Supporting Information

Sepiolite/Fe_3O_4 composite for effective degradation of diuron

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Table S1 TOC values of blank, original diuron and 61-SepMag treated solution. (For 61-SepMag, the reaction parameters are: $[diuron]_0$: 1g/L, pH: 3, $[H_2O_2]_0$: 40 mM, ultrasonic intensity: 300 W, reaction time: 2 h)

Sample name	TOC	TC	IC	TN	Unit
Blank	0.3	0.7	0.4	0.2	ppm
Original diuron	17.8	18.3	0.6	4.2	ppm
61-SepMag	11.7	12.8	1.1	3.2	ppm

[1] TOC: total organic carbon; [2] TC: total carbon; [3] IC: inorganic carbon; [4] TN: total nitrogen

Table S2 XRF analysis of Sep sample

Name	PbO	ZnO	CuO	NiO	Fe_2O_3	Mn_3O_4	Cr_2O_3	V_2O_5	BaO	TiO_2
Content/%	0.00	0.01	0.00	0.00	0.39	0.05	0.00	0.00	0.66	0.04
Name	CaO	K_2O	SO_3	P_2O_5	SiO2	Al_2O_3	MgO	Na_2O	L.O.I	
Content/%	0.28	0.10	0.39	0.01	53.83	0.49	18.52	0.05	25.18	

[1]L.O.I: Loss of Ignition

Table S3 XRF analysis of SepH sample

Name	PbO	ZnO	CuO	NiO	Fe_2O_3	Mn_3O_4	Cr_2O_3	V_2O_5	BaO	TiO_2
Content/%	0.00	0.00	0.00	0.00	0.13	0.01	0.00	0.00	0.58	0.03
Name	CaO	K_2O	SO_3	P_2O_5	SiO_2	Al_2O_3	MgO	Na_2O	L.O.I	
Content/%	0.30	0.06	0.31	0.00	62.61	0.33	14.02	0.03	21.59	

