

## Supplementary Information

### **Kaolinite/TiO<sub>2</sub>/cobalt(II) Tetracarboxymetallophthalocyanine Nanocomposites as Heterogeneous Photocatalysts for Decomposition of Organic Pollutants Trimethoprim, Caffeine and Prometryn**

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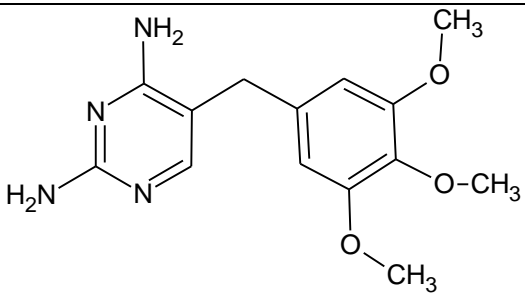
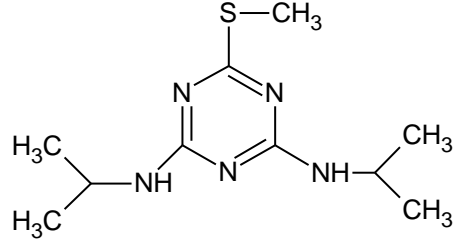
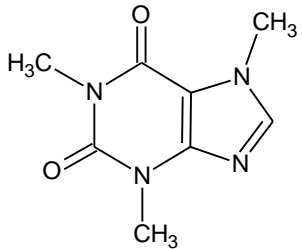
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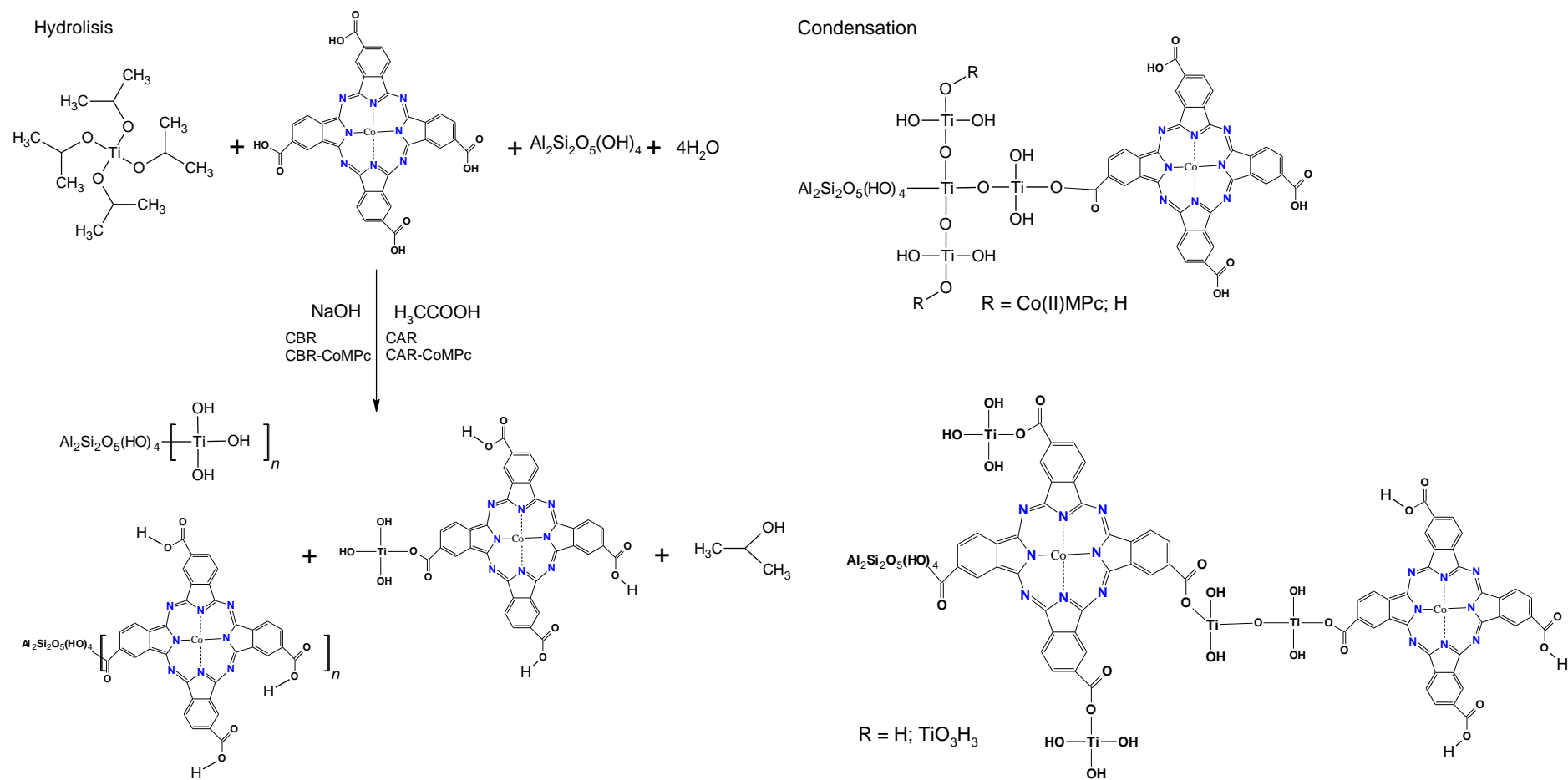
**Table S1.** Chemical structure and formulas of the organic pollutants

