Electronic Supplementary Information (ESI)

A new cobalt(II) meso-porphyrin: Synthesis, characterization, electric property and application in catalytic degradation of dyes

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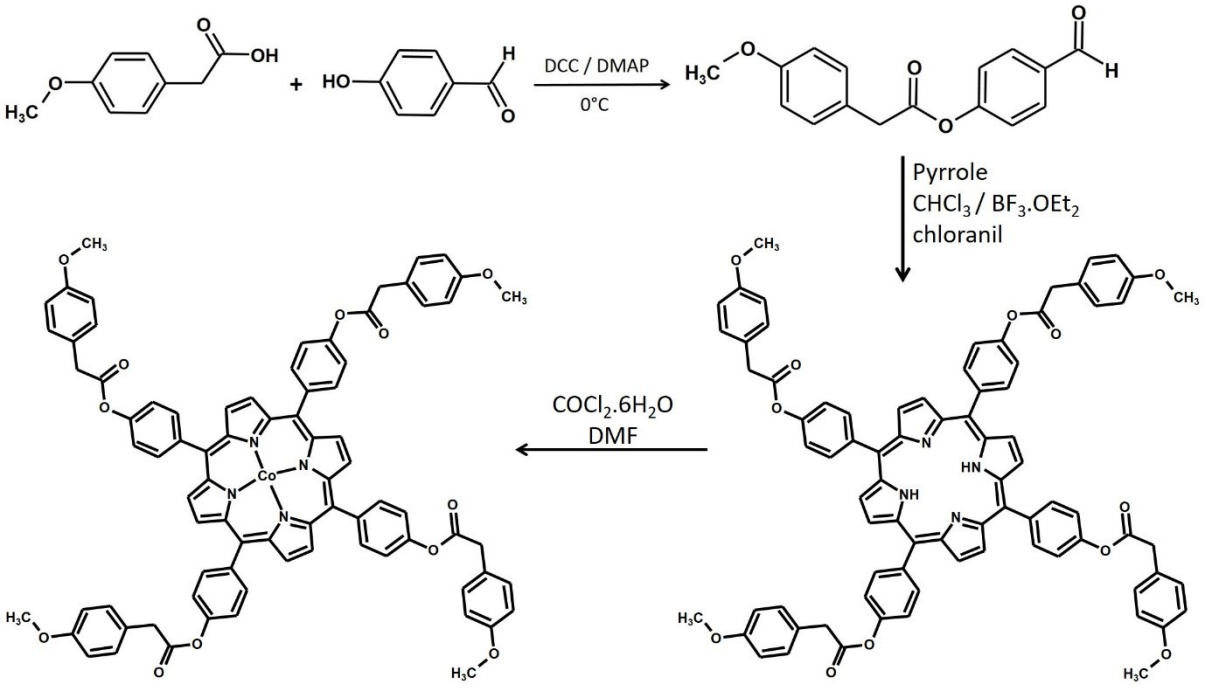

Scheme S1. Main chemical preparation steps.

Table S1: UV/Vis data of several free base meso-porphyrins, H_2TMAPP (1), Co^{II}TMAPP (**2**) and a selection of cobalt *meso*-metalloporphyrins in dichloromethane.

Compound	***Soret* band** **λ [nm] (log ε)**	***Q* bands** **λ [nm] (log ε)**			**[ref]**
		Meso-porphyrins			
H_2TPP	416 (6.10)	513 (5.70)	550 (4.36)	590 (4.24)	646 (4.19)	[1]
H_2TTP	420 (5.95)	515 (5.82)	555 (4.28)	595 (4.17)	650 (4.10)	[1]
H_2TBrPP	419 (6.58)	515 (5.24)	549 (4.93)	590 (4.77)	648 (4.68)	[2]
H_2TPBP	419 (5.90)	515 (4.46)	551 (4.13)	590 (3.94)	646 (3.84)	[3]
H_2Pp	421	517	553	592	648	[4]
H_2TMAPP	425 (5.92)	522(5.67)	550 (4.32)	597 (4.15)	653 (3.98)	this work
		Co(II)-meso-porphyrins			
[Co^{II}(TPP)]	412	528				[5]
[Co^{II}(TpivPP)]	412	524				[6]
[Co^{II}(TPBP)]	412 (6.07)	528 (5.58)				[7]
[Co(II)(Pp)]	414	531				[4]
[Co^{II}(TMAPP)]	415 (5.85)	539 (5.49)				this work