[1]L.O.I: Loss of Ignition

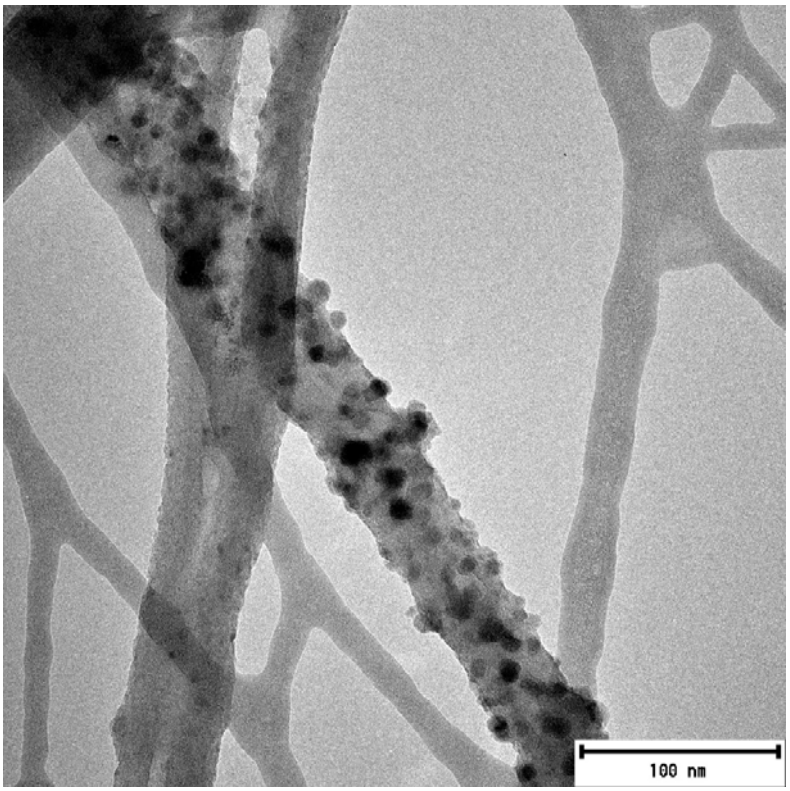

Fig. S1. TEM image of SepMag

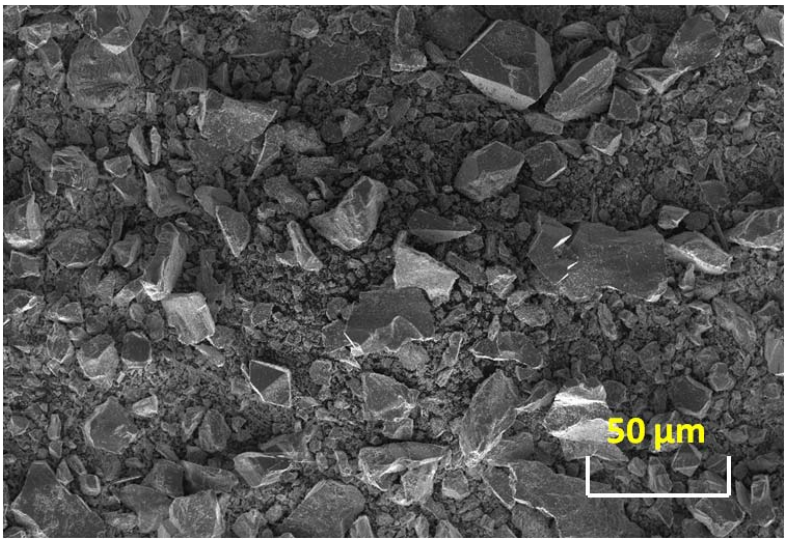

Fig. S2. SEM image of MagCom

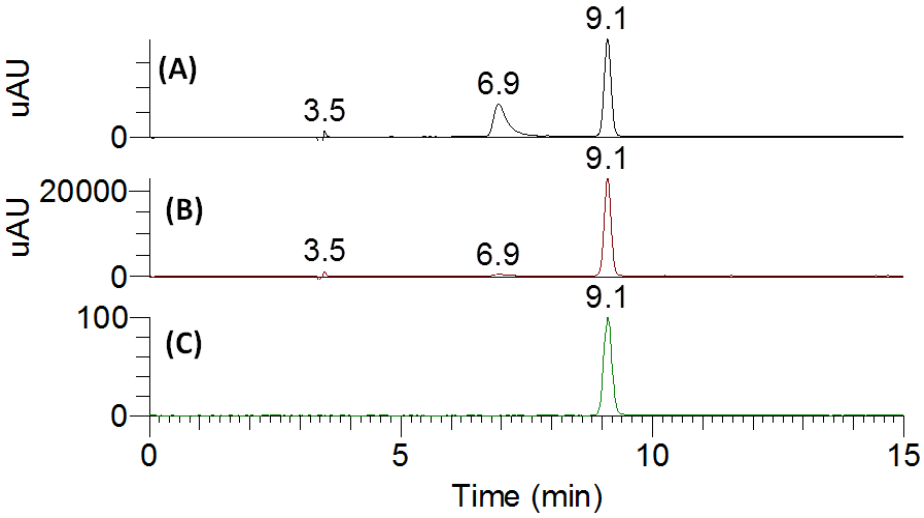

Fig. S3 HPLC-MS 28 ppm diuron standard. (A)UV_{220}, (B)UV_{254}, (C) *m/z* 233 $[Diuron+H]^+$ Diuron is observed by both UV and MS at a retention time of 9.1 min, consistent with previous HPLC results.

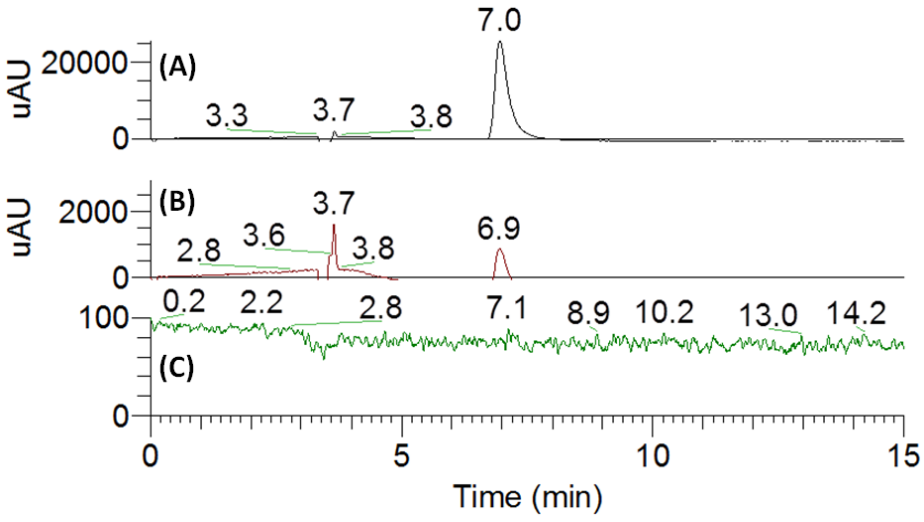

Fig. S4 Solvent Blank (DI Water): (A) UV_{220} , (B) UV_{254}, (C) Total Ion Chromatogram. The blank contains peaks in the UV (at 220 and 254 nm) at 3.7 and 6.9 min, respectively.

