Electronic Supplementary Material (ESI) for RSC Advances.

Supporting information

Construction of a flexible covalent organic framework based on triazine units with interesting photoluminescent properties for sensitive and selective detection of picric acid

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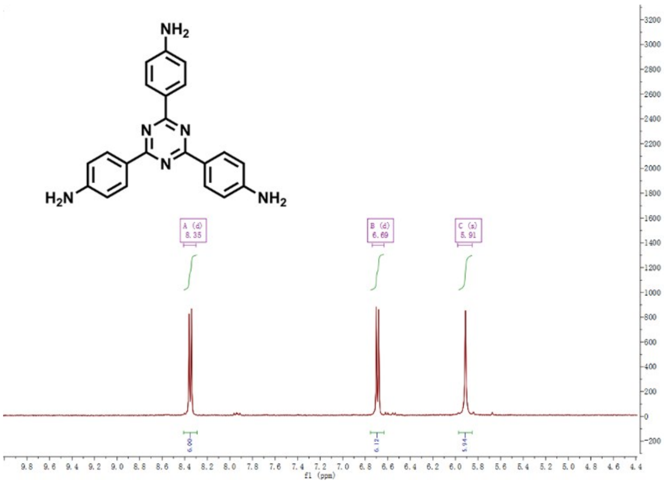

Fig. S1 ^{1}H NMR spectra (400 MHz) of TPT-NH_2.

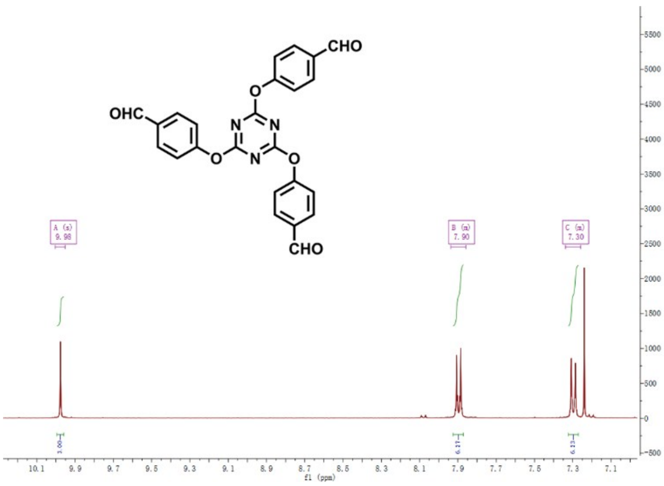

Fig. S2 ^{1}H NMR spectra (400 MHz) of TPOT-CHO.

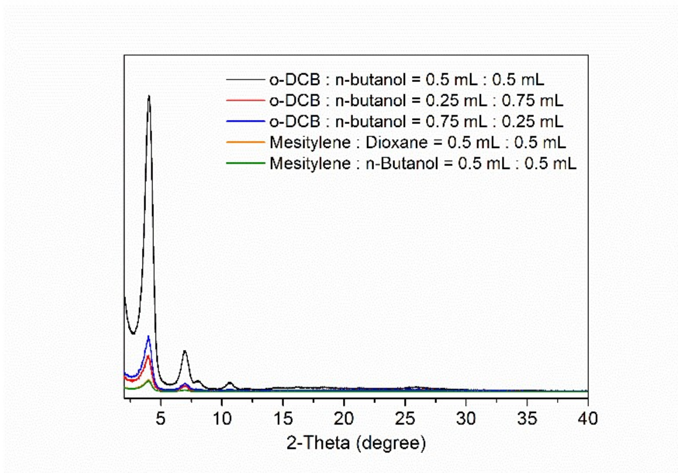

Fig. S3 PXRD patterns of DTZ-COF prepared under different solvothermal conditions.

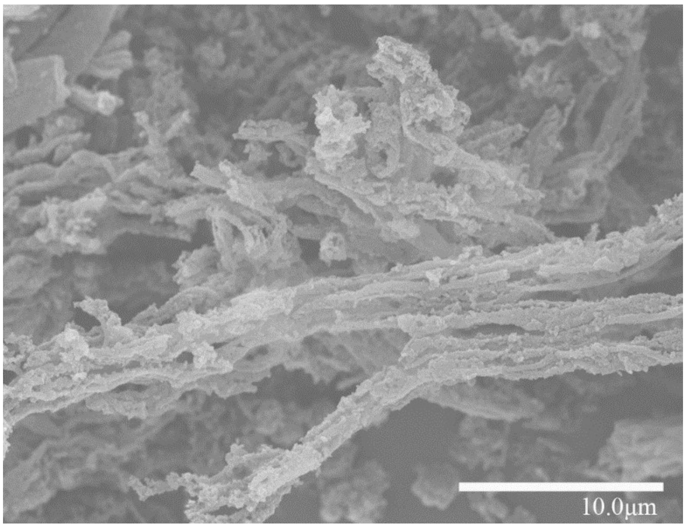

Fig. S4 SEM image of DTZ-COF synthesized under solvothermal condition.