Table S2. Electrochemical data [a] for H_2TMAPP, [Co^{II}(TMAPP)] and a selection of *meso*-porphyrins and Co(II) *meso*-metalloporphyrins. All data are obtained from voltammograms recorded in dichloromethane.

	Oxidations				Reductions			
	1st Porph oxid. (O1,R1)	2nd Porph oxid. (O2,R2)	3rd Porph oxid. (O3,R3)	Oxid.Co(II)/ Co(III) (MO2)	1st Porph red. (R4,O4)	2nd Porph red. (R5,O5)	Red Co(II)/ Co(I) (MR1[b],MO1[c])	
	$E_{1/2}$[d]	$E_{1/2}$	$E_{1/2}$	$E_{1/2}$	$E_{1/2}$	$E_{1/2}$	$E_{1/2}$	Ref.
H_2TPP	1.02	1.26	—	—	-1.20	-1.55	—	[8]
H_2TMPP	1.02	1.19	1.67[c]	—	-1.19	-1.52	—	[9]
H_2TClPP	1.00	1.23	1.53	—	-1.09	-1.41	—	[9]
H_2TMAPP	1.15	1.46	1.66	—	-1.08	-1.41	—	This work
[Co^{II}(TPP)]	1.16	—	—	0.98	-1.40[e]	—	-0.83	[10]
[Co^{II}(TPP)]	0.97	—	—	0.78	—	—	-0.85	[11]
[Co^{II}(TPP)]	0.91	—	—	0.75	—	—	—	[12]
[Co^{II}(TClPP)]	1.00	1.26	1.85	0.60[c]	-1.40	—	-0.88	[9]
[Co^{II}(TMPP)]	0.93	1.20	—	0.70[c]	-1.36	—	-0.70	[9]
[Co^{II}(TMAPP)]	1.08	1.29	—	0.61	-1.38	—	-0.93	This work

[a] The potentials are reported versus SCE. [b] MR Metal Reduction. [c] MO Metal Oxidation. [d] $E_{1/2}$ half wave potential. [e] Irreversible wave.

