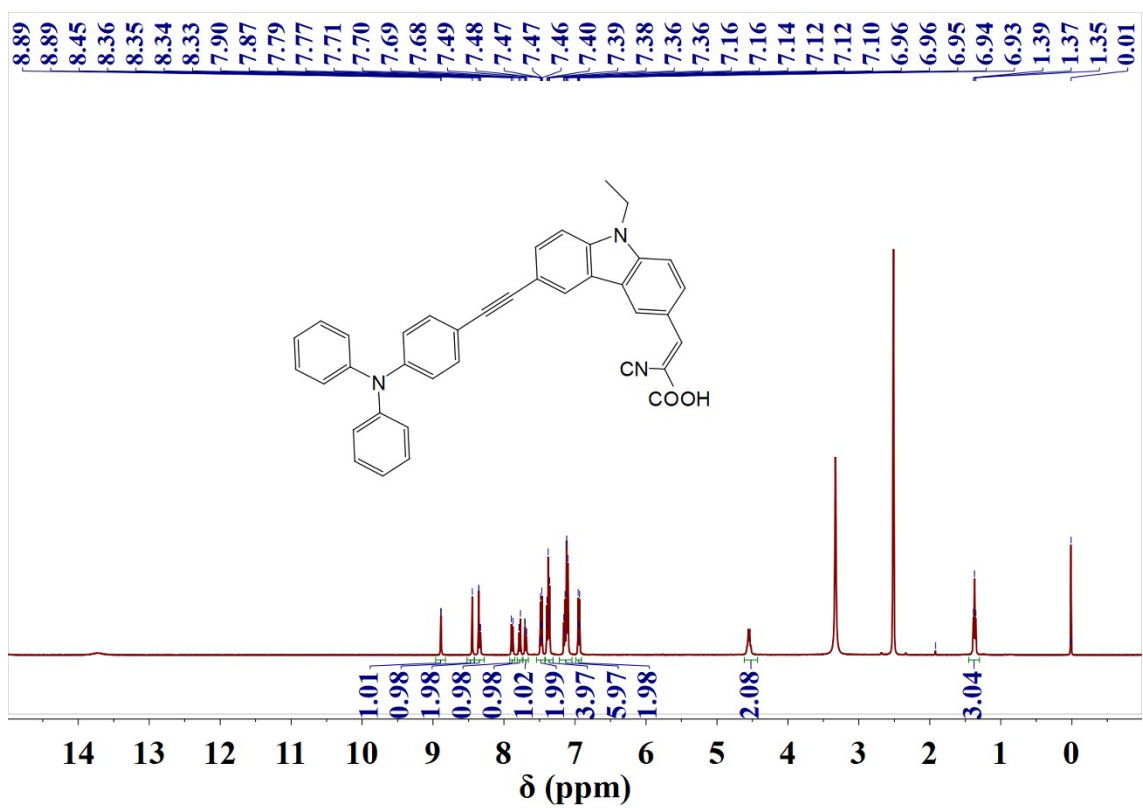


Fig. S8 ^1H NMR Spectrum of TCN in $\text{DMSO-}d_6$

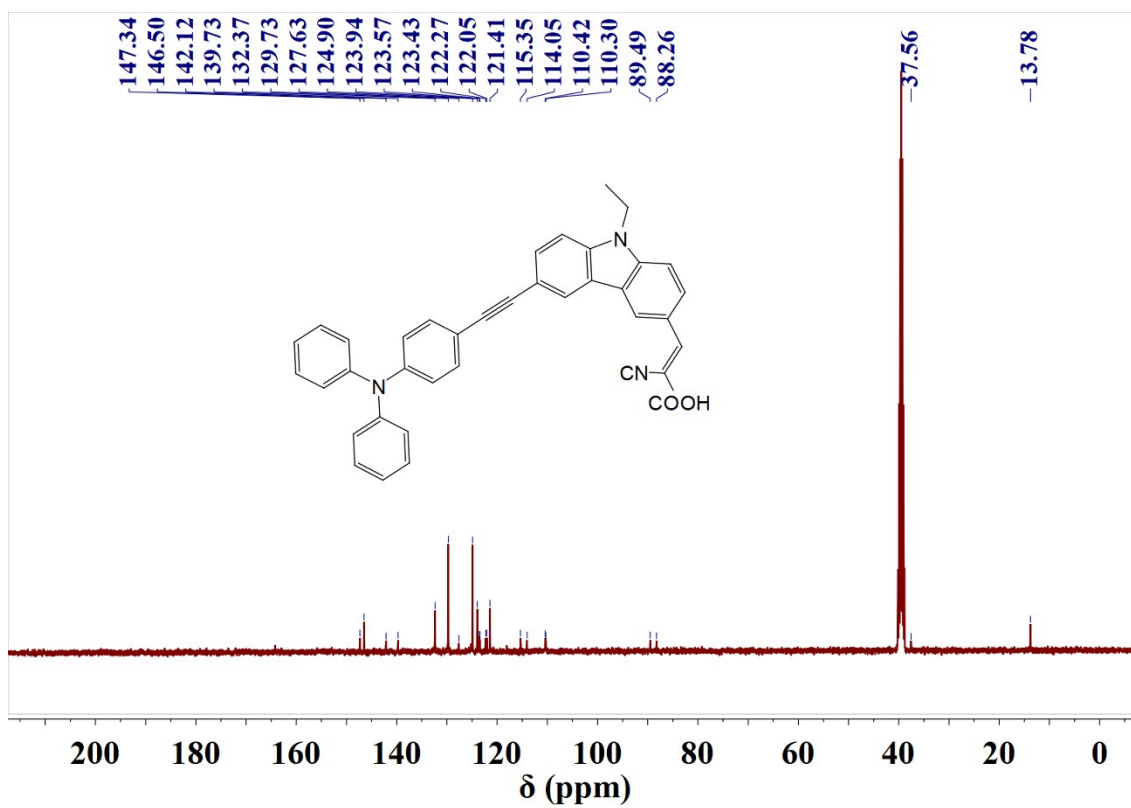


Fig. S9 ^{13}C NMR Spectrum of TCN in $\text{DMSO-}d_6$

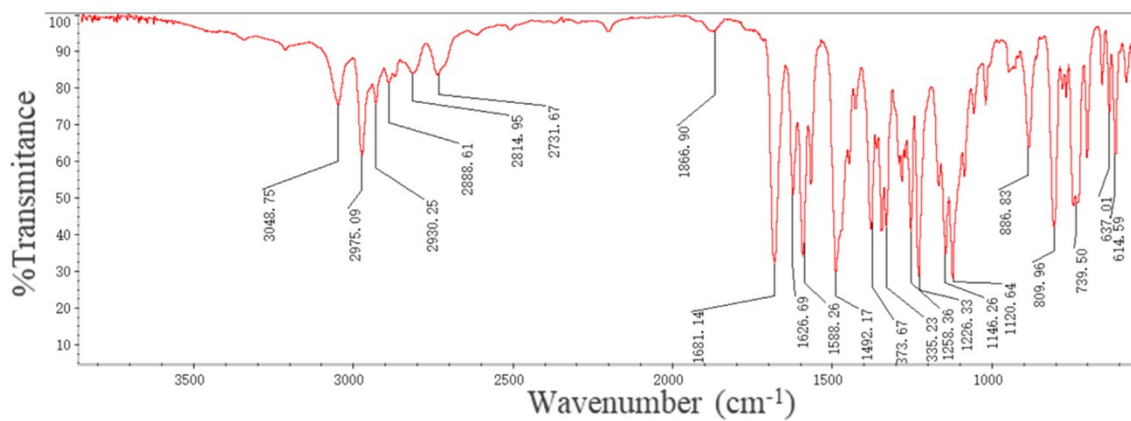


Fig. S10 IR Spectrum of CCC

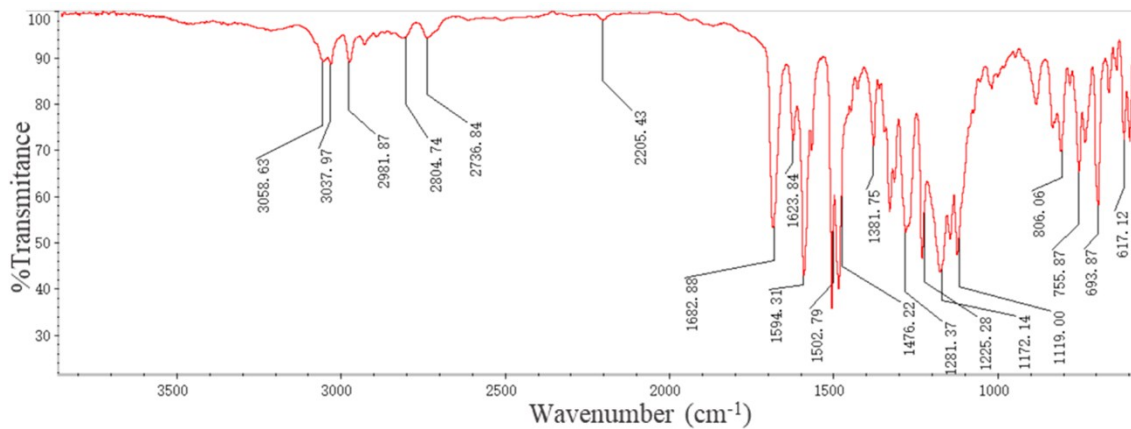


