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(II)

(Chemical Oxygen Demand)

(OH

.(Glaze et al.1987)

OH

(AOPs)

Advanced Oxidation Processes

COD

2,4-DCP

Oxidation – Reduction Potential (ORP)

$E^\circ = + 3.06 \text{ V}$

Fe^{2+} H_2O_2

2,4-DCP

OH

)

(

:(Freeman 1998)

() AOPs

DCP

COD BOD₅

BOD₅/COD

H_2O_2 /

UV /

H_2O_2 / UV /

UV/ H_2O_2

Fe^{2+} / H_2O_2

H.J.H Fenton

()

(Fenton Reaction)

(Fenton Reagent)

.(Nesheiwat et al. 2000)

OH

H_2O_2

2,4-)

(DCP

.(Bigda 1995)

2,4-DCP

()

:

H₂O₂

H₂O₂

.(Chamarro et al. 2001)

pH

pH

: pH

pH

pH

H₂O₂

.(Adams et al. 1994)

(Chlorophenols)

.(Fares 2003)

2,4-DCP

(2,4-D)

(2,4-DP

)

DCP



.(Chen et al. 1997)

(high-production volume chemicals)

(H₂O₂/substrate)

H₂O₂

(US EPA)

/

.(BUA 1988)

(Adams et al. 1994)

Fe=15 mg/L

2,4-DCP=100 mg/L

pH

mg/L

2,4-DCP

pH=3

Fe=15 mg/L

(II)

() H₂O₂

H₂O₂

Fe=15 mg/L

pH

)

2,4-DCP=50 mg/L

pH (

2,4-DCP=100 mg/L

pH

H₂O₂

H₂O₂

H₂O₂ (II)

H₂O₂

COD

(Chamaro et al. 2001)

H₂O₂ =50 mg/L

BOD₅ COD

H₂O₂

COD

(APHA 1998)

(II)

H₂O₂=50 mg/L

COD %

Fe(II) =5 mg/L H₂O₂=50 mg/L

COD %

COD

% COD

COD

Fe(II) =5 mg/L

2,4-DCP=100 mg/L

BOD₅

H₂O₂=50, 75, 100 mg/L

mg/L	COD		COD	H ₂ O ₂	H ₂ O ₂
BOD ₅	/	/	/	/	mg/L
/	/	/	mg/L		
			.()	COD	
COD				%	%
	COD	%			
BOD ₅ /COD			COD	(II)	H ₂ O ₂
	/				
COD					
			(II)		H ₂ O ₂ = 100 mg/L
Fe=15 mg/L	H ₂ O ₂ =100 mg/L		COD		
	BOD ₅ /COD			;	%
	.()	/			5 mg/L
			%		COD
	BOD ₅ /COD				
			H ₂ O ₂ = 100 mg/L		
			10 min		Fe(II) = 5 mg/L
			%		COD
BOD ₅ /COD	Fe=10 mg/L	H ₂ O ₂ =50 mg/L	COD		
/	2,4-DCP=50 mg/L				
					.()
H ₂ O ₂ =100 mg/L	Fe=15 mg/L				
/		BOD ₅ /COD		H ₂ O ₂	
		.()		COD %	%
	BOD ₅ /COD		COD	(II)	
Fe=15 mg/L					
Fe=15 mg/L			H ₂ O ₂ =75 mg/L		
	BOD ₅ /COD				Fe(II) = 10 mg/L
			COD		2,4-DCP=100 mg/L
	BOD ₅ /COD				

H₂O₂

pH (II) 2,4-DCP=100 mg/L
/ / / /

.() pH 2,4-DCP=100 mg/L BOD₅/COD

pH 2,4-DCP=100 mg/L H₂O₂=100 mg/L /
Fe=15 mg/L

Fe=10 mg/L H₂O₂=75 mg/L , H₂O₂
COD (BOD₅/COD)

Fe H₂O₂

pH Fe²⁺ H₂O₂
/ .() /

BOD₅/COD
(II)

%
%

H₂O₂
H₂O₂
(Ma et al. 2000)

pH
(Bum et al. 1999) BOD₅/COD

pH=3-4 pH
pH

.(Chamarro et al. 2001) NaOH pH
pH

pH 2,4-DCP=50 mg/L

/...