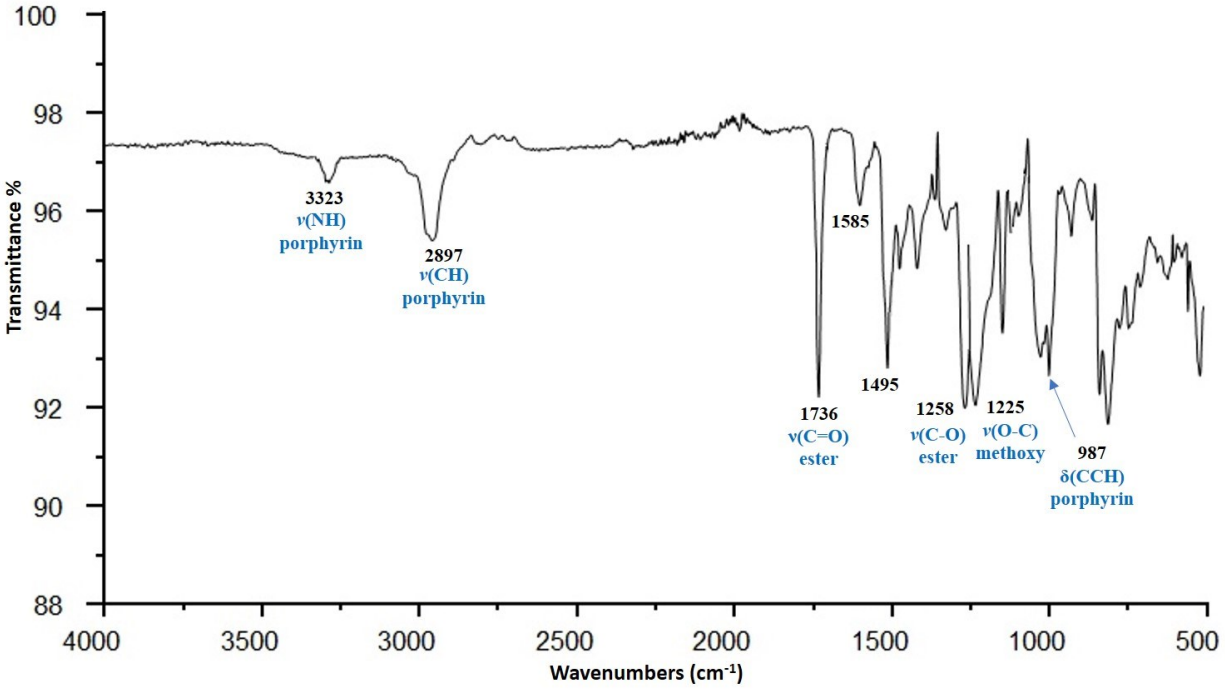

Fig. S1. IR spectrum of (**1**).

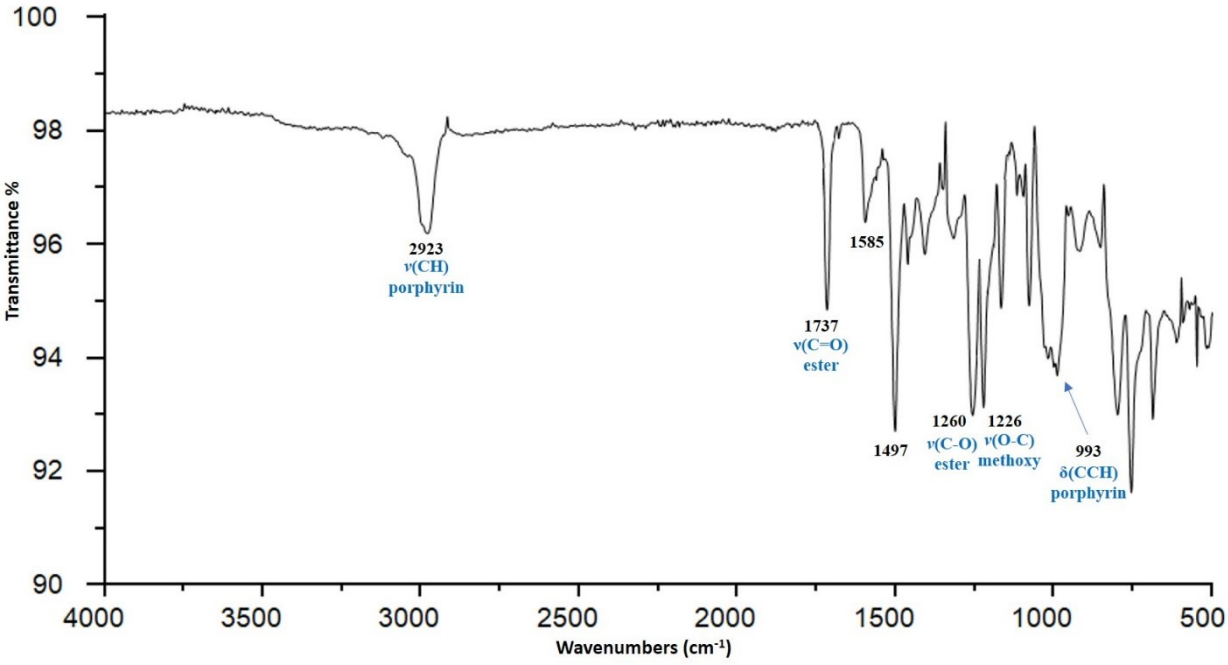

Fig. S2. IR spectrum of (**2**).