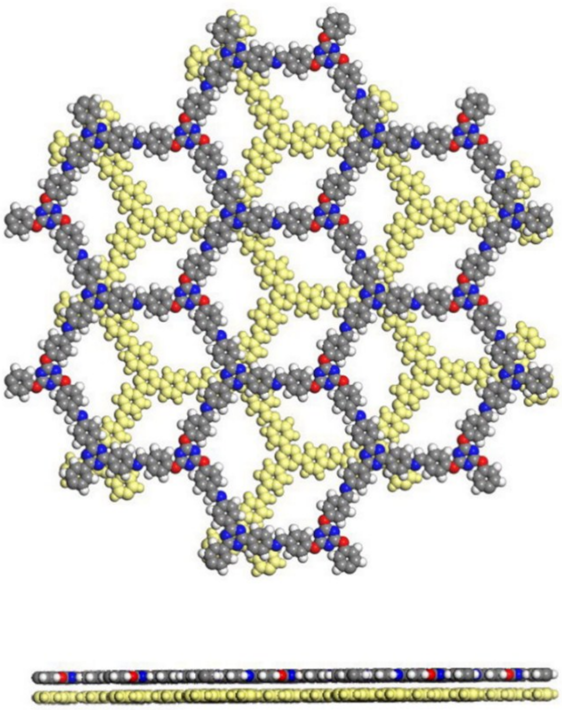

Fig. S5 The top view and side view of AB stacking mode of DTZ-COF.

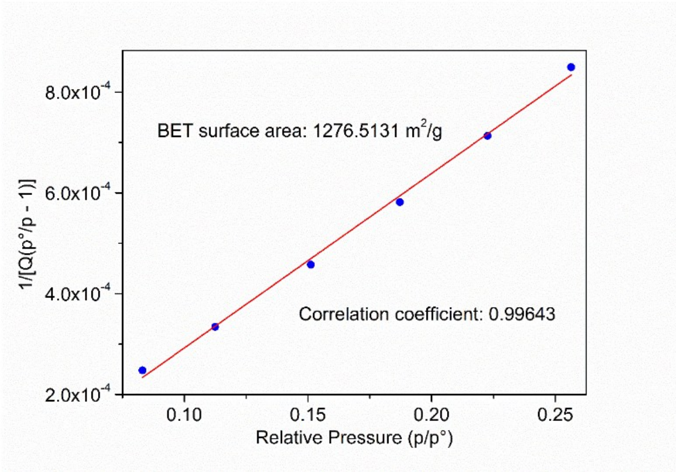

Fig. S6 Multiple point BET plot of DTZ-COF synthesized by solvothermal method giving a specific surface area of 1276 m^2/g.

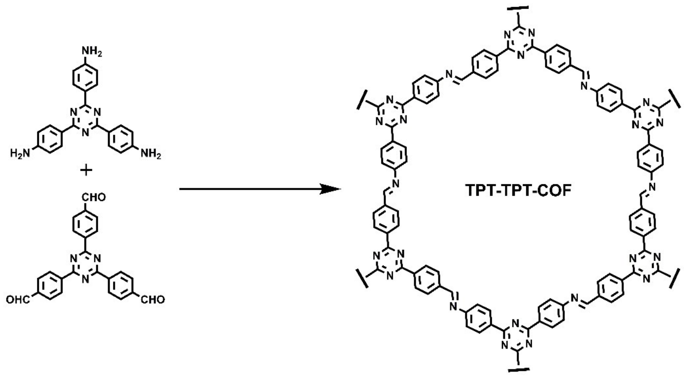

Fig. S7 Schematic diagram of synthesis of TPT-TPT-COF.

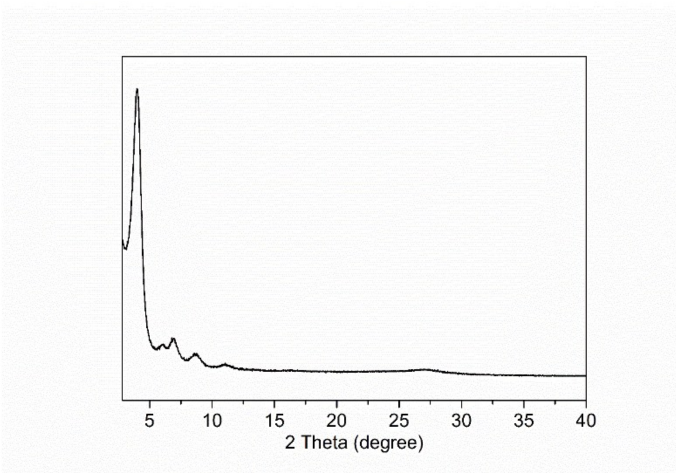

Fig. S8 PXRD pattern of TPT-TPT-COF.

