The Electronic Supporting Information (ESI)

for

Efficient elimination of caffeine from water using Oxone activated by a magnetic and recyclable cobalt/carbon nanocomposite derived from ZIF-67

Kun-Yi Andrew Lin and Bo-Chau Chen*

Department of Environmental Engineering, National Chung Hsing University,

250 Kuo-Kuang Road, Taichung, Taiwan, R.O.C.

*Corresponding Author. Tel: +886-4-22854709, E-mail address: linky@nchu.edu.tw

(Kun-Yi Andrew Lin)

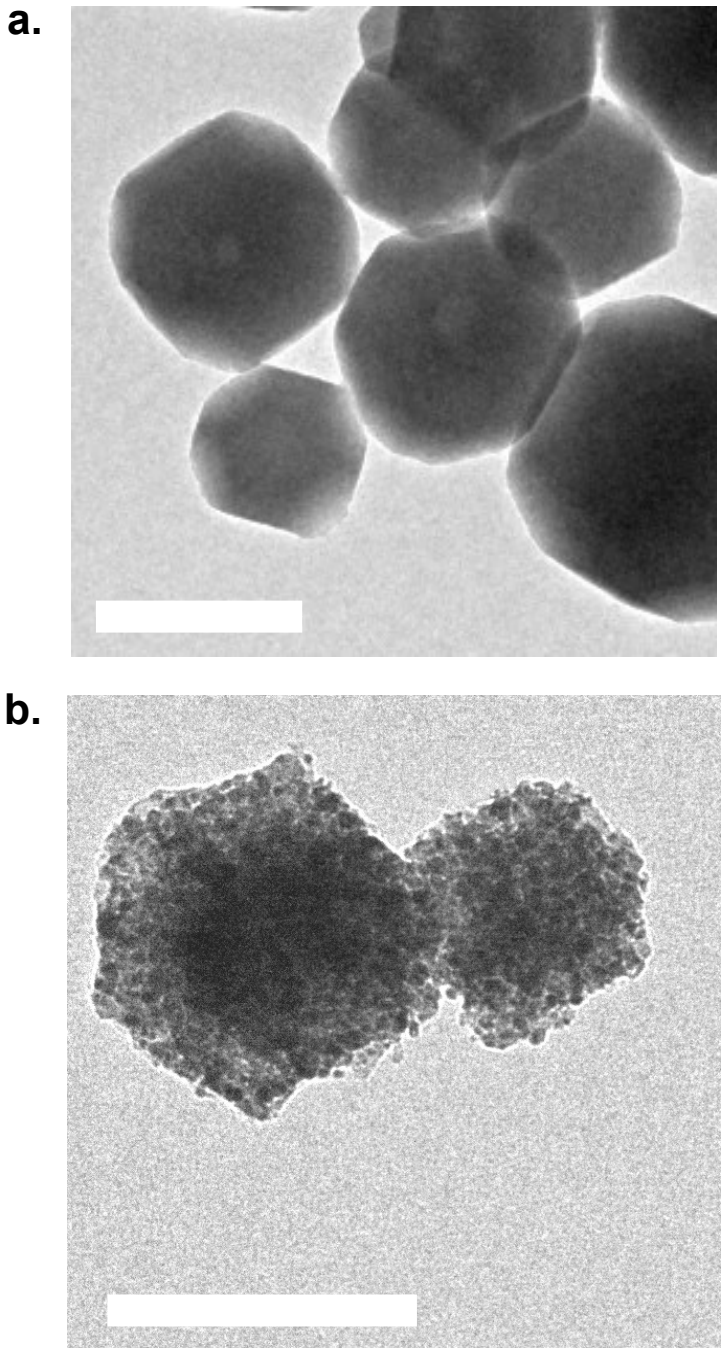

Fig. S1. TEM images of **a.** ZIF-67 and **b.** CCN. The scale bar is 500 nm.

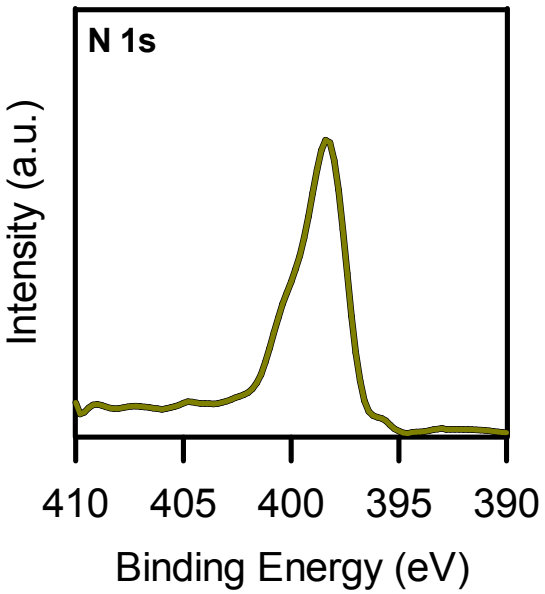

Fig. S2. N 1s core-level XPS spectrum of CCN.

