Supporting information

Is UV/Ce(IV) process a chloride-resistant AOPs for organic pollutants decontamination?

Wenqian Liu[a], Changling Fang[a], Ying Huang[a], Luoyan Ai[a], Fei Yang[a], Zhaohui Wang[a,b], Jianshe Liu[a]

[a]*State Environmental Protection Engineering Center for Pollution Treatment and Control in Textile Industry, College of Environmental Science and Engineering, Donghua University, Shanghai, 201620, China*

[b]*International Center for Balanced Land Use (ICBLU), The University of Newcastle, Callaghan, NSW 2308, Australia*

Tel: +86-21-67792557; Fax: +86-21-67792522

E-mail: zhaohuiwang@dhu.edu.cn (Z. Wang)

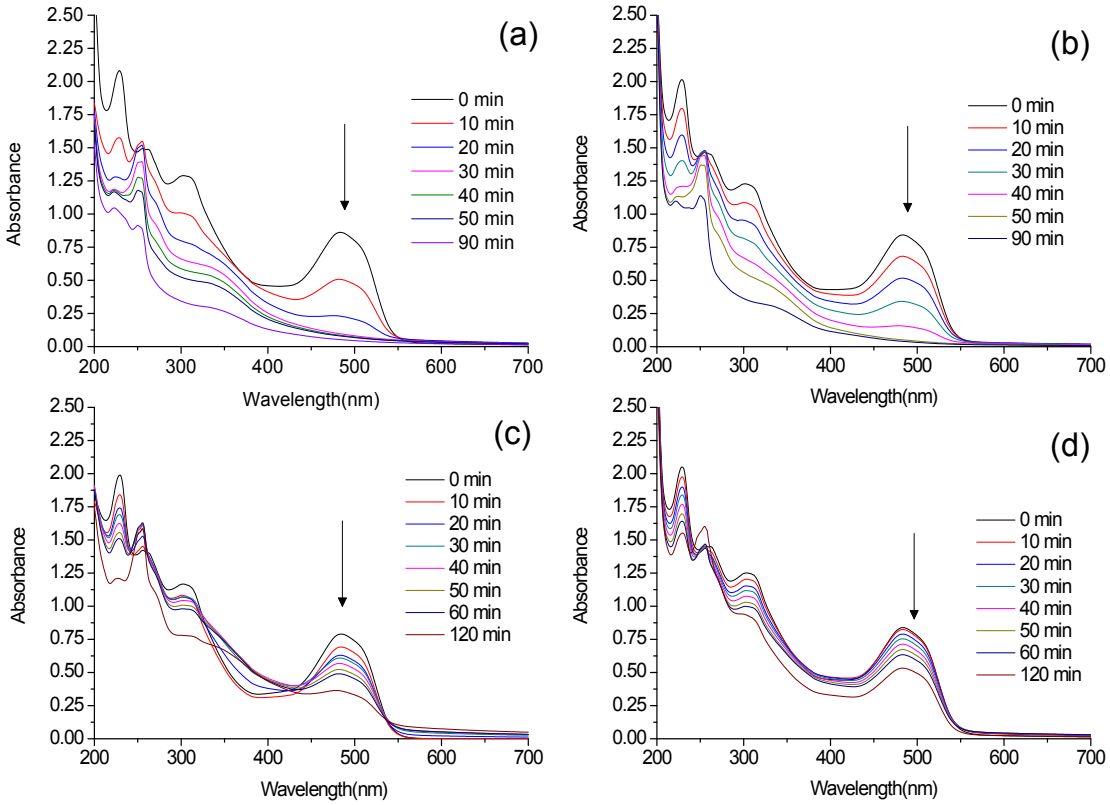

Fig. S1 UV–vis spectral changes for AO7 degradation with UV/Ce(IV) system (a), UV/Ce(IV)/ Cl^- system(b), Ce(IV) system(c) and Ce(IV)/Cl^- system(d). Conditions: $[AO7]_0$ = 0.04 mM, $[Ce(IV)]_0$ =0.25 mM, $[Cl]_0$ =300 mM.