Organic pollutant	Chemical structure	Chemical formula
Trimethoprim (TMP)		$C_{14}H_{18}N_4O_3$
Prometryn (PMT)		$C_{10}H_{19}N_5S$
Caffeine (CFF)		$C_8H_{10}N_4O_2$

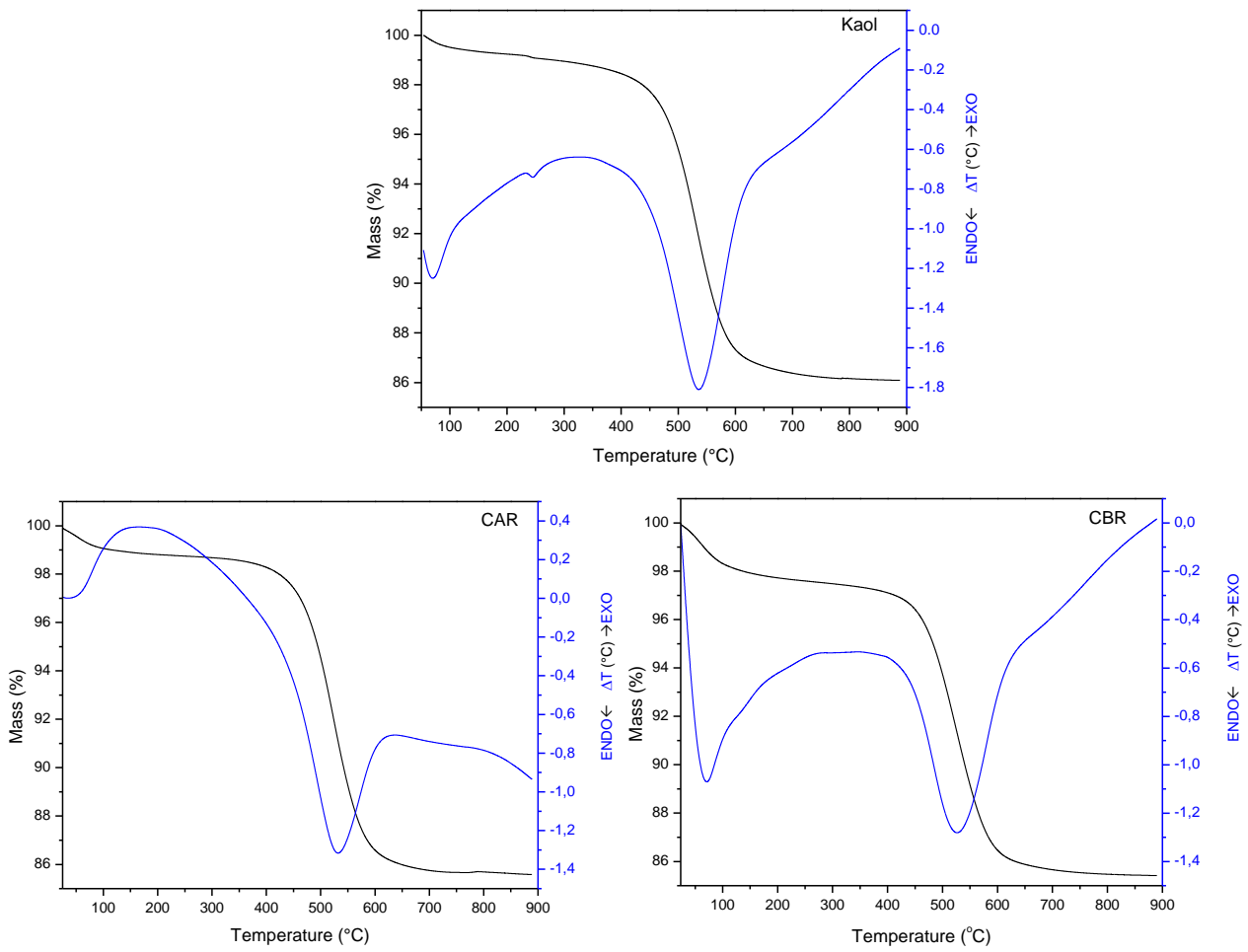
**Table S2.** Intensities (cps) of various X-ray diffraction (XRD) reflections and ratio between them for different materials

