

## Phosphate Modulated Nitrogen-doped Titanium Dioxide/ Carbon Nitride Heterogeneous Photocatalysts with Efficient O<sub>2</sub> Activation for Ametryn Degradation

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### 1 SEM of 4p-5NT/CN

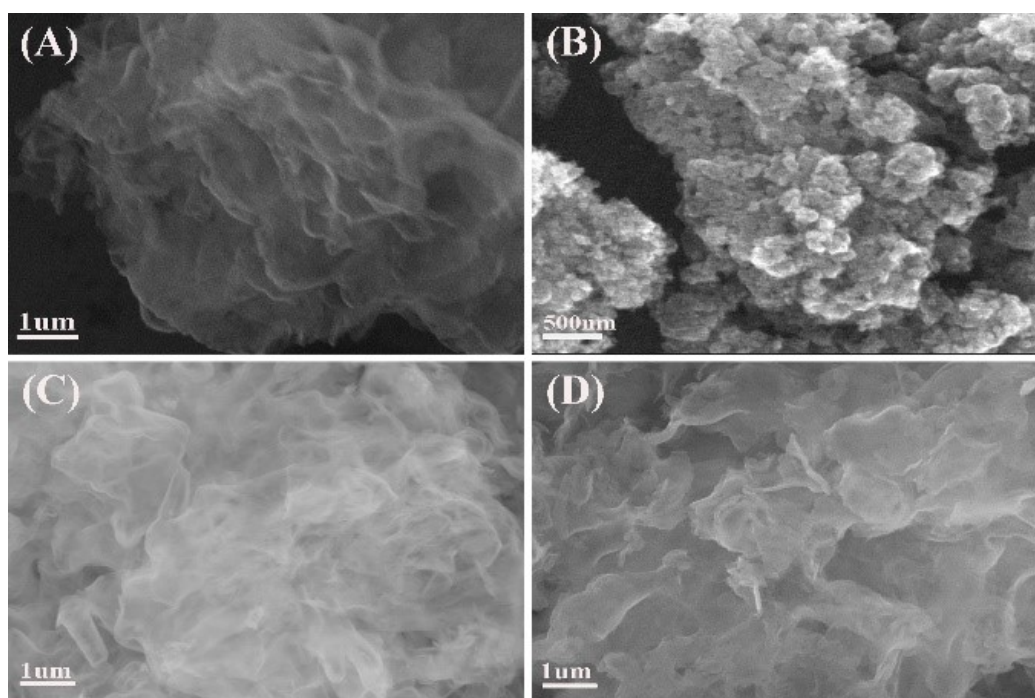


Fig. S1 SEM image of (A)CN 、 (B)NT 、 (C)5NT/CN 、 (D)4P-5NT/CN

### 2 XRD of 4p-5NT/CN, XPS full spectrum and C1s

The diffraction peaks at  $2\theta = 27.3^\circ$  (002) and  $13.1^\circ$  (100) proved that the synthesised sample was CN. NT diffraction peaks were observed at  $25.4^\circ$ ,  $37.8^\circ$ ,  $48.1^\circ$ ,  $54.0^\circ$ ,  $55.1^\circ$ ,  $62.8^\circ$ ,  $68.8^\circ$ ,  $72.3^\circ$  and  $75.1^\circ$ , corresponding to (101), (004), (200), (105), (211), (204), (116), (220) and (215) crystal planes, and two other small peaks at  $36.9^\circ$  and  $38.6^\circ$  corresponding to (103) and (112) crystal planes of anatase TiO<sub>2</sub>, respectively (JCPDF: 21-1272).