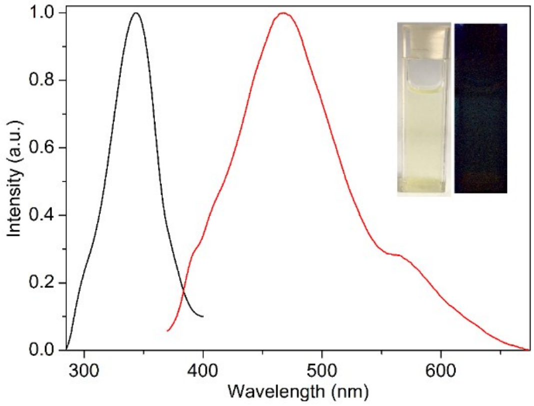

Fig. S9 Normalized fluorescence excitation (black) and emission (red) spectra of TPT-TPT-COF in THF dispersion. Inset: Images of TPT-TPT-COF in THF dispersion under sun-light and UV-light irradiation of 365 nm.

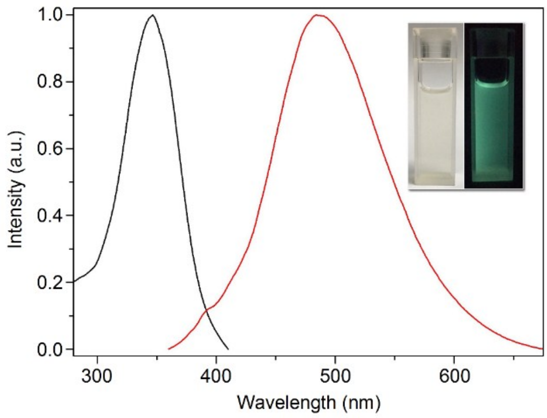

Fig. S10 Normalized fluorescence excitation (black) and emission (red) spectra of DTZ-COF in THF dispersion. Inset: Images of DTZ-COF in THF dispersion under sun-light and UV-light irradiation of 365 nm.

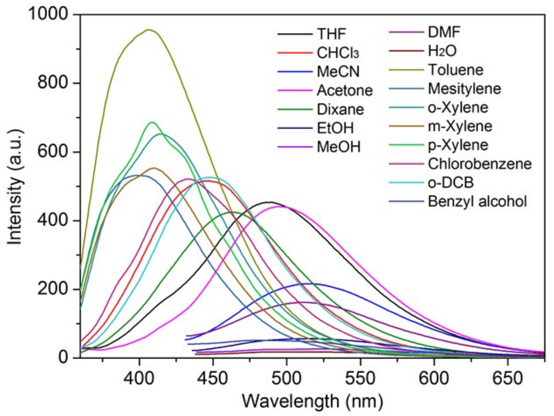

Fig. S11 The fluorescence emission spectra of DTZ-COF dispersed in different solvents (λ_{ex} = 350 nm).

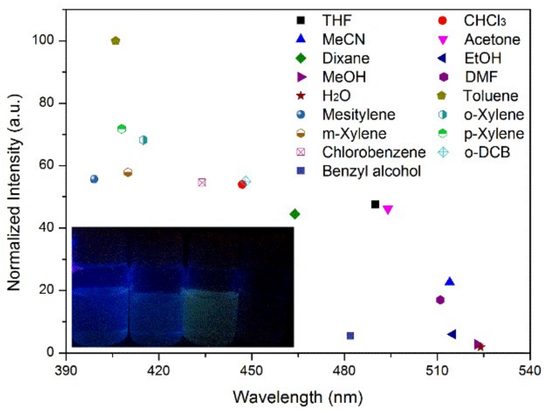

Fig. S12 The wavelength and intensity of the fluorescence emission of DTZ-COF in different solvents (λ_{ex} = 350 nm). Inset: Images of DTZ-COF in toluene, $CHCl_3$, THF and H_2O (from left to right) dispersions under UV-light irradiation of 365 nm.