Fig. S11 IR Spectrum of TCC

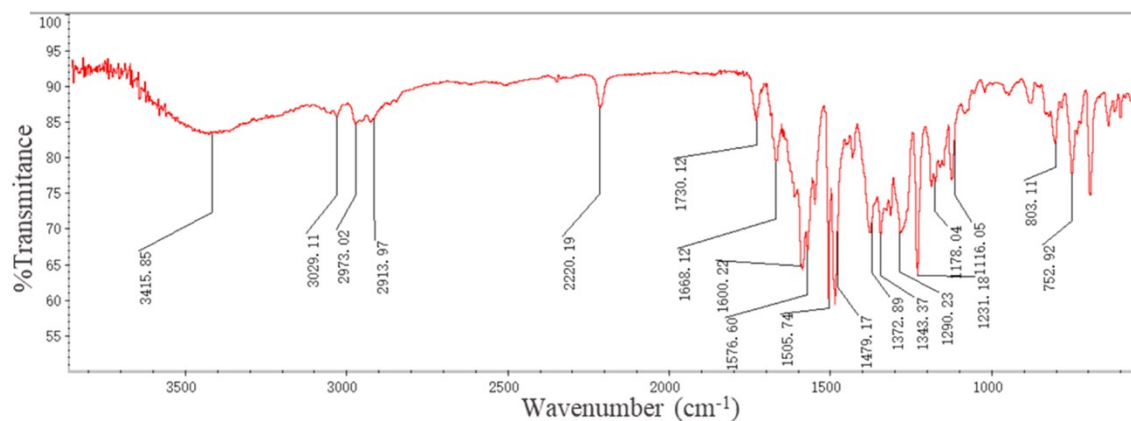


Fig. S12 IR Spectrum of CCN

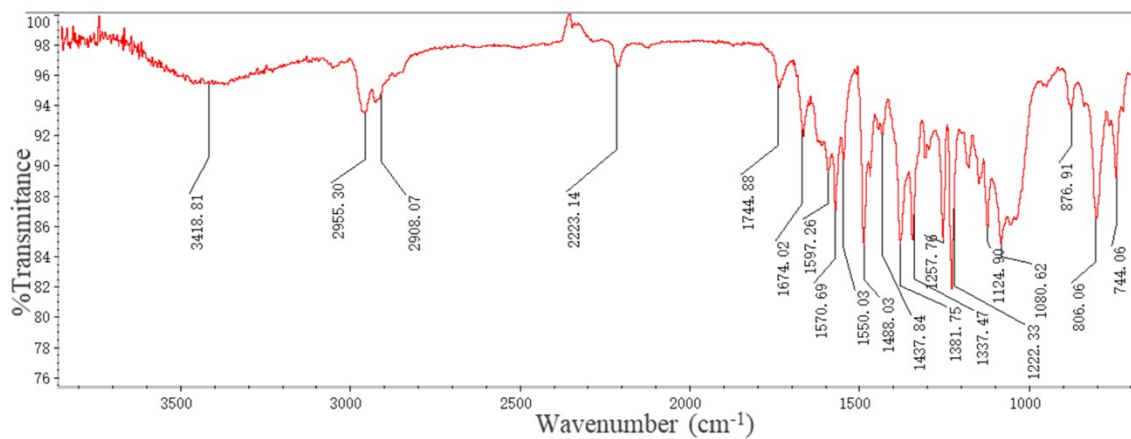


Fig. S13 IR Spectrum of TCN

Table S1 The Optimized conditions for synthesis four kinds of dye containing aldehyde

Test	Material	Pd(PPh ₃) ₂ Cl ₂	Temperat	Status of	Finishing	Yield
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	Ratio		ure /°C	Reaction	time	%
1	1.00	0.03	85	No	--	--
2	1.05	0.03	85	No	--	--
3	1.1	0.03	85	Yes	4	43
4	1.1	0.02	85	Yes	4	59
5	1.1	0.015	85	Yes	6	71
6	1.1	0.015	55	Yes	10	88
7	1.1	0.015	r.t	No	--	--