	$d_{(001)}$	$d_{(020)}$	$d_{(060)}$	$d_{(001)}/d_{(020)}$	$d_{(020)}/d_{(060)}$
Kaol	7184	1481	891	4.85	1.662
CAR	3273	742	635	4.41	1.169
CBR	3135	759	709	4.13	1.071
CAR-CoMPc	3186	838	758	3.80	1.106
CBR-CoMPc	2738	801	666	3.42	1.203

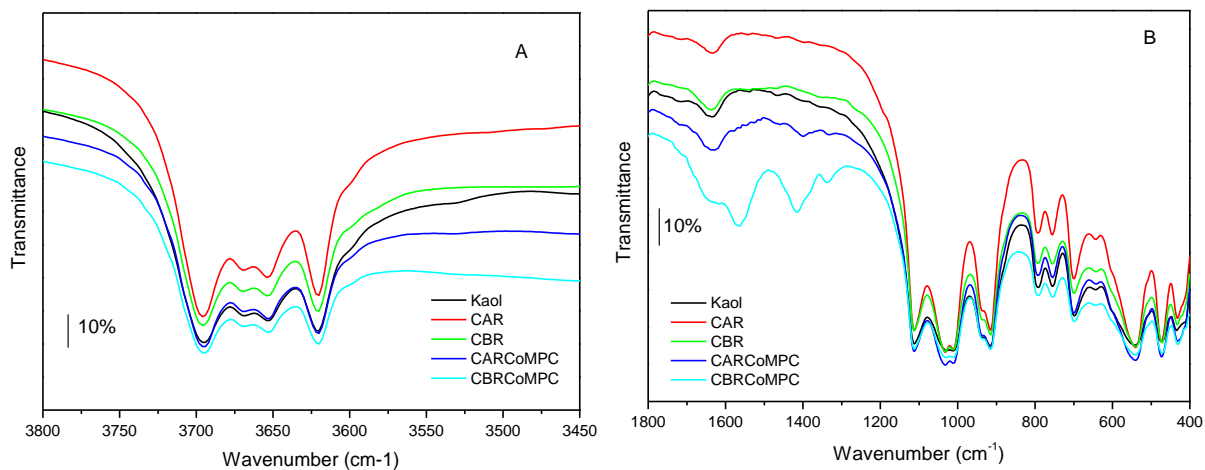
CAR: composite acid route; CBR: composite basic route; CoMPc: cobalt(II) tetracarboxyphthalocyanine.



