Sacrificial template synthesis of 3D flower-like Sn-doped BiOCl hierarchical structure with enhanced performance for degradation of tetracycline hydrochloride

Shimin Long[a], Wenguang Wang[a,*], Liangpeng Wu[b,**], Wentao Zhou[a], Chuangbin Hong[a], Yingxian Lin[a], Chenyi Jing[a], Wen Luo[a]

[a]School of Materials and Energy, Guangdong University of Technology, Guangzhou Higher Education Mega Center 100#, Guangzhou, 510006, P. R. China

[b]Advanced Energy Science and Technology Guangdong Laboratory, Huizhou, 516000, P. R. China

* Corresponding author. Tel: +86-020-39322570; E-mail: wenguangwang2005@163.com

** Corresponding author. E-mail: wulp@gdlhz.ac.cn

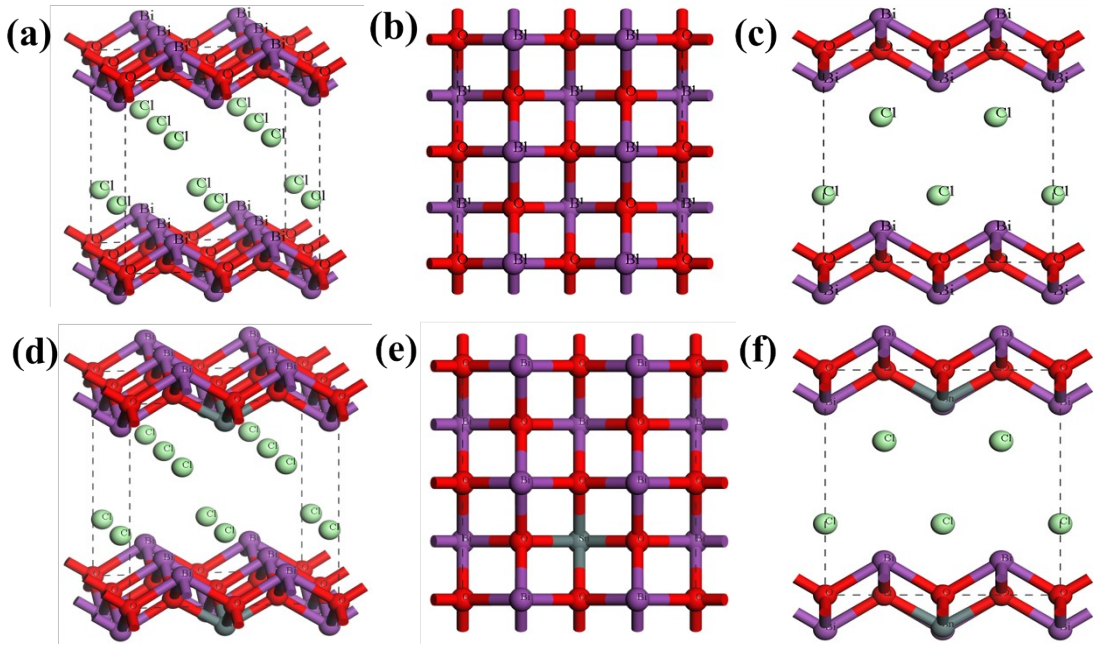


Fig. S1 The optimized schematic representation of the crystal structures of pure BiOCl (a: front view, b: top view, c: side view), and Sn-doped BiOCl (d: front view, e: top view, f: side view).