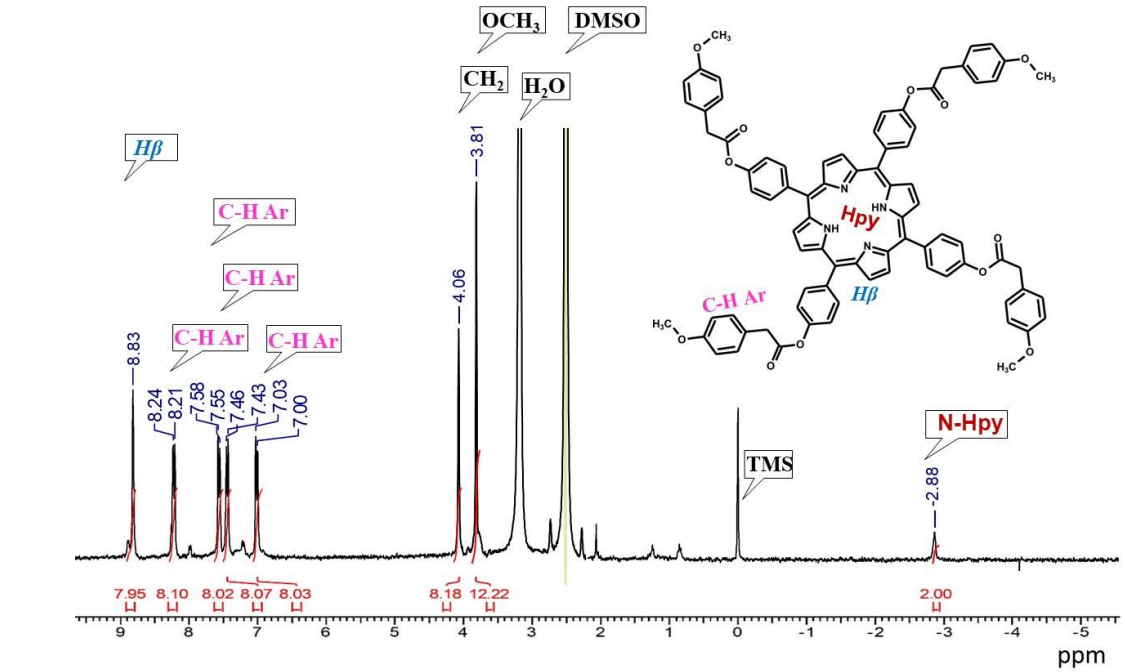

Fig. S3. ^{1}HNMR spectrum of H_2TMAPP (**1**).