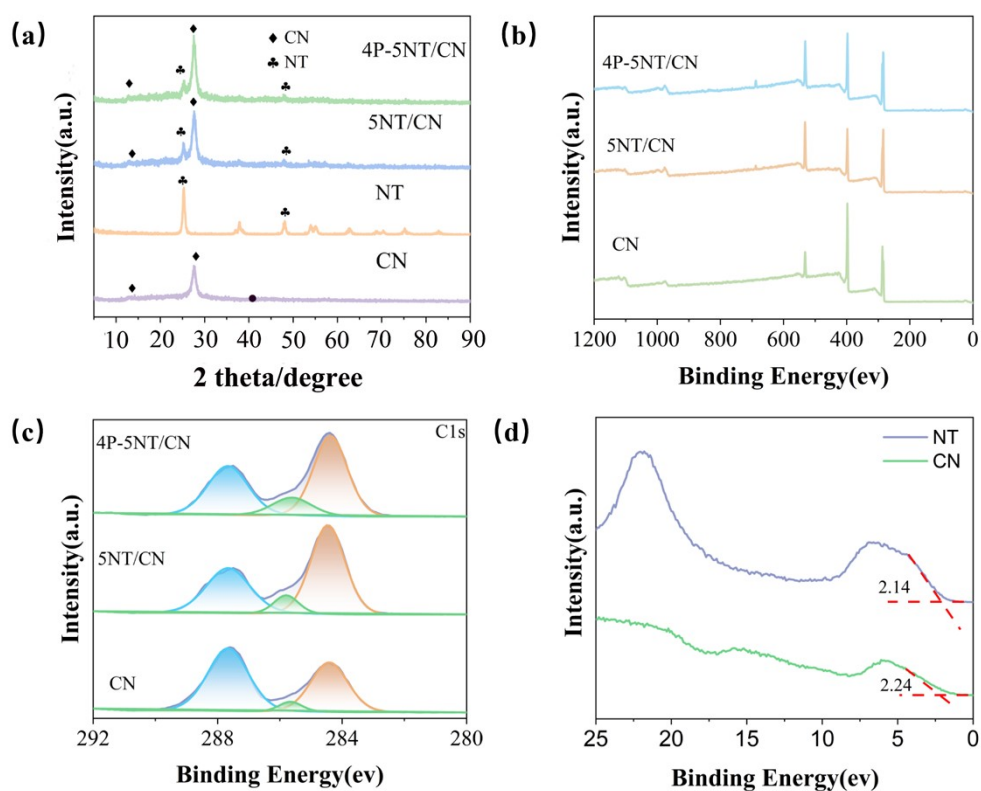


Fig. S2 (a) XRD patterns of CN、NT、5NT/CN 和 4P-5NT/CN (b-c) XPS for full spectra、C1s (d) XPS-VB plot.

### 3 XPS of O1s

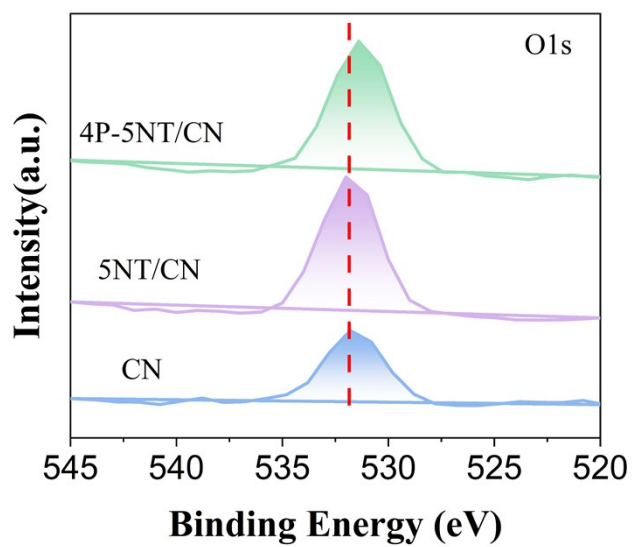


Fig. S3 O1s spectrum of XPS

## 4 Electrochemical performance characterization

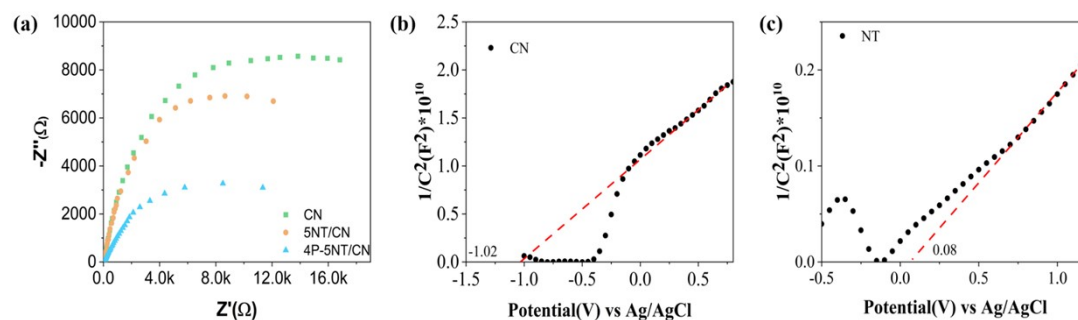


Fig. S4 (a-c) EIS; M-S of CN、NT image

	CN	NT
MS- $E_{fb}$ (Vs Ag/AgCl)	-1.02eV	0.08eV
MS- $E_{fb}$ (Vs NHE)	-0.82eV	0.28eV
$E_f \approx E_{fb}$		
$E_{VB}-E_f$	2.24eV	2.14eV
$E_{VB}$	1.42eV	2.42eV
$E_g$	2.73eV	3.03eV
$E_{CB}=E_{VB}-E_g$	-1.31eV	-0.61eV