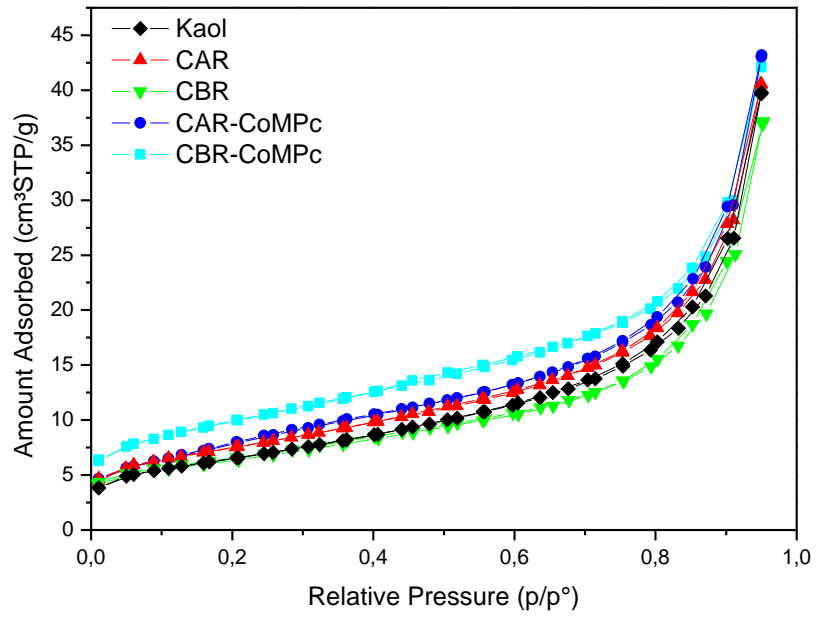
**Figure S1.** Experimental procedure for the preparation of Kaol/TiO<sub>2</sub>/(CoMPC) composites.



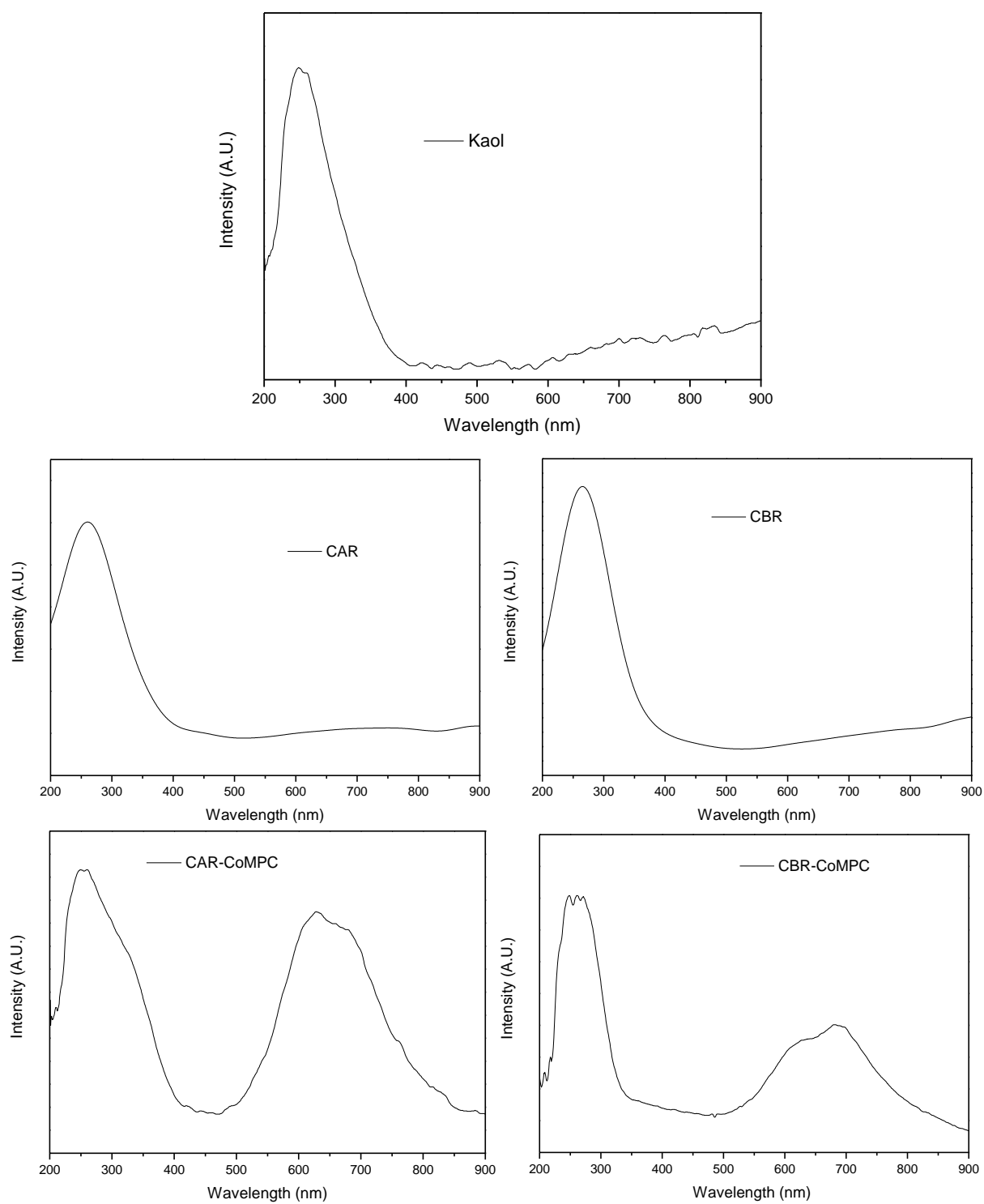
**Figure S2.** Thermal analysis curves for parent kaolinite and reference samples CAR and CBR.