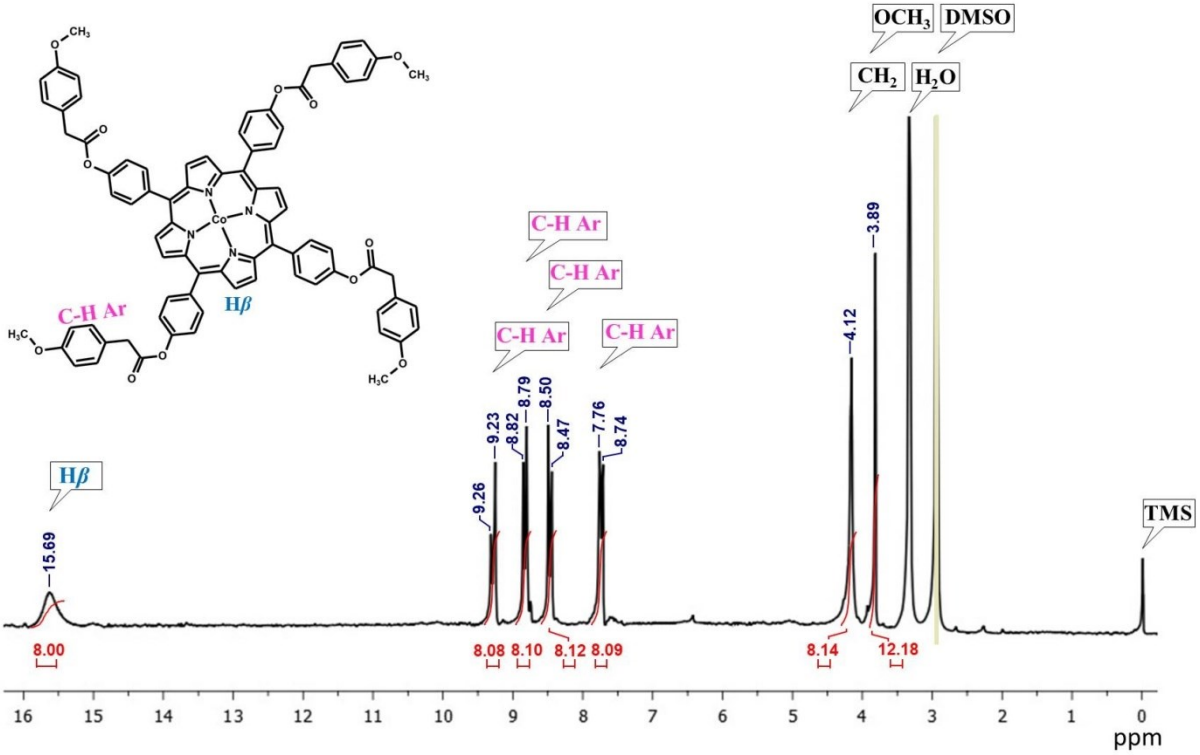

Fig. S4. ^{1}HNMR spectrum of Co^{II}TMAPP (**2**).