Table. S1 Calculation of the position of the VB and CB

## 5 XRD stability test

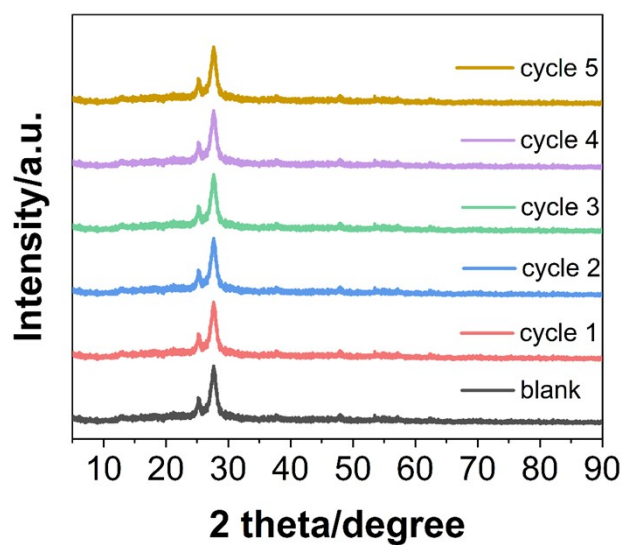


Fig. S5 XRD plots at different cycles

## 6 Stability Test and MTT

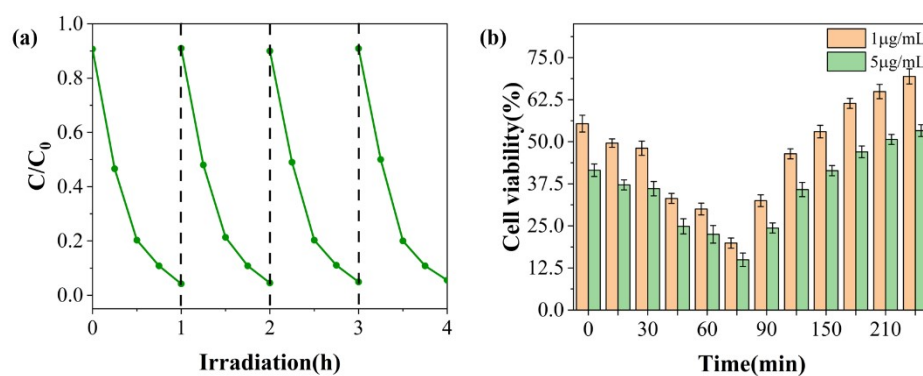


Fig.S6 (a) 4P-5NT/CN degradation Ametryn stability test chart ; (b) Histogram of growth inhibition of L929 cells by degradation of atrazine at different times