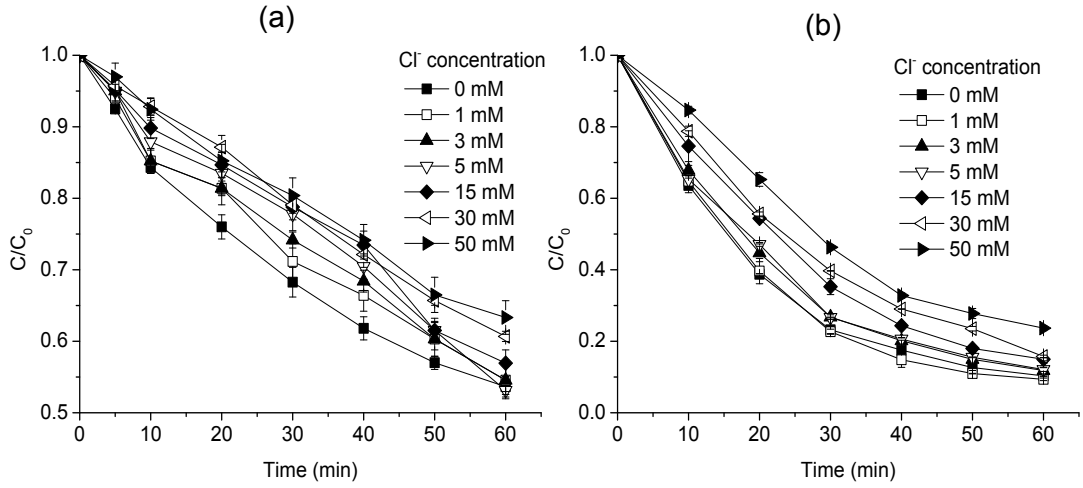

Fig. S2 The effect of chloride concentration on AO7 decolorization in Ce(IV) system (a) and UV/Ce(IV) system (b). Conditions: $[AO7]_0$ = 0.04 mM, $[Ce(IV)]_0$ = 0.25 mM.

Table S1 The mineralization efficiency of UV/Ce(IV) system and UV/Ce(IV)/Cl^- system. Conditions: $[AO7]_0$ = 0.04 mM, $[Ce(IV)]_0$ = 0.25 mM.

TOC/TOC_0 (%)	Ce(IV)		Ce(IV)/UV	
	No Cl^-	300 mM Cl^-	No Cl^-	300 mM Cl^-
60 min	1.4	0.4	4.6	3.1
120 min	3.2	0.94	6.6	4.1
240 min	4.7	1.6	8.6	5.3
480 min	5.6	2.4	11.9	7.5