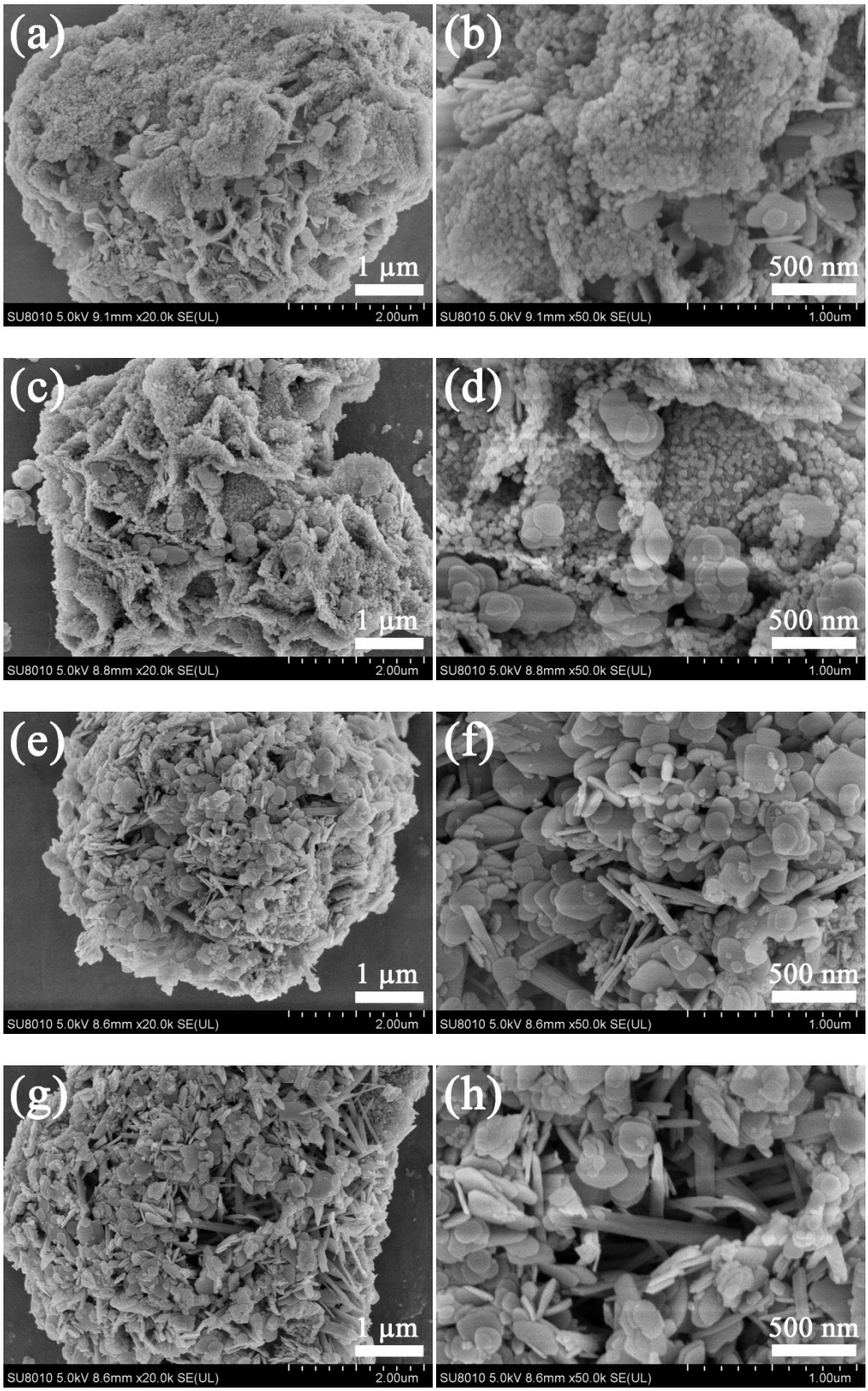


Fig. S2 SEM images of the Sn-BiOCl-1 (a and b), Sn-BiOCl-2 (c and d), Sn-BiOCl-4 (e and f) and Sn-BiOCl-5 (g and h).

Fig. S3 The digital photographs of pure BiOCl (a), Sn-BiOCl-1 (b), Sn-BiOCl-2 (c), Sn-BiOCl-3 (d), Sn-BiOCl-4 (e), Sn-BiOCl-5 (f) and SnS_2 (g).