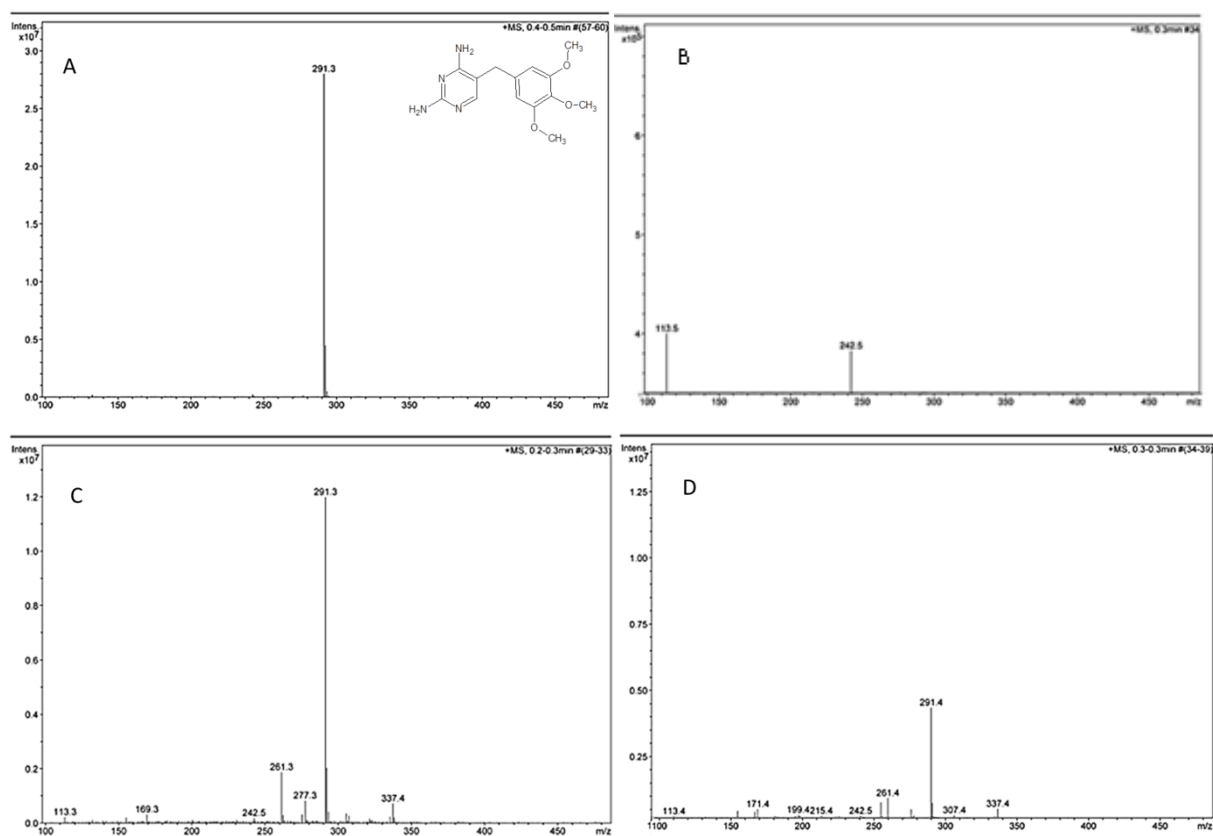
**Figure S3.** Infrared spectra of the materials based in kaolinite: (A) region between 3800 and 3450 cm<sup>-1</sup>; (B) region between 1800 and 400 cm<sup>-1</sup>.