## 7 The energy band positions of CN and NT

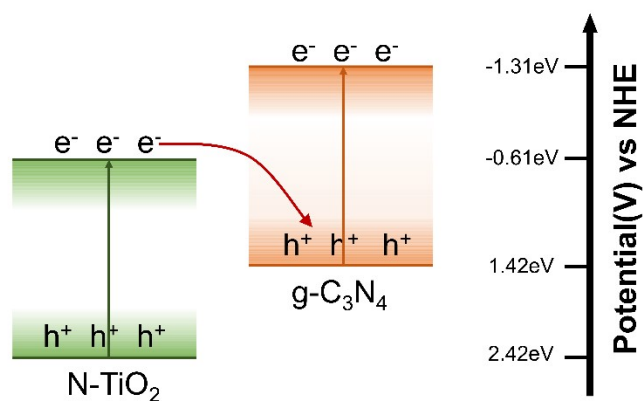


Fig. S7 The energy band positions of CN and NT

## 8 Normalized photocurrent action spectra

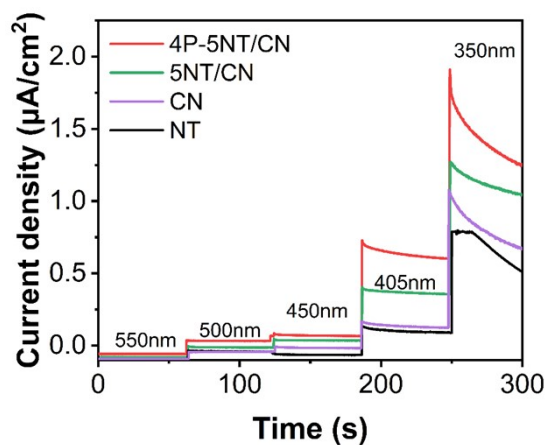