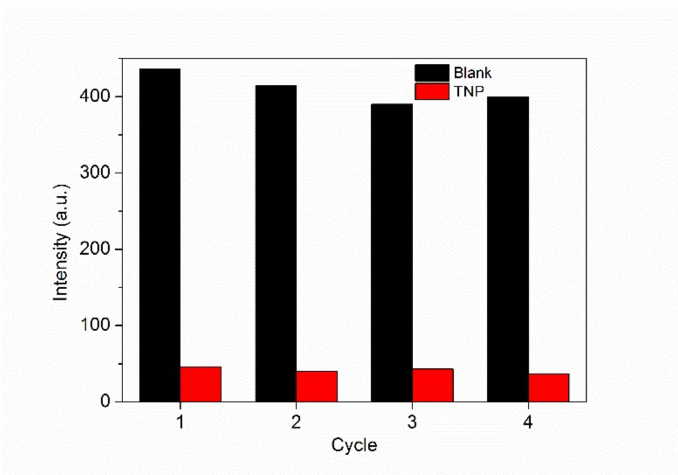

Fig. S13 Cycling test of DTZ-COF for the detection of TNP.

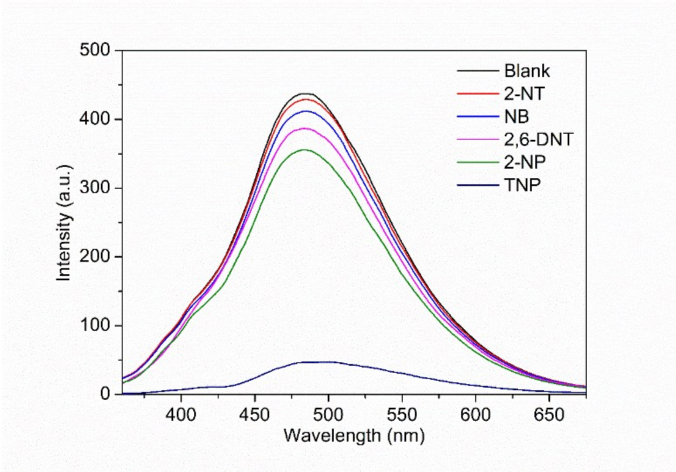

Fig. S14 The fluorescence emission spectra of DTZ-COF in THF dispersions upon addition of different nitroaromatic compounds at a concentration of 10.7 ppm (λ_{ex} = 350 nm).

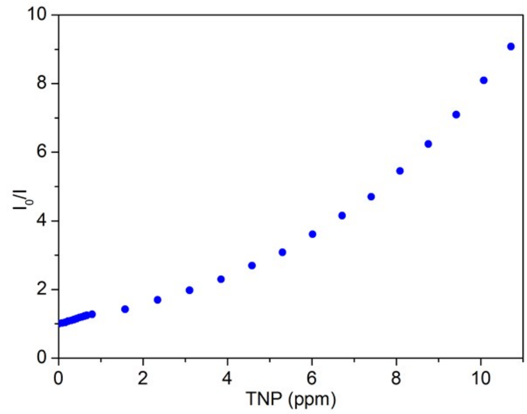

Fig. S15 Stern-Volmer plot for fluorescence quenching of DTZ-COF by TNP.

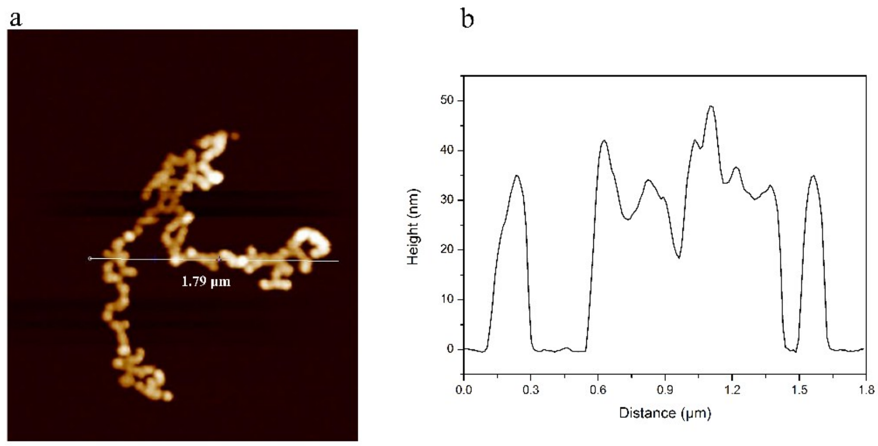

Fig. S16 AFM image (a) and height distribution (b) of DTZ-COF.

Table S1 Fractional atomic coordinates for the unit cell of DTZ-COF.