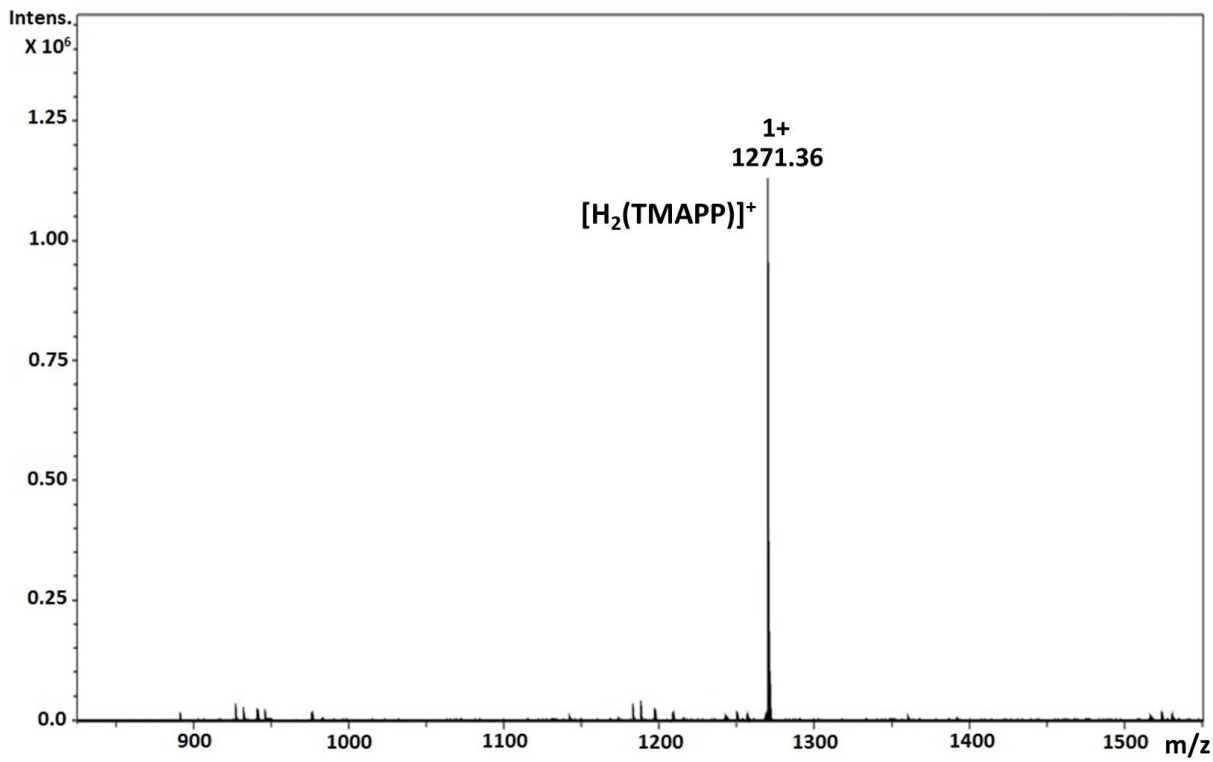

Fig. S5. Positive MALDI-TOF mass spectrum of H_2TMAPP (**1**).

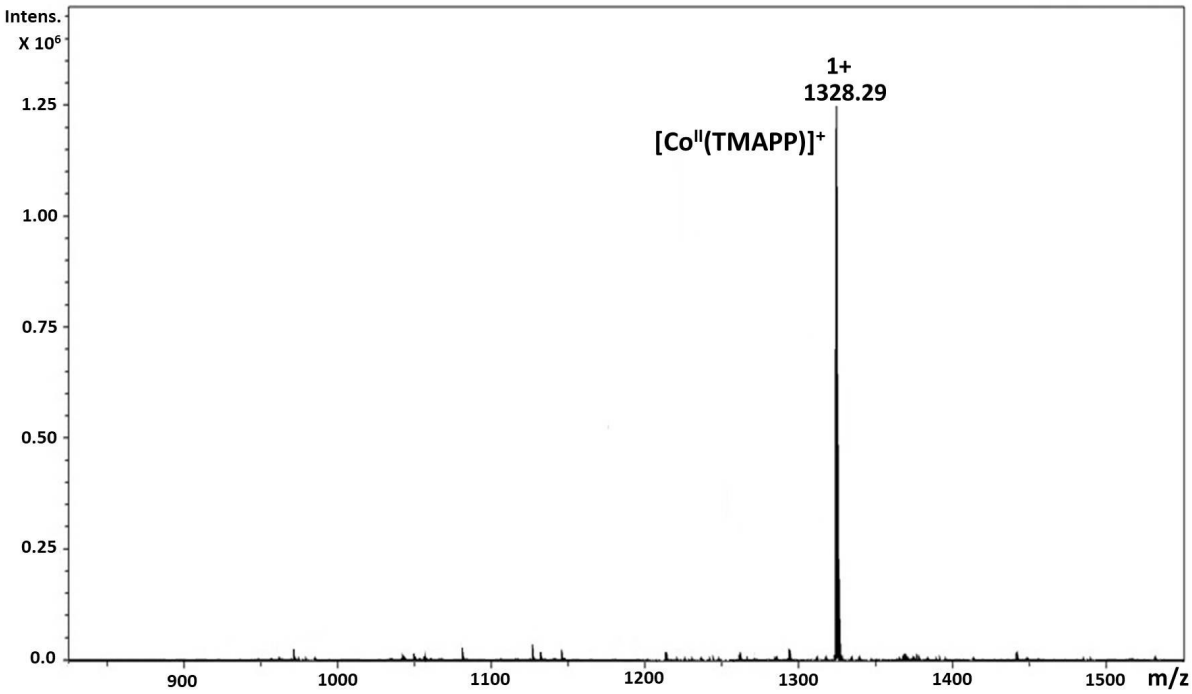

Fig. S6. Positive MALDI-TOF mass spectrum of [Co^{II}(TMAPP)] (**2**).