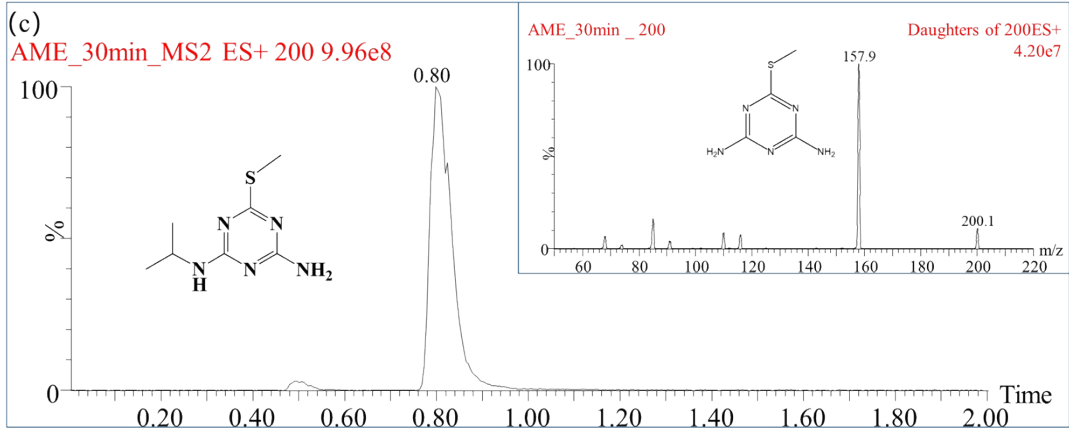
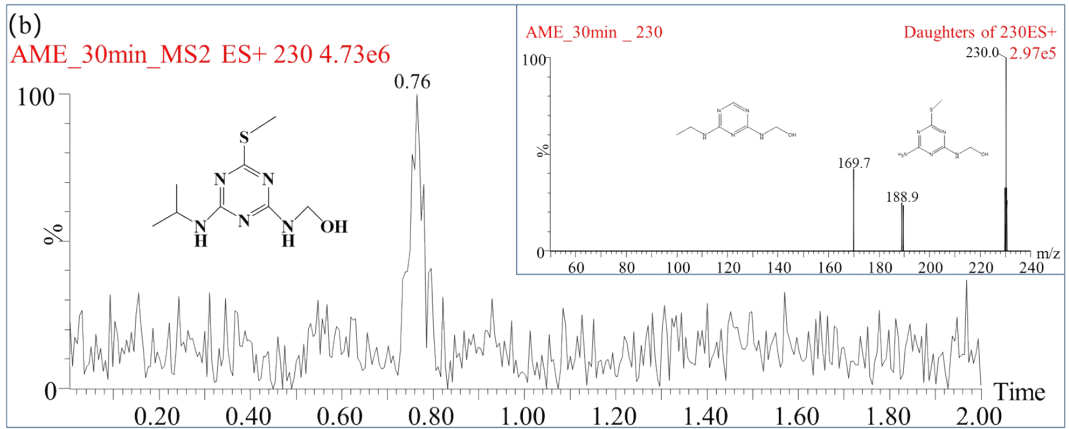
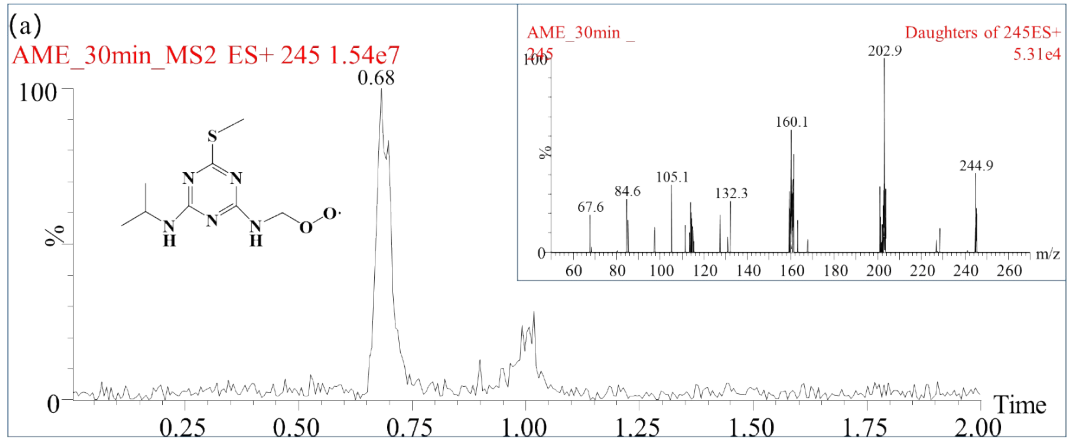
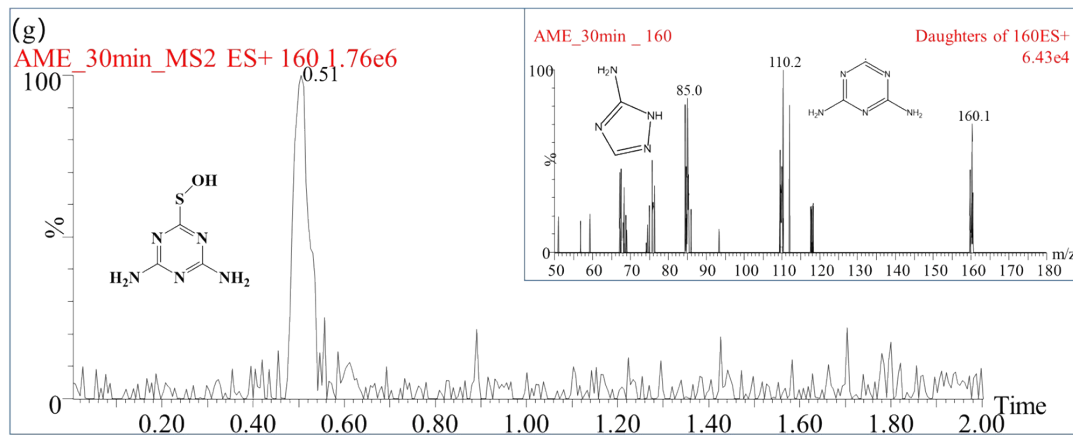
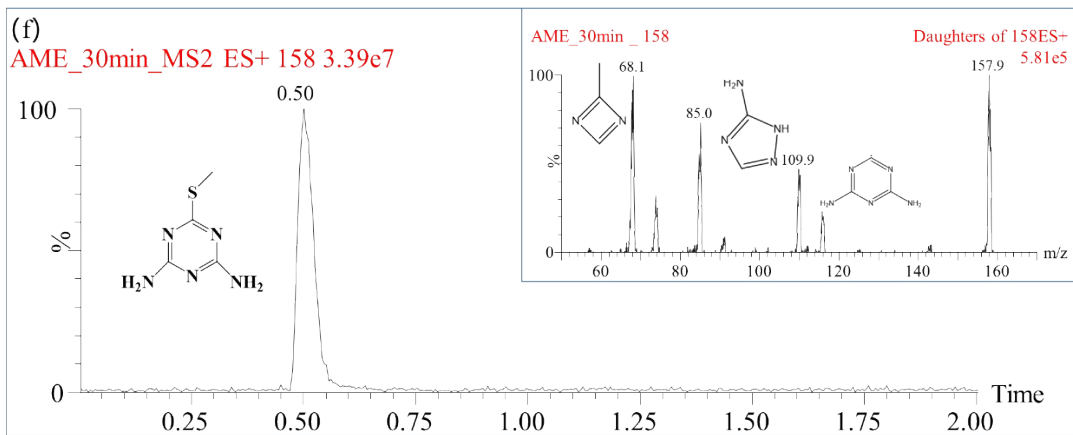
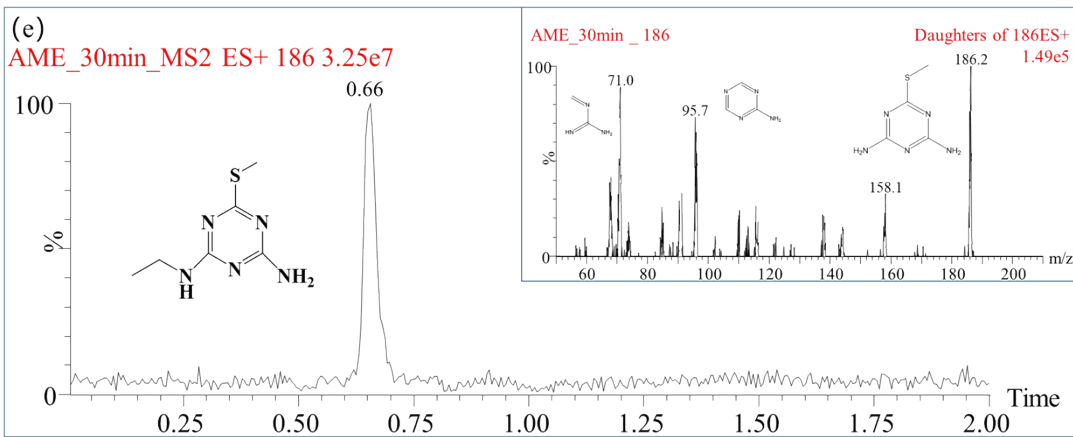