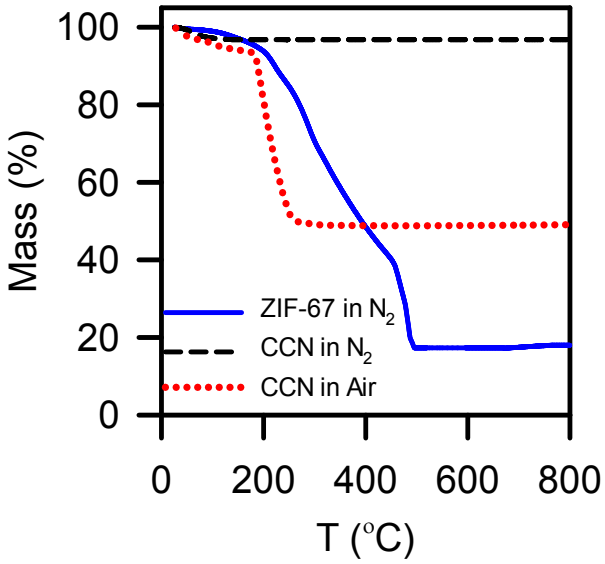

Fig. S3. Thermogravimetric analyses of ZIF-67 and CCN in air or N_2.

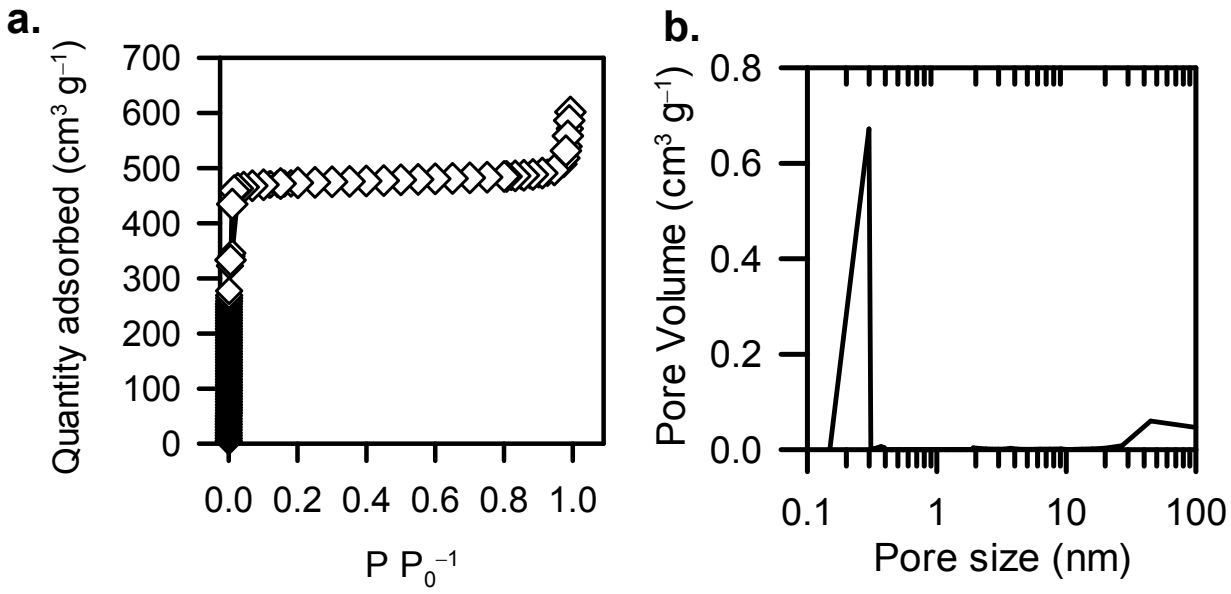

Fig. S4. **a.** N_2 sorption and desorption isotherms and **b.** the pore size distribution of the precursor of CCN, ZIF-67.