**Figure S4.** Nitrogen adsorption-desorption isotherms on the different solids.

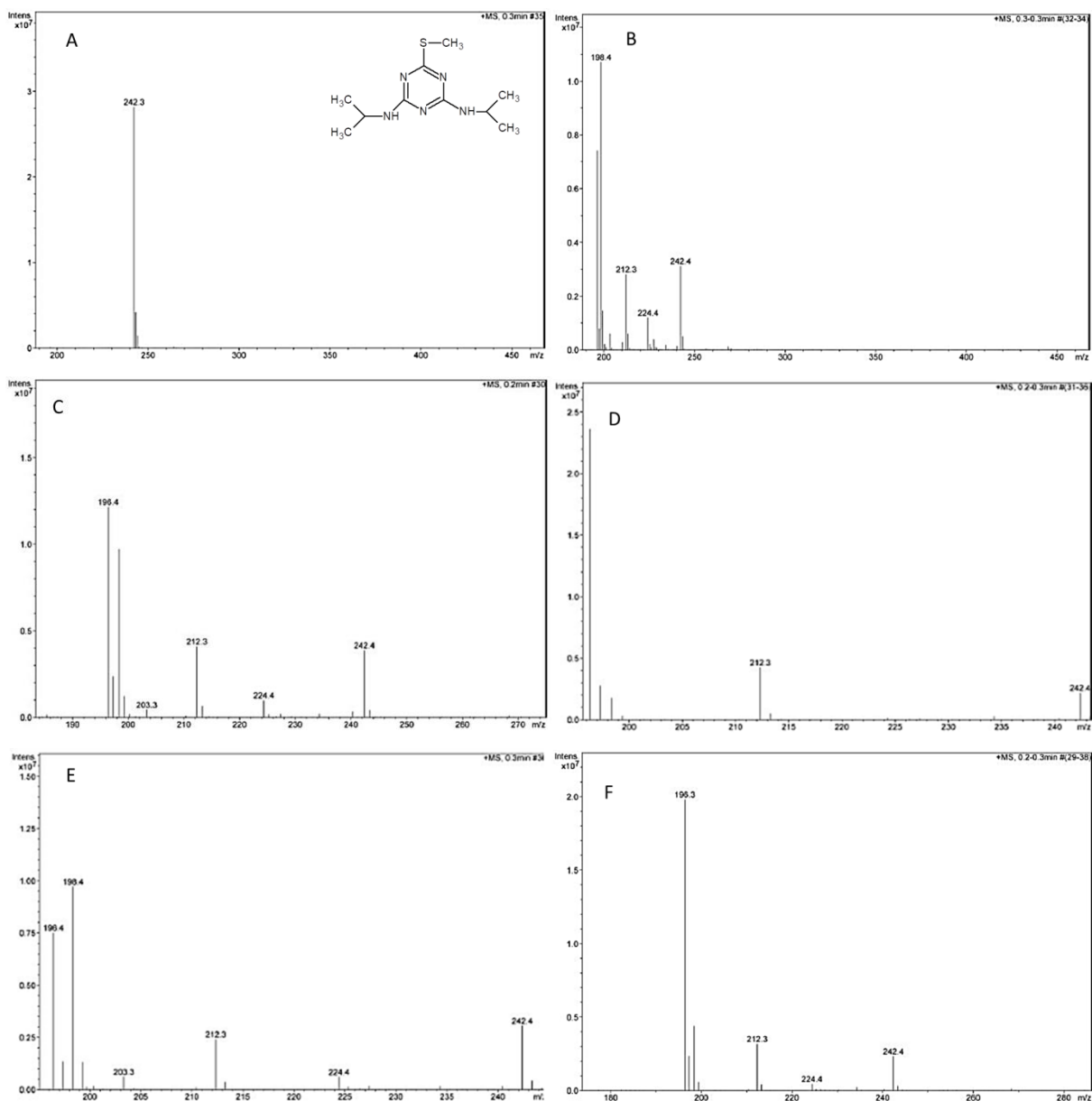


**Figure S5.** UV-Vis absorption spectra for materials Kaol, CAR, CBR, CAR-CoMPC and CBR-CoMPC.

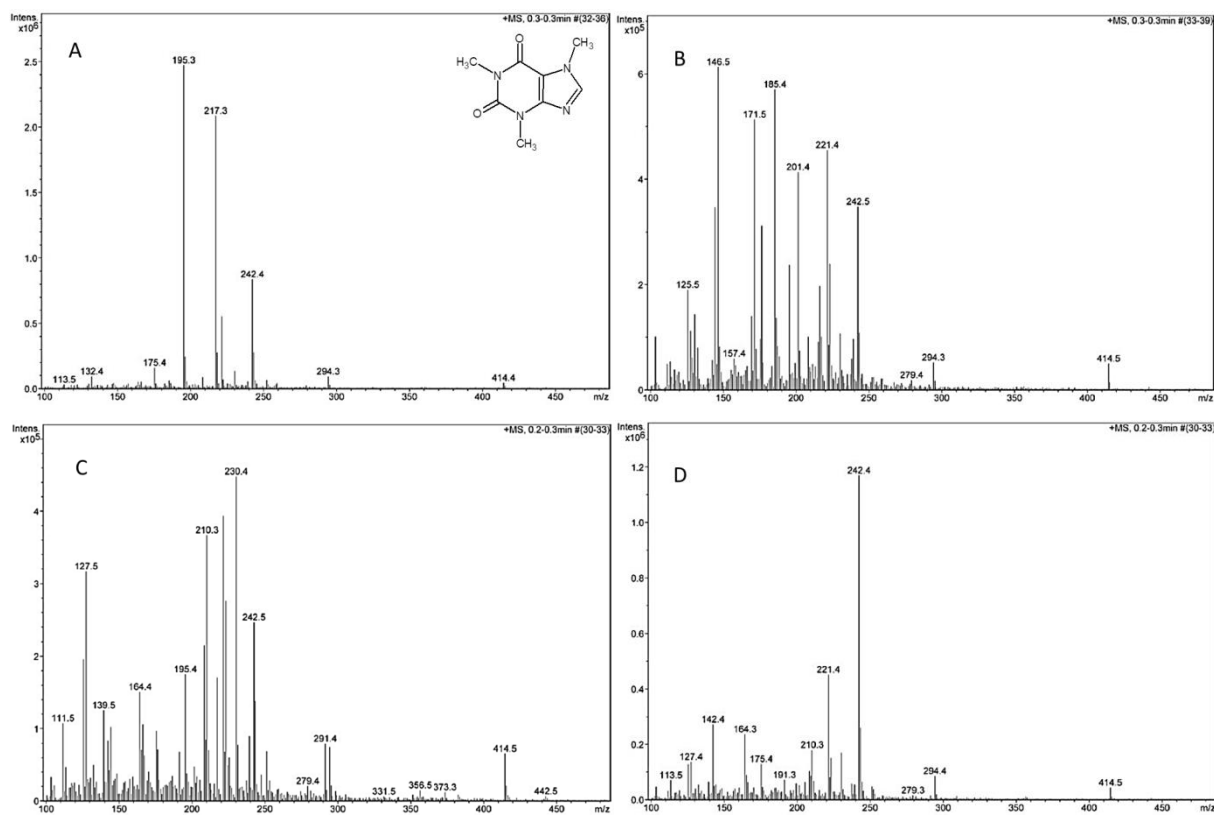


**Figure S6.** Mass spectra for the following solutions: trimethoprim (A), treated by photolysis for 240 min (B), treated with commercial P25 TiO<sub>2</sub> for 240 min (C) and treated with CAR-CoMPC for 240 min (D).