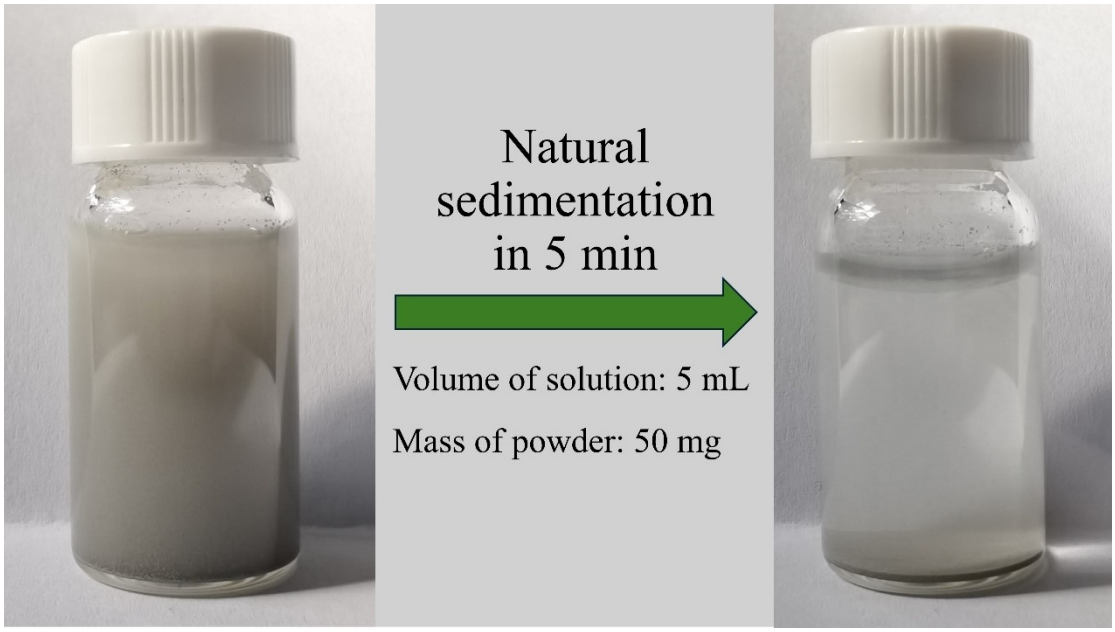
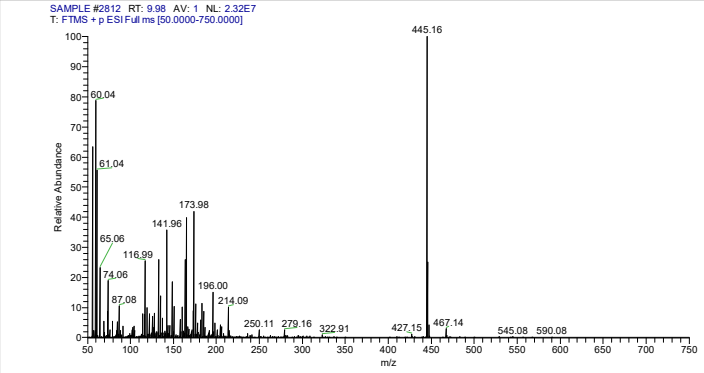
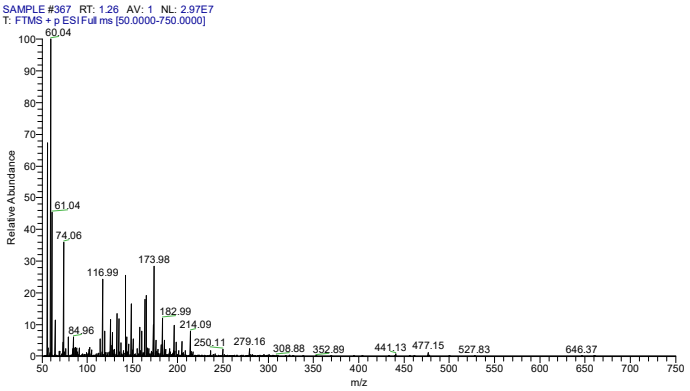
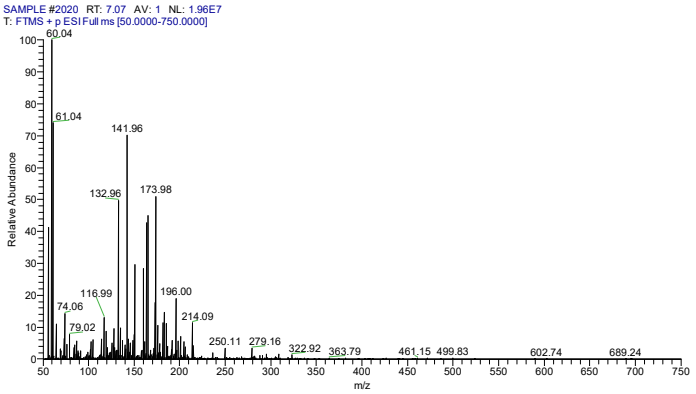
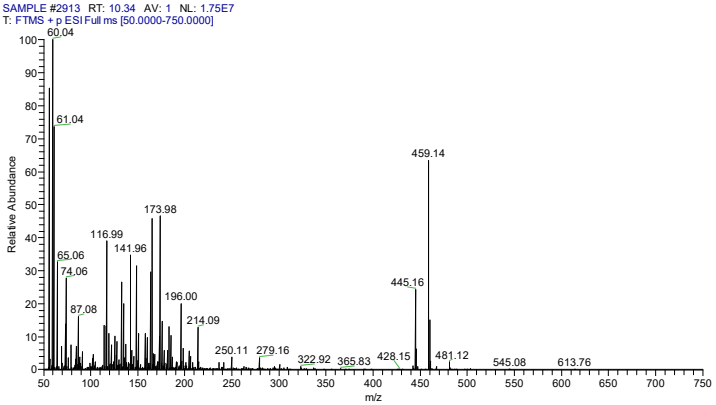