DTZ-COF							
Space group symmetry P3 a = b = 26.8882 Å, c = 3.6611 Å α = β = 90˚, γ = 120˚							
Atom	x(Å)	y(Å)	z(Å)	Atom	x(Å)	y(Å)	z(Å)
N1	0.32162	0.58172	0.13578	N43	0.74677	0.31472	0.13578
C2	0.33056	0.53652	0.13578	C44	0.8288	0.29818	0.13578
N3	0.38479	0.54598	0.13578	C45	0.84933	0.25932	0.13578
C4	0.42998	0.60014	0.13578	C46	0.57039	0.11722	0.13578
N5	0.42055	0.64493	0.13578	C47	0.62978	0.13772	0.13578
C6	0.36639	0.63594	0.13578	C48	0.90844	0.27935	0.13578
O7	0.35445	0.68117	0.13578	C49	0.9478	0.33842	0.13578
C8	0.39831	0.7394	0.13578	C50	0.92738	0.37747	0.13578
O9	0.48715	0.61207	0.13578	C51	0.86829	0.35741	0.13578
C10	0.50151	0.5682	0.13578	C52	0.6495	0.09822	0.13578
C11	0.22711	0.46506	0.13578	C53	0.61044	0.03913	0.13578
O12	0.28532	0.47936	0.13578	C54	0.55097	0.01873	0.13578
C13	0.38115	0.78083	0.13578	C55	0.53128	0.05811	0.13578
C14	0.42182	0.83951	0.13578	N56	0.50982	0.95848	0.13578
C15	0.48068	0.85776	0.13578	N57	0.00807	0.35756	0.13578
C16	0.4984	0.81691	0.13578	H58	0.33427	0.76933	0.13578
C17	0.45761	0.75828	0.13578	H59	0.40635	0.87234	0.13578
C18	0.18566	0.40648	0.13578	H60	0.54539	0.82892	0.13578
C19	0.12699	0.38849	0.13578	H61	0.47531	0.72715	0.13578
C20	0.10877	0.42912	0.13578	H62	0.20045	0.37314	0.13578
C21	0.14964	0.48769	0.13578	H63	0.0966	0.34234	0.13578
C22	0.20828	0.50551	0.13578	H64	0.13439	0.52069	0.13578
C23	0.5601	0.58535	0.13578	H65	0.24011	0.55124	0.13578
C24	0.5781	0.54468	0.13578	H66	0.59107	0.63135	0.13578
C25	0.53748	0.48582	0.13578	H67	0.62514	0.55691	0.13578
C26	0.47891	0.46812	0.13578	H68	0.44833	0.42201	0.13578
C27	0.46108	0.50892	0.13578	H69	0.41378	0.49546	0.13578
C28	0.52424	0.91903	0.13578	H70	0.57125	0.93113	0.13578
C29	0.55518	0.44226	0.13578	H71	0.52218	0.39693	0.13578
N30	0.60903	0.45666	0.13578	H72	0.03128	0.4437	0.13578
C31	0.0475	0.41142	0.13578	H73	0.54158	0.34142	0.13578
C32	0.62815	0.41552	0.13578	H74	0.57819	0.27099	0.13578
C33	0.58909	0.35606	0.13578	H75	0.75476	0.41087	0.13578
C34	0.60912	0.317	0.13578	H76	0.71648	0.48165	0.13578

C35	0.66835	0.33673	0.13578	H77	0.81869	0.21323	0.13578
C36	0.70723	0.39612	0.13578	H78	0.55135	0.14726	0.13578
C37	0.68722	0.43522	0.13578	H79	0.92716	0.24905	0.13578
C38	0.68948	0.29553	0.13578	H80	0.95812	0.42353	0.13578
N39	0.65179	0.23815	0.13578	H81	0.85157	0.3893	0.13578
C40	0.67098	0.20006	0.13578	H82	0.69683	0.11182	0.13578
N41	0.72837	0.21975	0.13578	H83	0.62743	0.00745	0.13578
C42	0.76646	0.27703	0.13578	H84	0.4838	0.04369	0.13578

Notes and References:

1 P. Das and S. K. Mandal, *J. Mater. Chem. A*, 2018, **6**, 16246−16256.
2 X. Z. Song, S. Y. Song, S. N. Zhao, Z. M. Hao, M. Zhu, X. Meng, L. L. Wu and H. J. Zhang, *Adv. Funct. Mater.*, 2014, **24**, 4034−4041.
3 A. F. M. El-Mahdy, C. H. Kuo, A. Alshehri, C. Young, Y. Yamauchi, J. Kim and S. W. Kuo, *J. Mater. Chem. A*, 2018, **6**, 19532−19541.