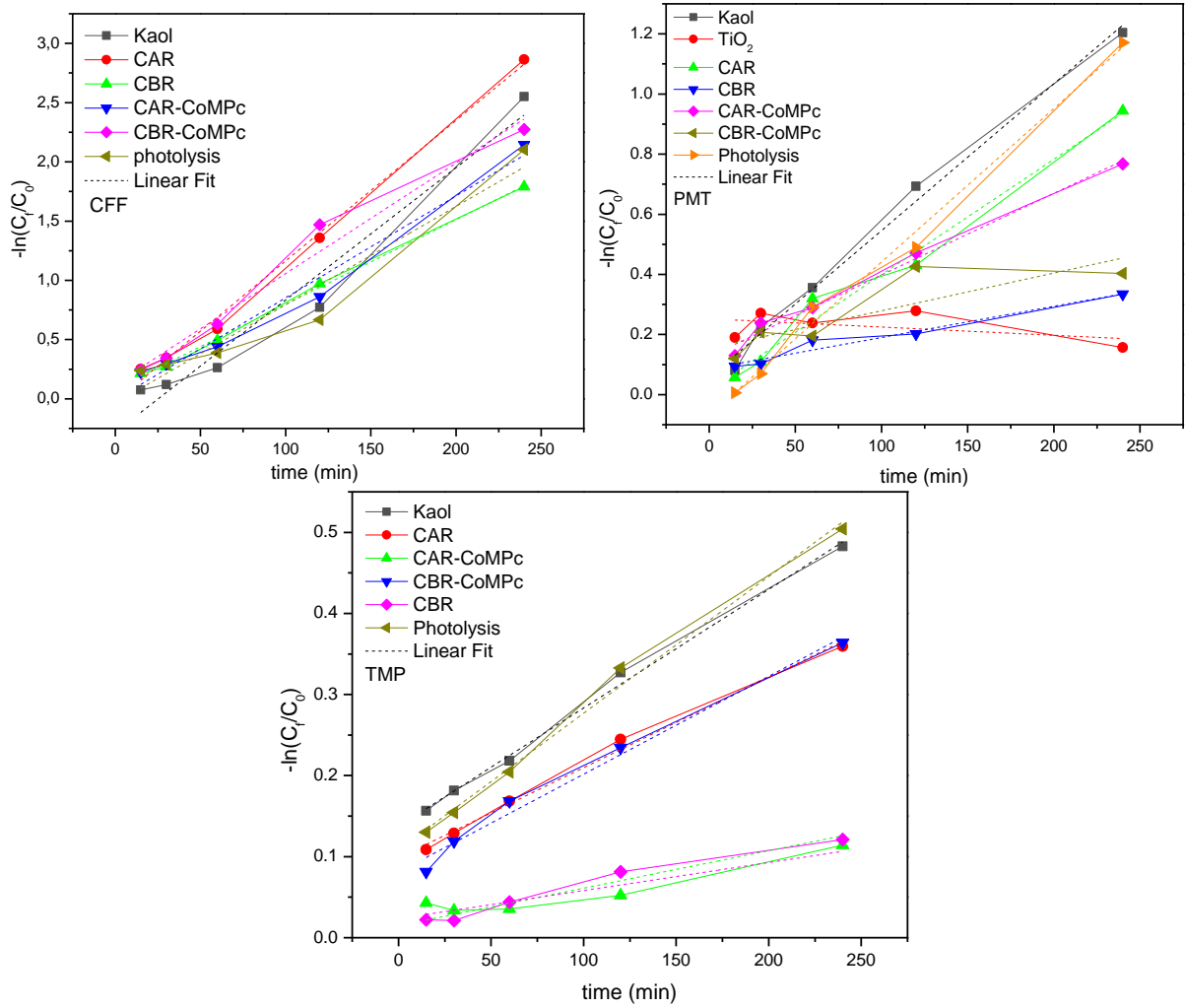




**Figure S7.** Mass spectra for the following solutions: prometryn (A), treated by photolysis for 240 min (B), treated with CAR for 240 min (C), treated with CBR for 240 min (D), treated with CAR-CoMPC for 240 min (E) and treated with CBR-CoMPC for 240 min.



**Figure S8.** Mass spectra for the following solutions: caffeine (A), treated by photolysis for 240 min (B), treated with CBR for 240 min (C), and treated with CBR-CoMPC for 240 min (D).



**Figure S9.** First-order kinetic plots of the various photocatalysis experiments under irradiation.