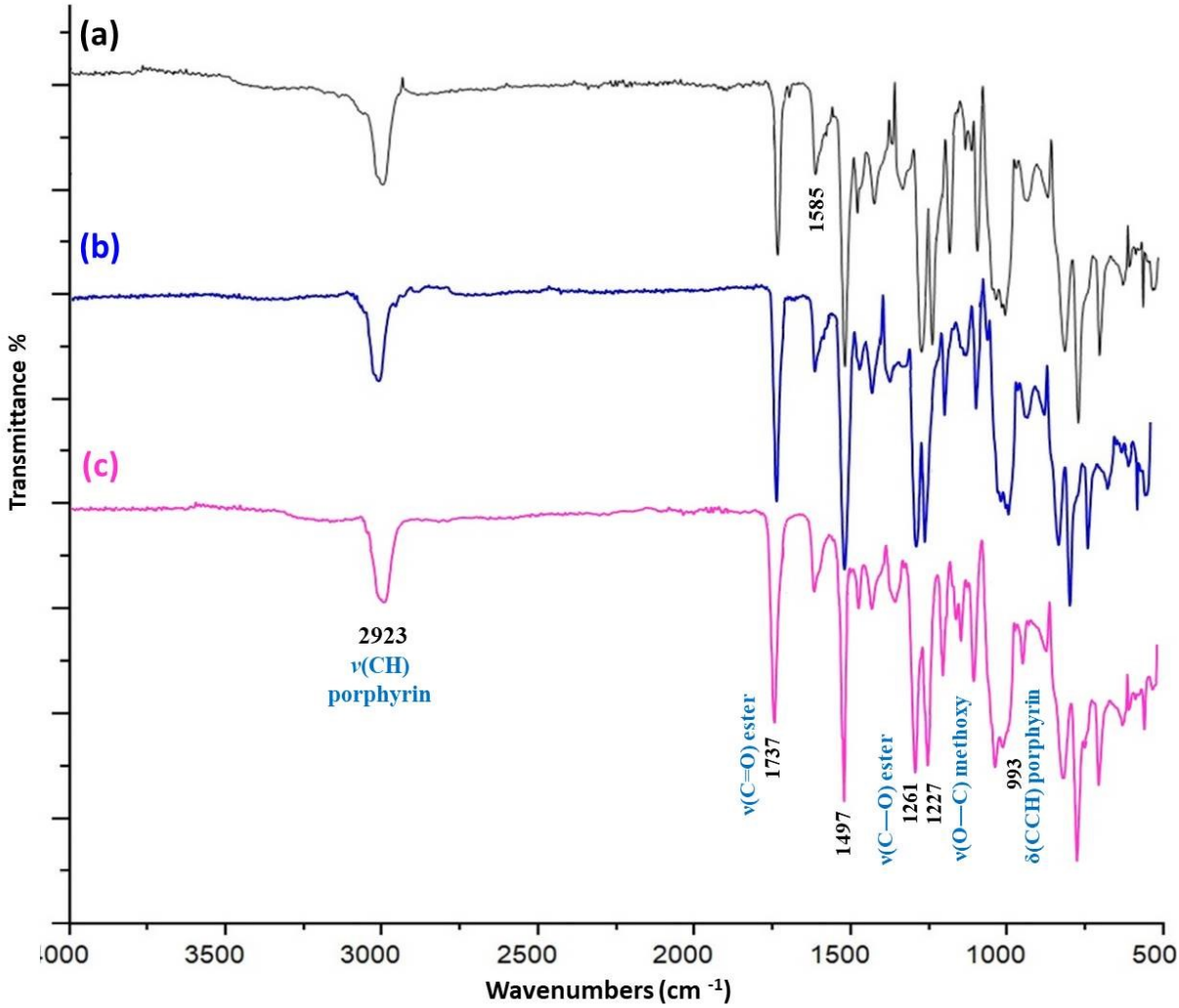

Fig. S6. FT-IR spectra of [Co^{II}(TMAPP)]: (a) before degradation, (b) after degradation of MB, and (c) after degradation of CV.

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