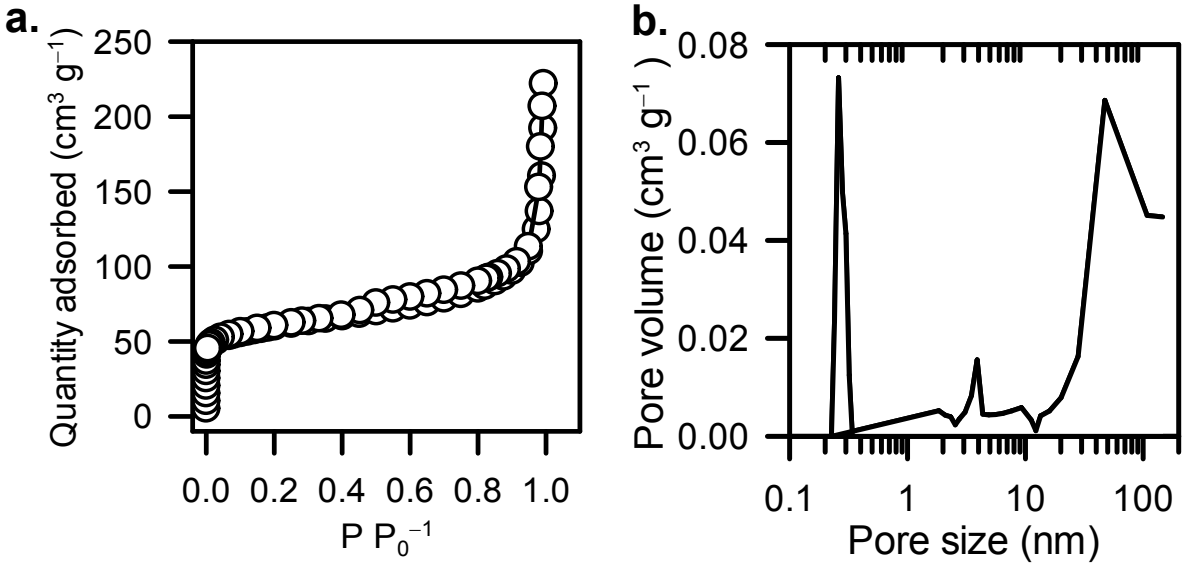

Fig. S5. **a.** N_2 sorption and desorption isotherms and **b.** the pore size distribution of CCN.

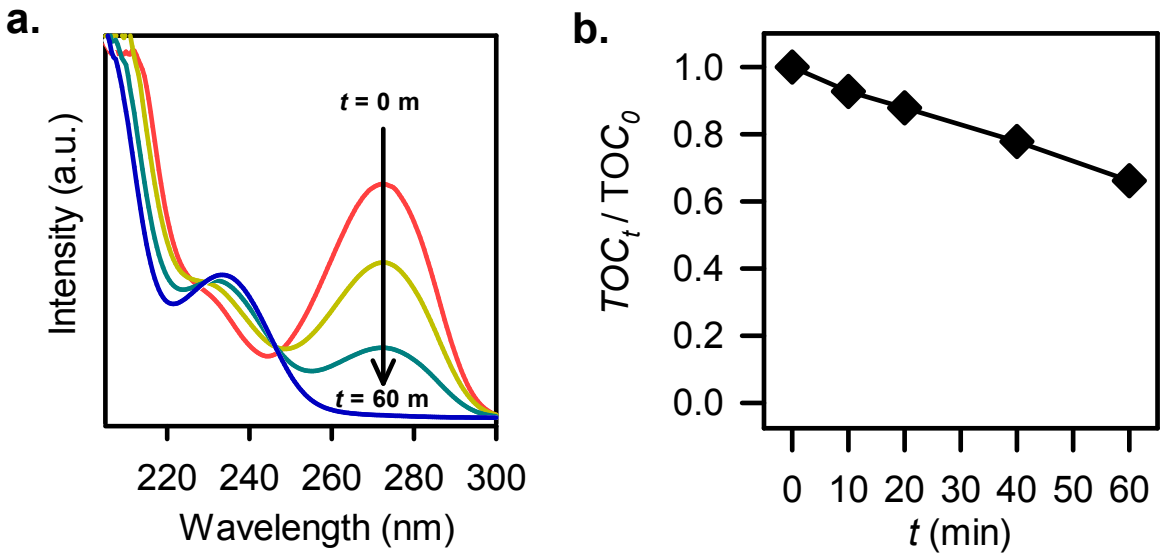

Fig. S6. Elimination of caffeine using CCN-activated Oxone: **a.** UV-Vis spectral variation; **b.** total organic carbon (TOC) change during the degradation.