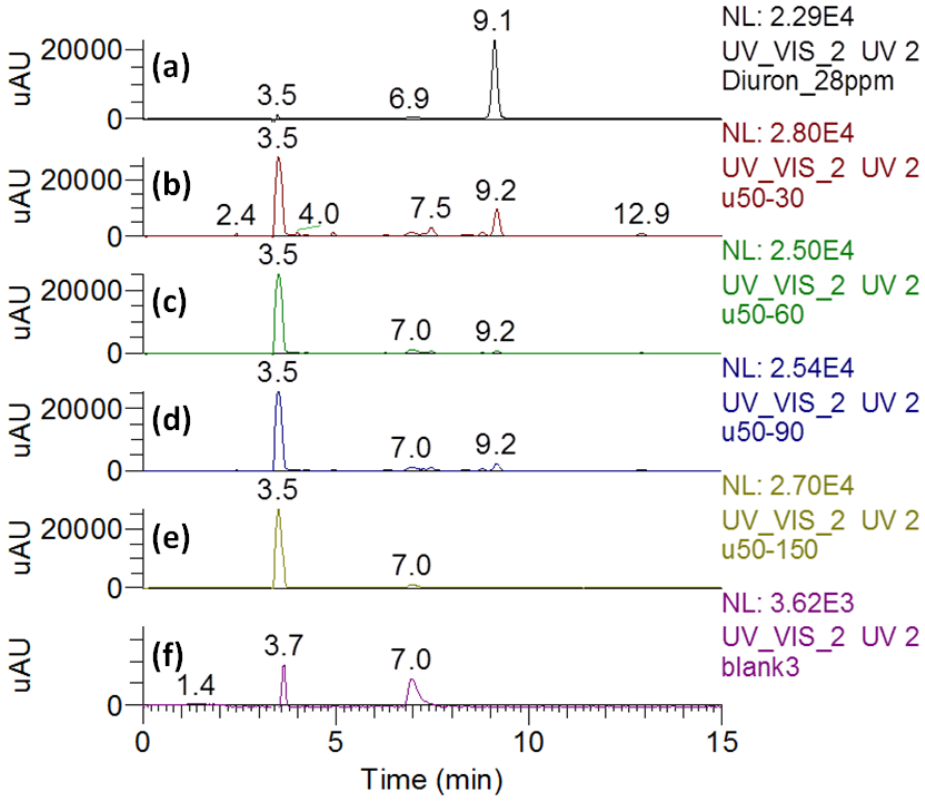

Fig. S5. UV_{254} chromatograms for the reaction of diuron with 61-SepMag/sonication: (a) 28 ppm diuron; (b) 30 min, (c) 60 min, (d) 90 min, (e) 150 min, and (f) blank

Note: The diuron peak at 9.1 and 9.2 min disappears as the reaction proceeds. The major product peak appears at 3.5 min. The peak around 7.0 min is also present in a blank.

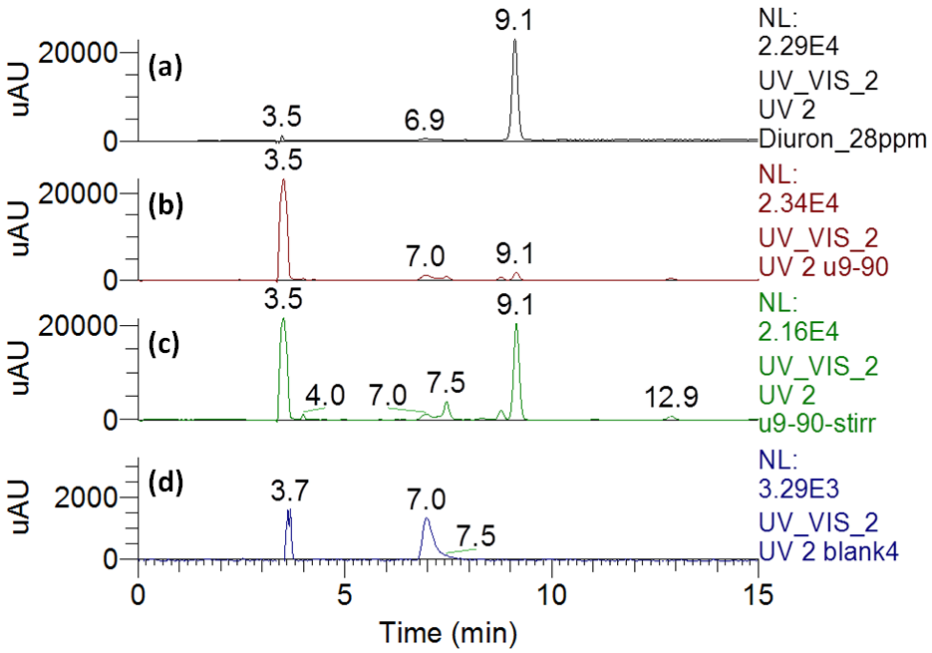

Fig. S6. UV_{254} chromatograms for reaction of diuron with 61-SepMag / sonication: (a) 28 ppm diuron, (b) 90 min, (c) 120 min, and (d) blank

Note: Peaks between 7.5 and 8.8 min are observed, consistent with previous observations. A large, broad peak previously observed at 4.7 min is not observed here. The diuron peak at 9.1~9.2 min disappears as the reaction proceeds. The mass spectrum from the 90 minute degradation sample was searched for ions corresponding to plausible degradation products based on the UV traces and the literature (Maragou, N.C., Thomaidis, N.S., Koupparis, M.A, 2011. Optimization and comparison of ESI and APCI LC-MS/MS methods: A case study of Irgarol 1051, diuron, and their degradation products in environmental samples, *J. Am. Soc. Mass Spectrom* 22, 1826). These degradation products were not identified in the blank or in diuron before degradation.