%

)

COD

()

.(

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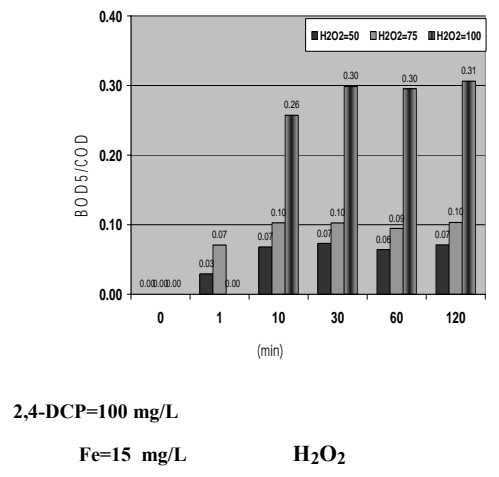
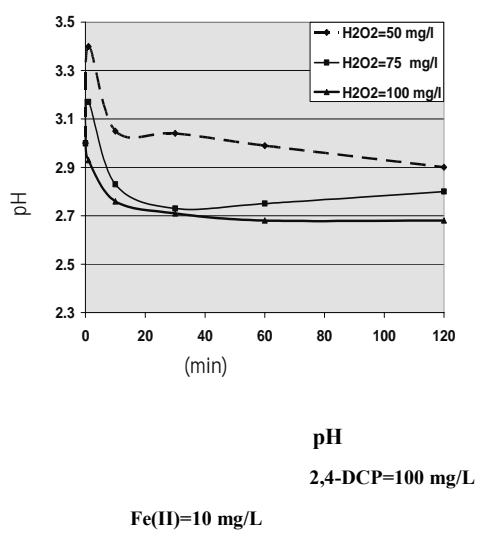
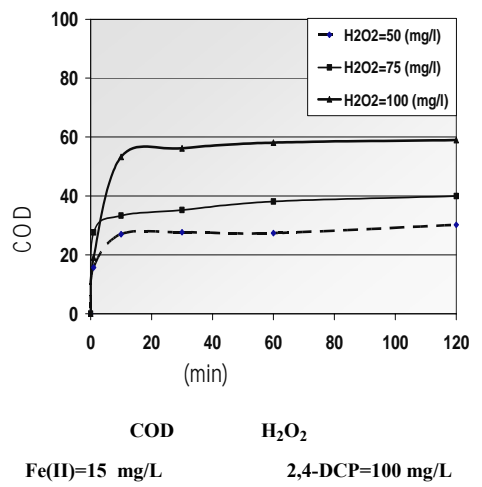
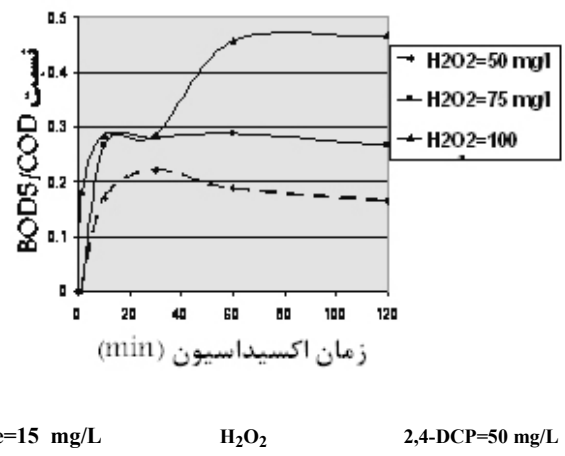
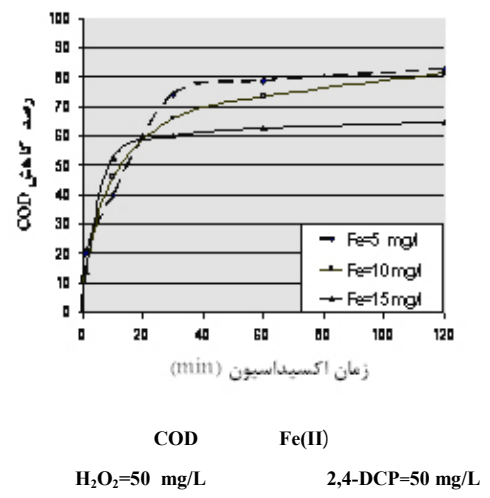
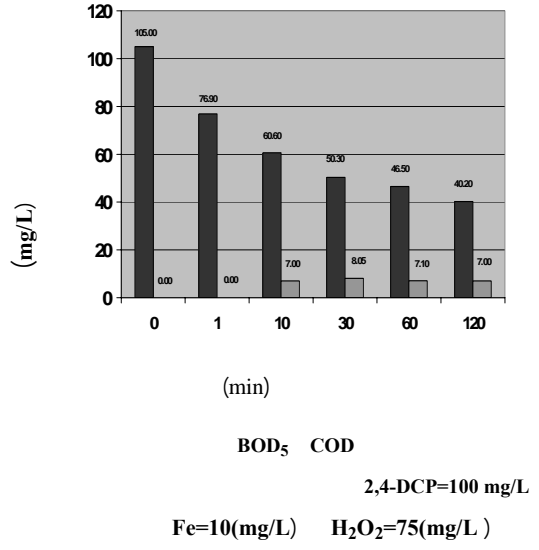
Fe(II)=10 mg/L	H ₂ O ₂		2,4-DCP=50 mg/L				$\frac{BOD_5}{COD}$		BOD ₅ · COD			
	Fe=10 mg/L											
	H ₂ O ₂ =100 mg/L			H ₂ O ₂ =75 mg/L			H ₂ O ₂ =50 mg/L					
$\frac{BoD_5}{COD}$	BOD ₅ mg/L	COD	COD mg/L	$\frac{BoD_5}{COD}$	BOD ₅ mg/L	COD	COD mg/L	$\frac{BoD_5}{COD}$	BOD ₅ mg/L	COD	COD mg/L	min
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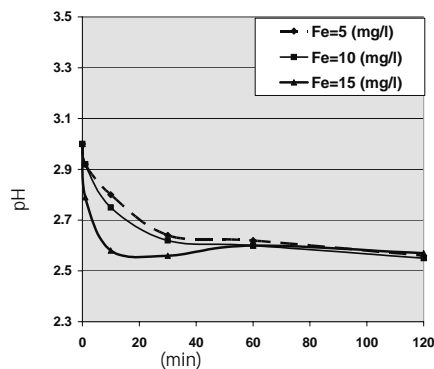
Fe(II)=15 mg/L	H ₂ O ₂		2,4-DCP=50 mg/L				$\frac{BOD_5}{COD}$		BOD ₅ · COD			
	Fe=15 mg/L											
	H ₂ O ₂ =100 mg/L			H ₂ O ₂ =75 mg/L			H ₂ O ₂ =50 mg/L					