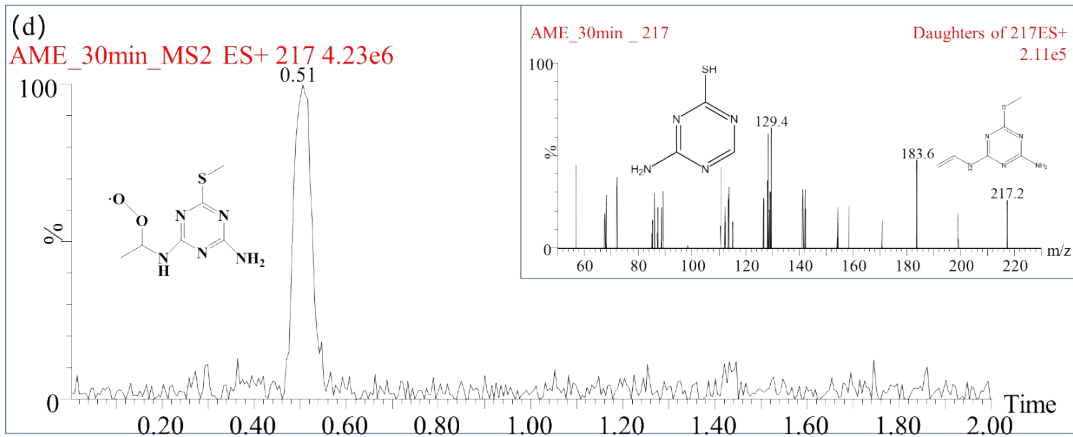
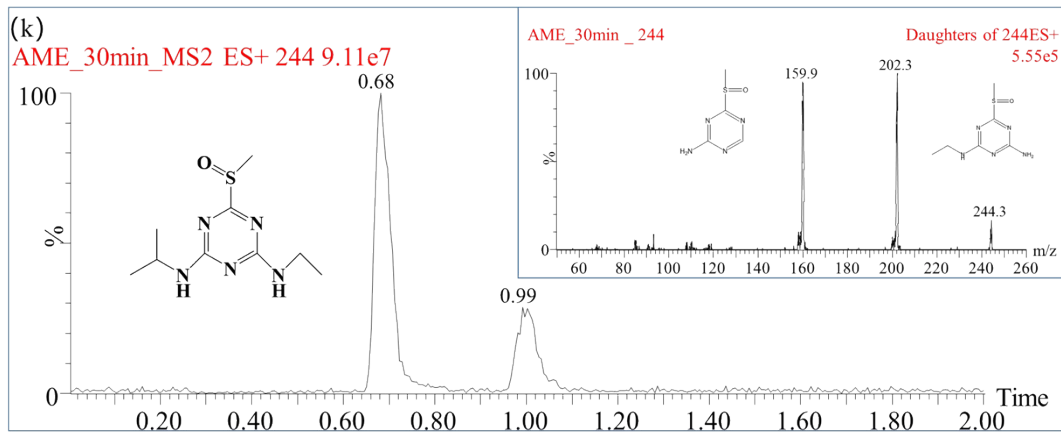
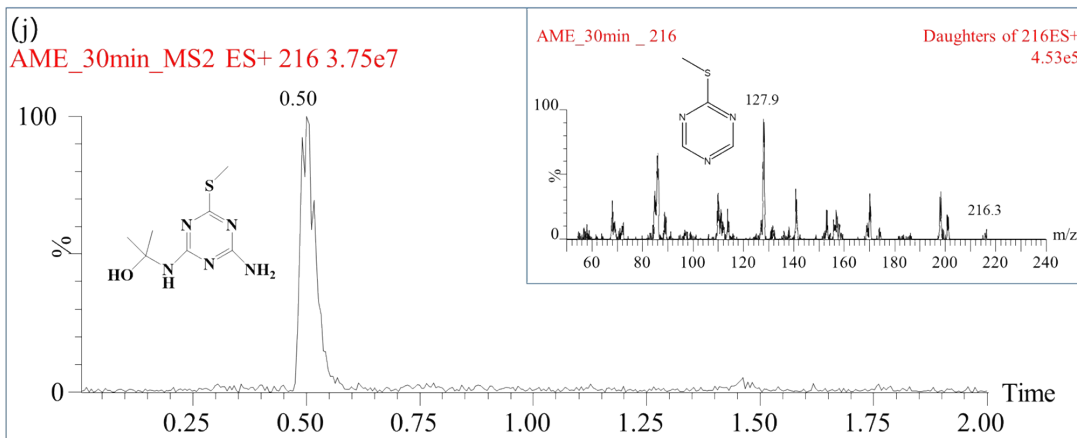
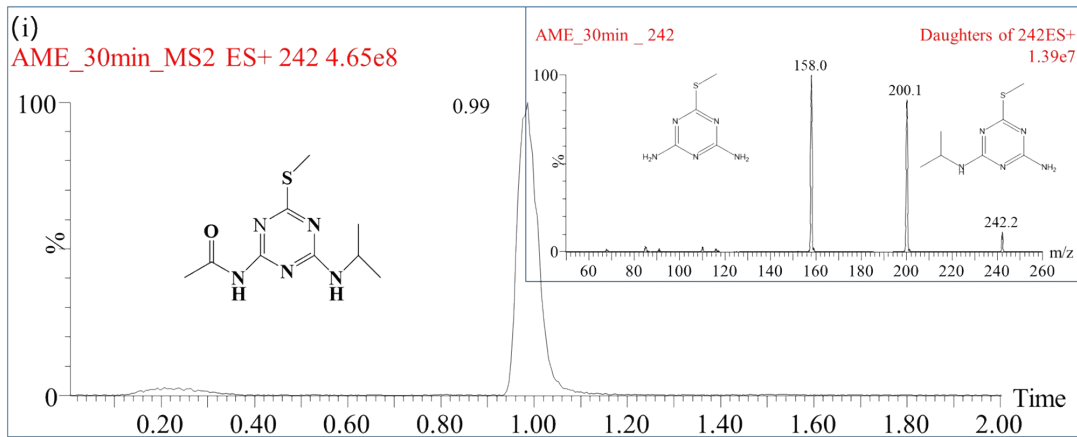
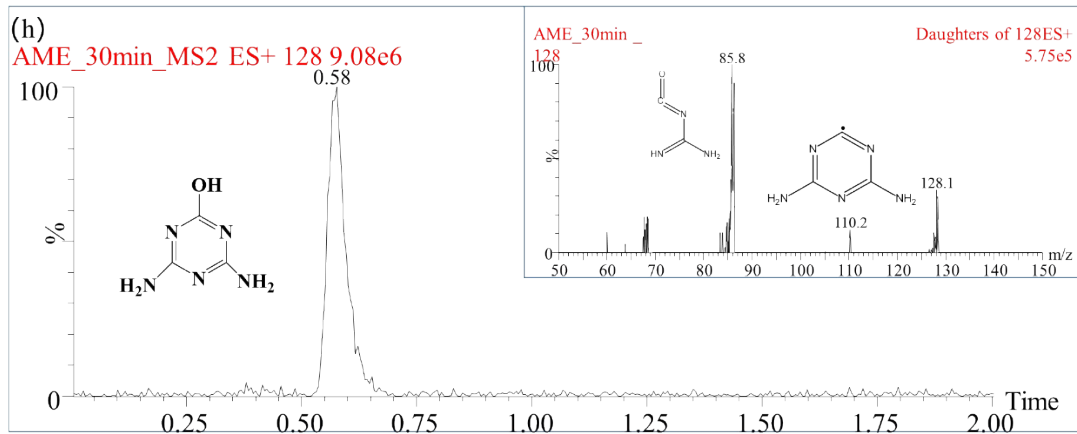