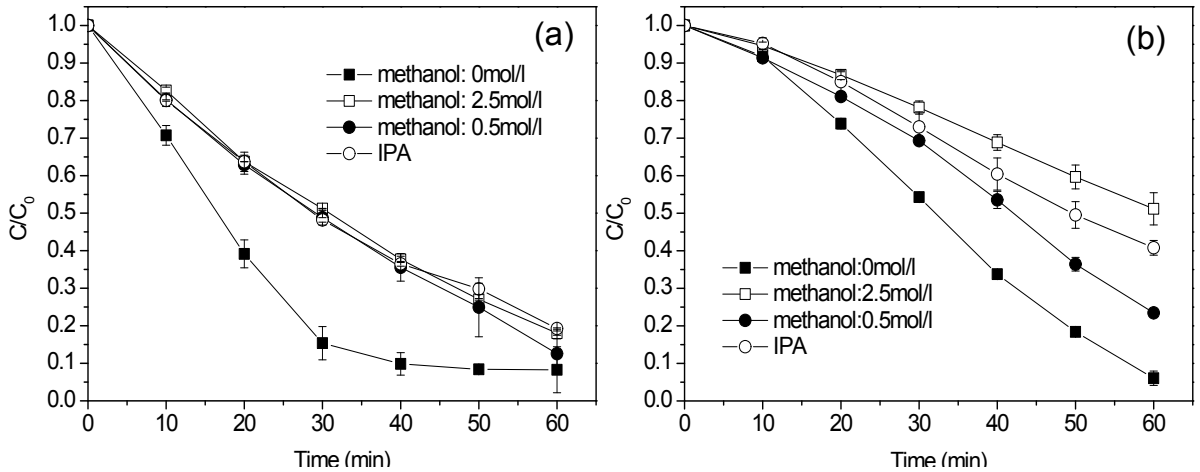

Fig. S3 Influence of alcohols on photocatalytic degradation of AO7 with UV/Ce(IV) (a) and UV/Ce(IV)/Cl^- system (b). Conditions: $[AO7]_0$ = 0.04 mM, $[Ce(IV)]_0$ = 0.25 mM, $[Cl]_0$ = 300 Mm, $[IPA]_0$ = 0.25 mM.

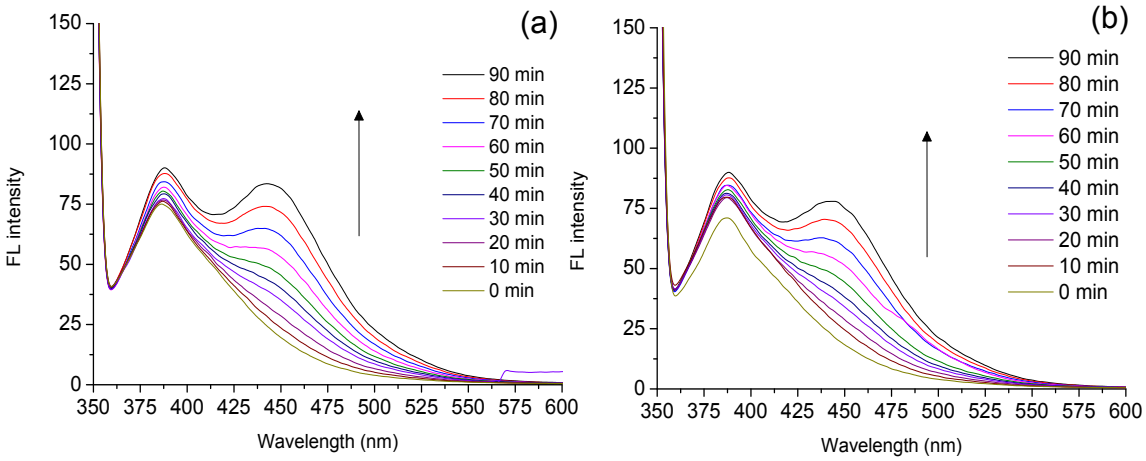

Fig. S4 Photoluminescence spectral changes of 7-HC in UV/H_2O_2/COU (a) system and UV/H_2O_2/COU/Cl^- (a) system. Conditions: $[COU]_0$ =0.25 mM, $[H_2O_2]_0$ = 0.1 mM, $[Cl^-]_0$ =300 mM.