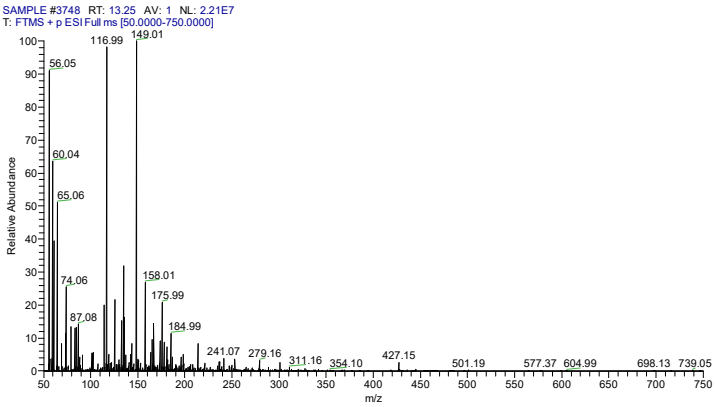
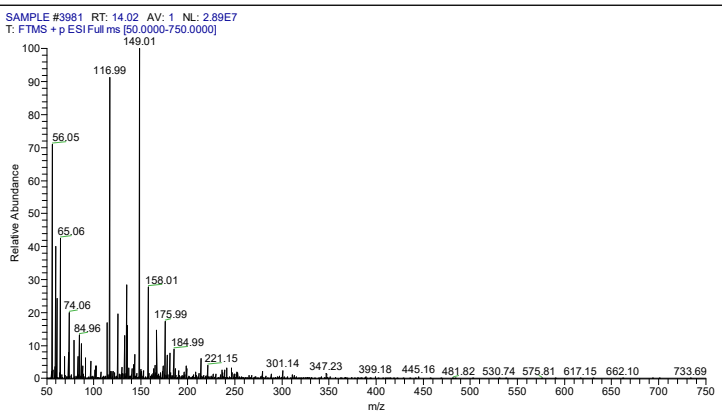
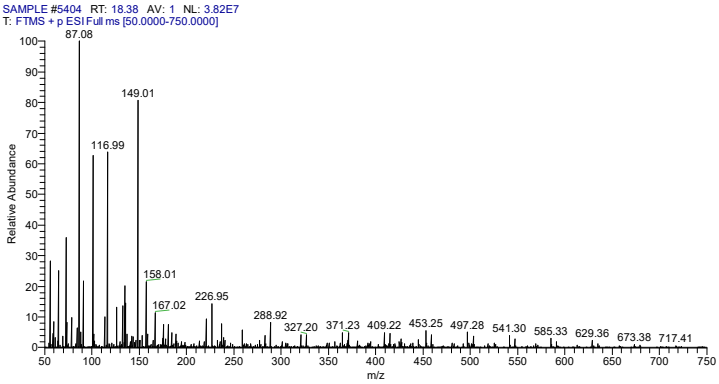
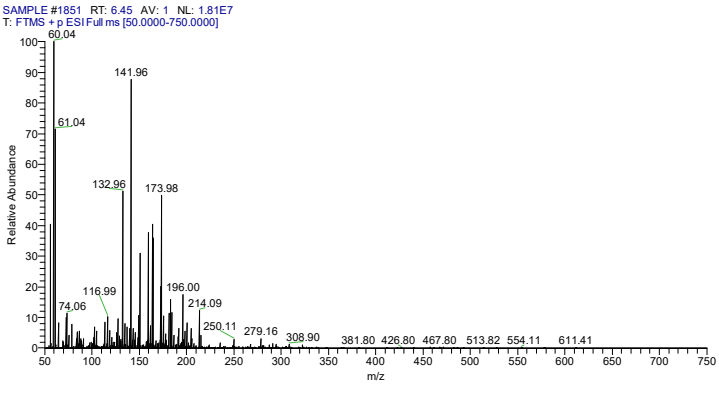