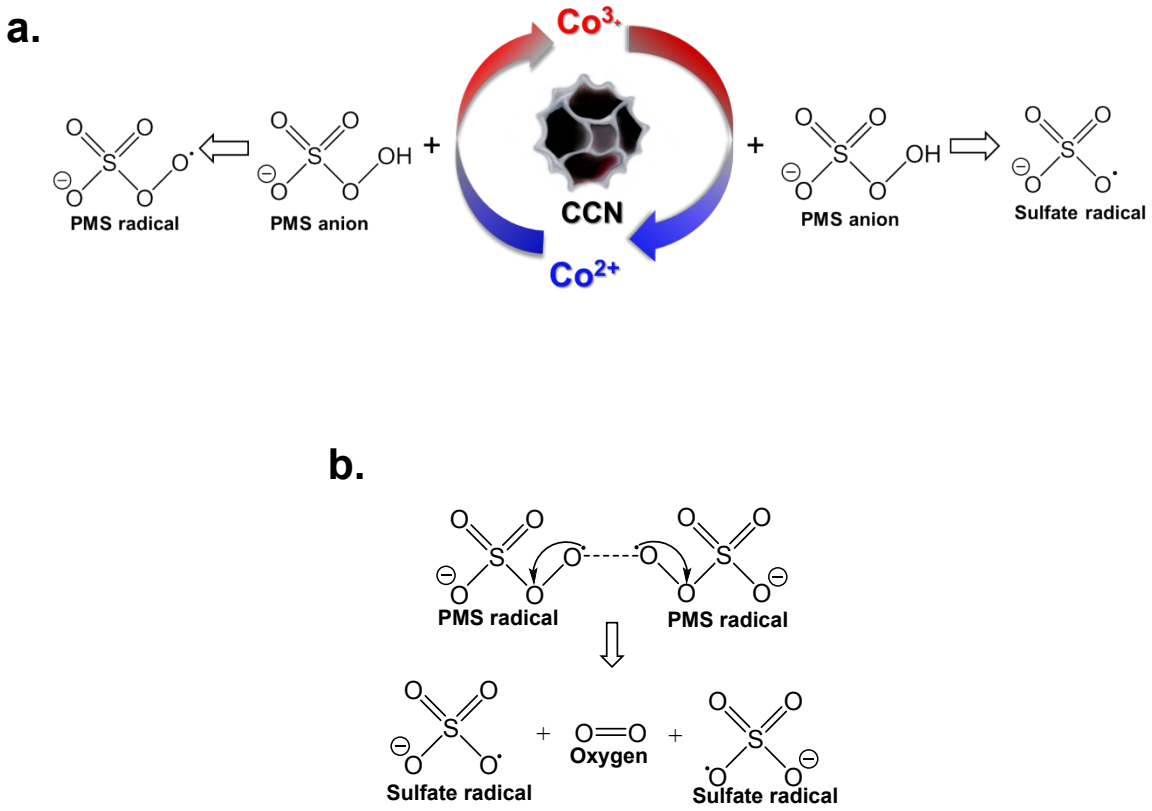

Fig. S7. Illustrations showing **a.** the activation of PMS by CCN to generate PMS and sulfate radicals; **b.** the formation of sulfate radicals derived from the self-reaction of PMS radicals.

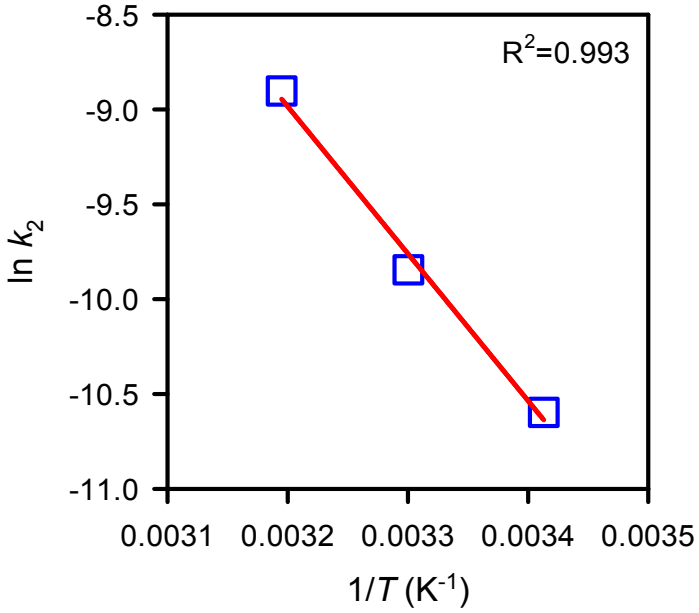

Fig. S8. A plot for determining the activation energy E_a and the temperature-independent factor k