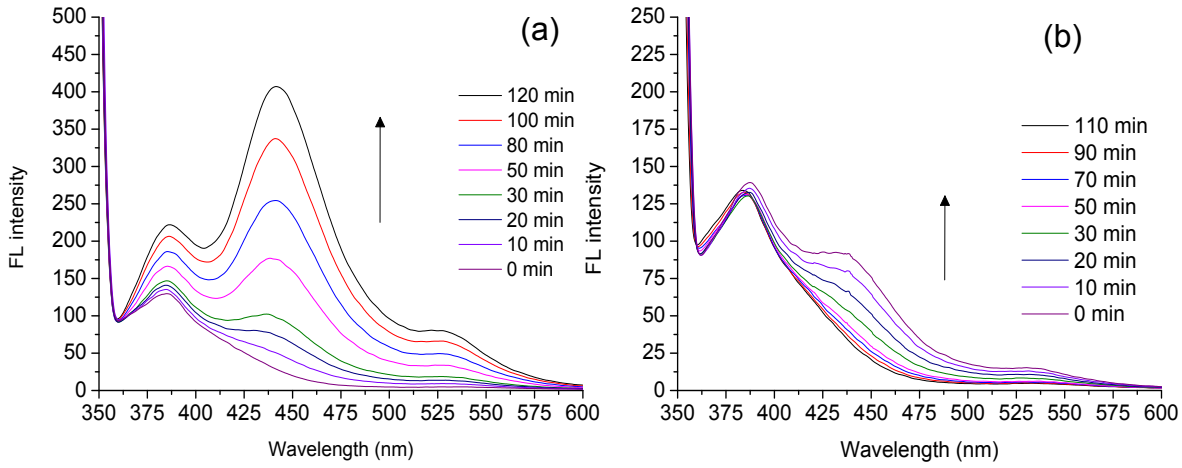

Fig. S5 Photoluminescence spectral changes of UV/Ce(III) (a) and UV/Ce(III)/Cl^- in the presence of COU (b). Conditions: $[AO7]_0$ = 0.04 mM, $[COU]_0$ = 0.25 mM, $[Ce(III)]_0$ = 0.25 mM, $[Cl^-]_0$ =300 mM.

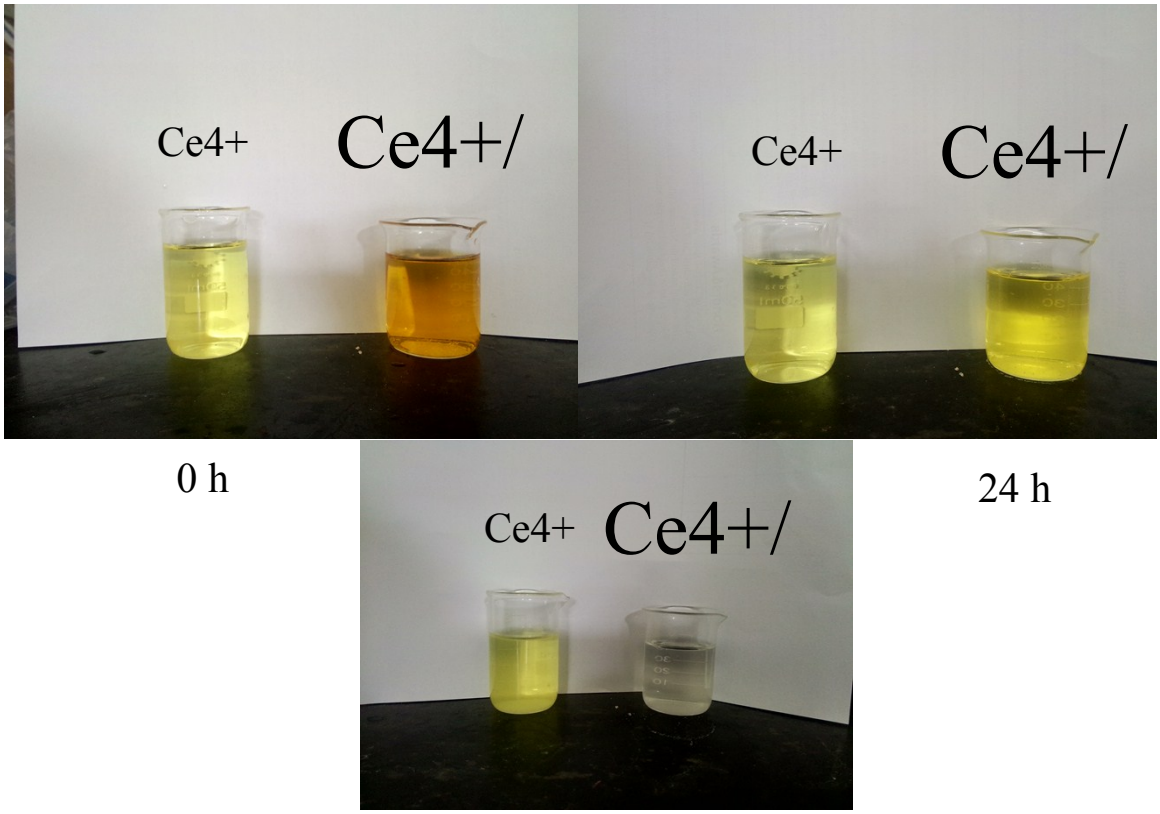

Fig. S6 The color change of solution containing Ce(IV) and chloride.