Fig. S4 The digital photographs for the natural sedimentation of Sn-BiOCl-3 powder in TCH solution.

Table S1 The LC-MS spectra and corresponding m/z values of TCH and its intermediate products during the photocatalytic oxidation process.

Name	Mass-to-charge ratio (m/z)	LC-MS spectra
TCH	445	
A	477	
B	461	
C	459	

D	427	
E	399	
F	371	
G	279	

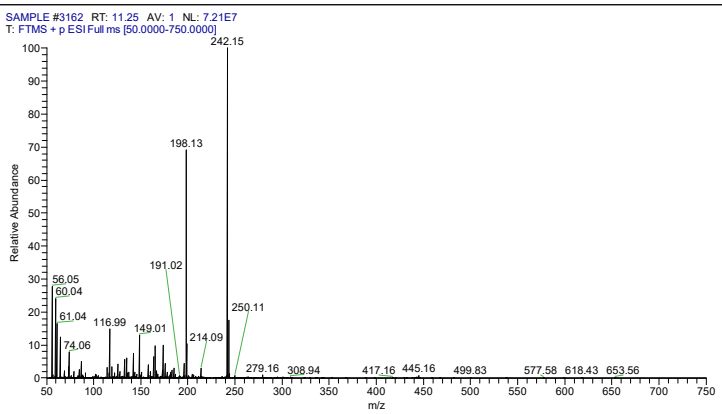
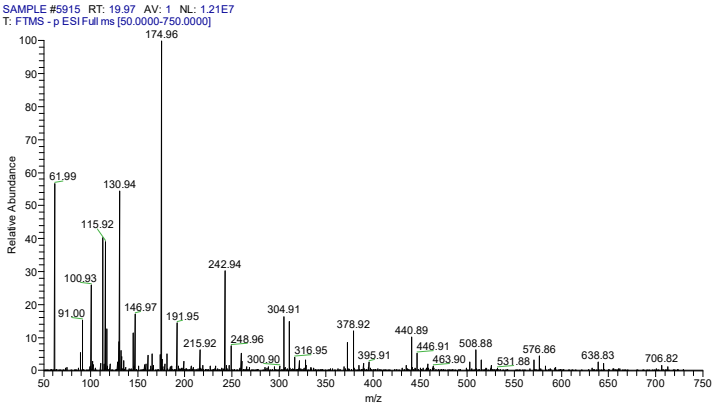
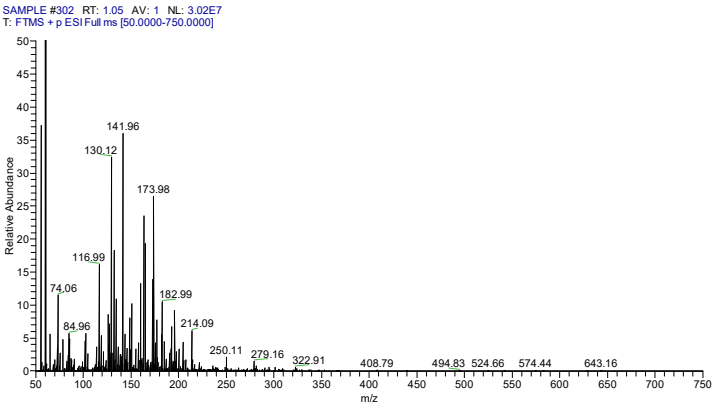
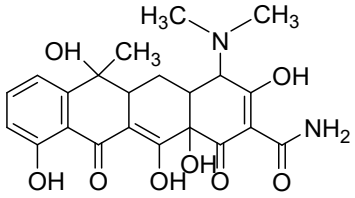
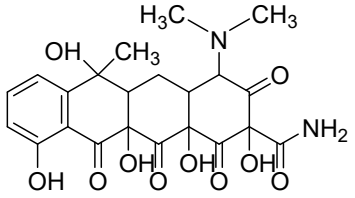
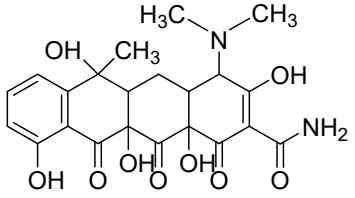
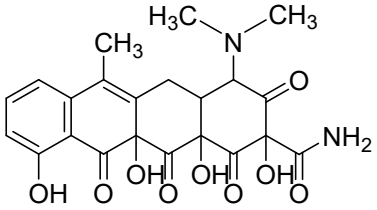
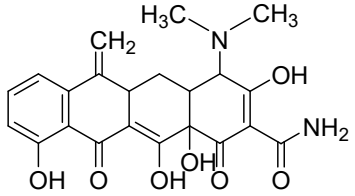
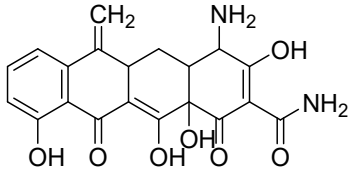