$\frac{BoD_5}{COD}$	BOD ₅ mg/L	COD	COD mg/L	$\frac{BoD_5}{COD}$	BOD ₅ mg/L	COD	COD mg/L	$\frac{BoD_5}{COD}$	BOD ₅ mg/L	COD	COD mg/L	min
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Fe(II)=10 mg/L	H ₂ O ₂		2,4-DCP=100 mg/L				$\frac{BOD_5}{COD}$		BOD ₅ · COD			
	Fe=10 mg/L											
	H ₂ O ₂ =100 mg/L				H ₂ O ₂ =75 mg/L				H ₂ O ₂ =50 mg/L			
$\frac{BoD_5}{COD}$	BOD ₅ mg/L	COD	COD mg/L	$\frac{BoD_5}{COD}$	BOD ₅ mg/L	COD	COD mg/L	$\frac{BoD_5}{COD}$	BOD ₅ mg/L	COD	COD mg/L	min
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Fe(II)=15 mg/L	H ₂ O ₂		2,4-DCP=100 mg/L				$\frac{BOD_5}{COD}$		BOD ₅ · COD			
	Fe=15 mg/L											
	H ₂ O ₂ =100 mg/L				H ₂ O ₂ =75 mg/L				H ₂ O ₂ =50 mg/L			
$\frac{BoD_5}{COD}$	BOD ₅ mg/L	COD	COD mg/L	$\frac{BoD_5}{COD}$	BOD ₅ mg/L	COD	COD mg/L	$\frac{BoD_5}{COD}$	BOD ₅ mg/L	COD	COD mg/L	min
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pH :
2,4-DCP=100 mg/L

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