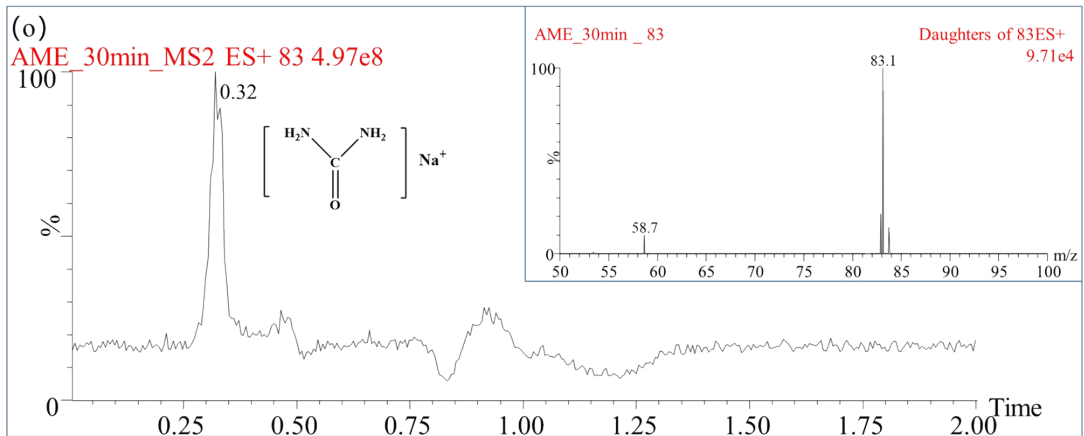
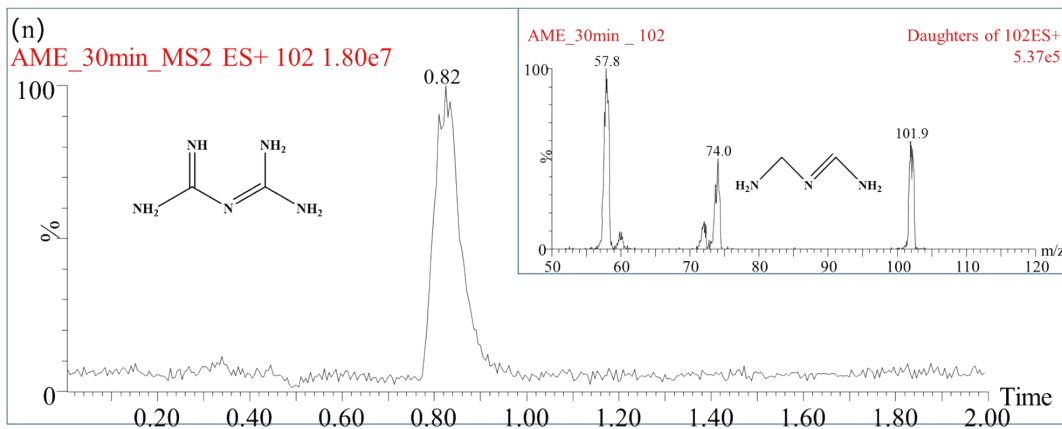
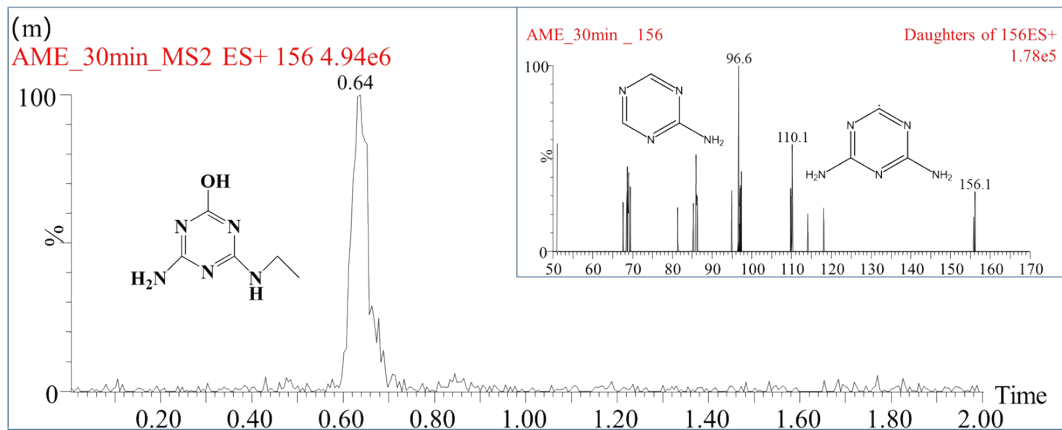
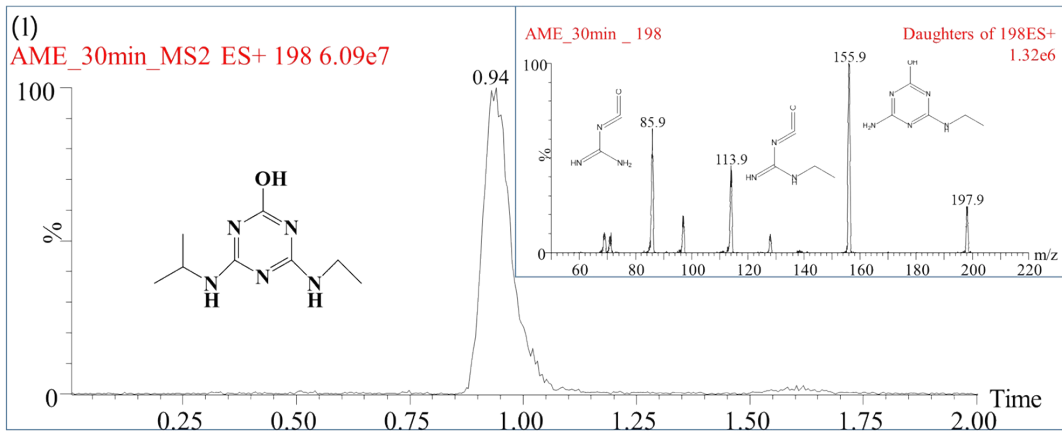
Fig. S8 Normalized photocurrent action spectra