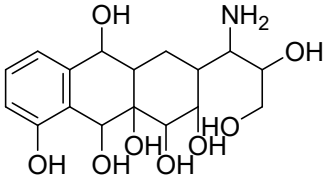
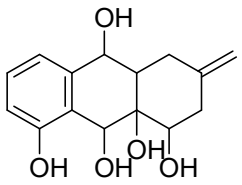
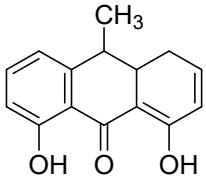
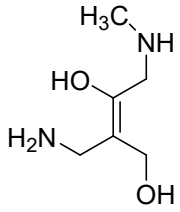
H	242	
I	147	
J	130	

Table S2 The molecular formulas and structural formulas of TCH and its intermediates products during the photocatalytic oxidation process.

Name	Molecular formula	Mass-to-charge ratio (m/z)	Structural formula
TCH	$C_{22}H_{24}O_8N_2$	445	
A	$C_{22}H_{24}O_{10}N_2$	477	
B	$C_{22}H_{24}O_9N_2$	461	
C	$C_{22}H_{22}O_9N_2$	459	
D	$C_{22}H_{22}O_7N_2$	427	
E	$C_{20}H_{19}O_7N_2$	399	
F	$C_{17}H_{25}O_8N$	371	

G	$C_{15}H_{18}O_5$	279	
H	$C_{15}H_{14}O_3$	242	
I	$C_6H_{14}O_2N_2$	147	
J	$C_6H_{11}O_2N$	130