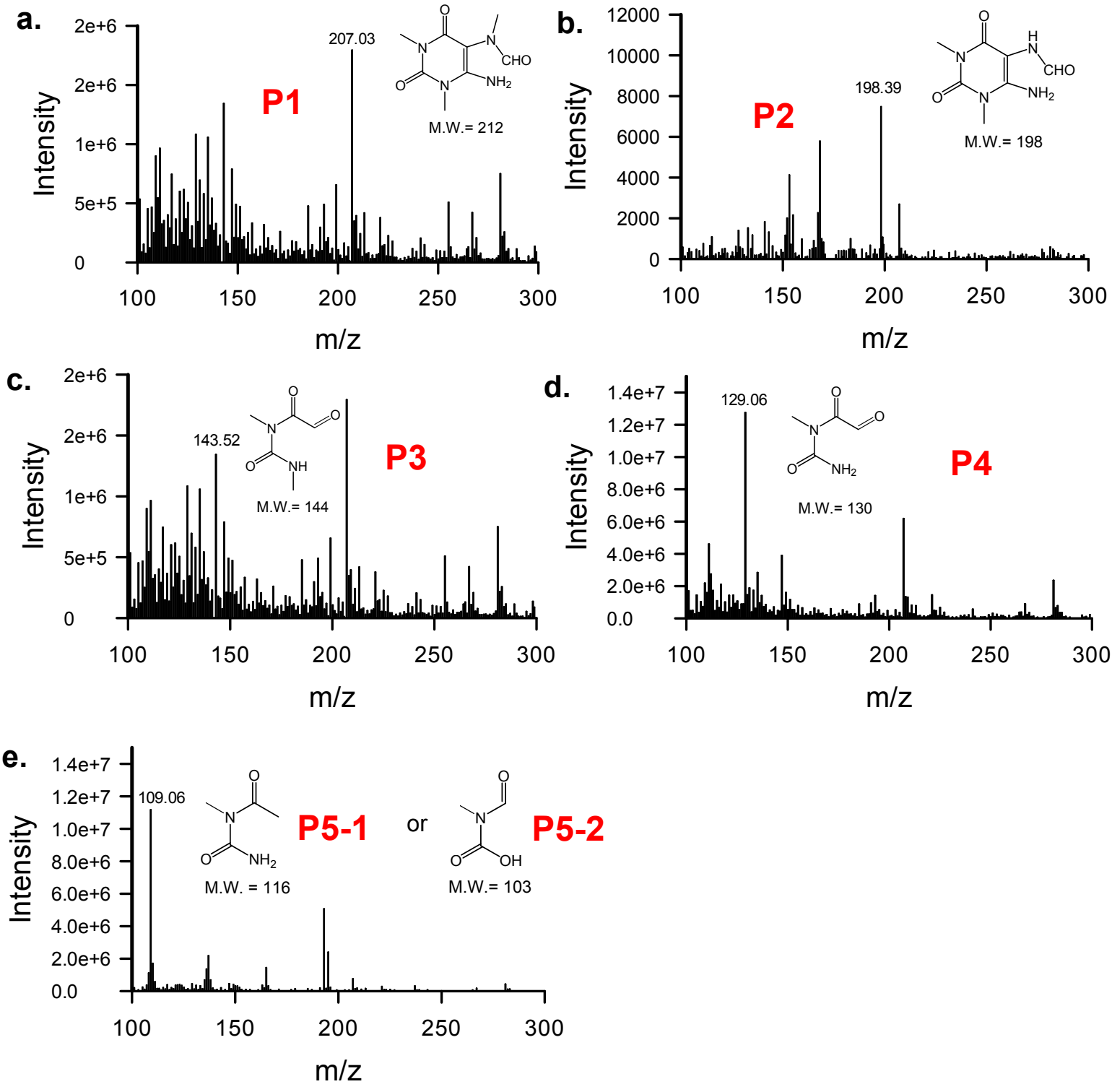

Fig. S9. GC-MS spectrograms of identified intermediates during the caffeine degradation: **a.** P1, **b.** P2, **c.** P3, **d.** P4 and **e.** P5-1 and P5-2.