## 9 Mass spectrum fragmentation and retention time











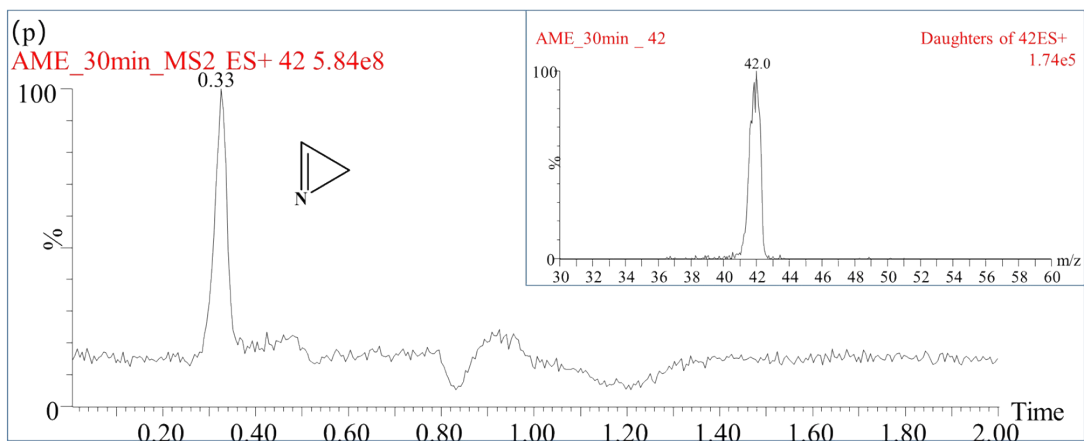


Fig. S9 (a-p) Mass chromatogram and Daughter ion Scanning Fragment of intermediates extracted from Amertyn degradation process

### 10 Fragment change trend chart

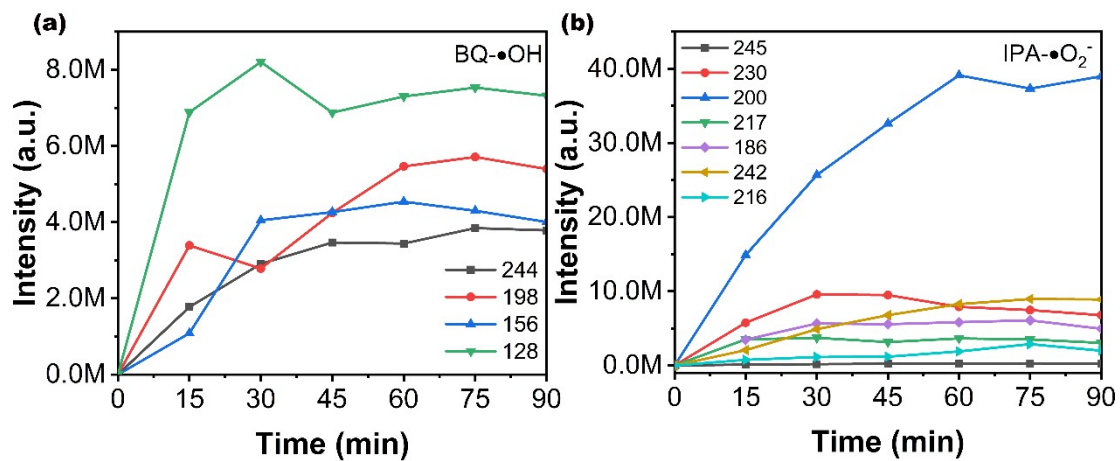


Fig. S10 Fragment change trend chart