

• ( *Cr (VI)* , *Pb (II)* , *Cd ( II)* )

( . . )

( )

-

:

$Cr^{6+}$  ,  $Pb^{2+}$  ,  $Cd^{2+}$

( *Batch* )

*pH*

( )

*pH*

Plus GBC

( )

F12 HORIBA pH -

pH

( )

25mm

(MERCK)

( )

( MERCK)

pH

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( )

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( )

EDTA ( )

( )

( )

( )

( - )

( - )

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Cr<sup>6+</sup>, Pb<sup>2+</sup>, Cd<sup>2+</sup>

( )

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( 0.5 - 0.125 ) mm

75%

( 0.125 - 0.063 ) mm

21%

< 0.063 mm

4%

$$q_e = K_f \cdot C_e^{1/n}$$

$$\text{Log } q_e = \text{Log } K_f + 1/n \text{ Log } C_e$$

ppm 50 40 30 20 10

$$C_e/q_e = 1/Q_0 \cdot b + C_e/Q_0$$

(ppm) :  $C_0$

10min

2gr

(ppm) :  $C_e$

600rpm

:  $q_e$

(mg/g)

(Lit) :  $v$

(g) :  $w$

:  $K_f$

:  $1/n$

:  $Q_0$

:  $b$

$$q_e = (C_0 - C_e) v / w$$

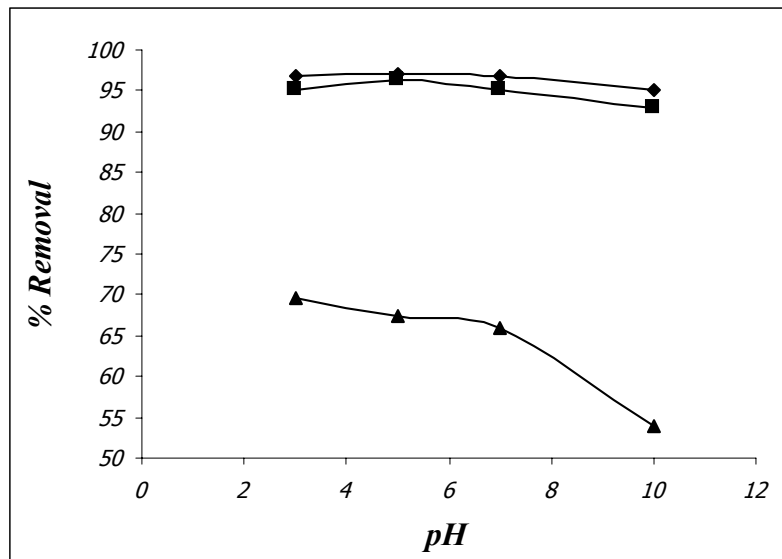
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<i>Adsorbent</i>	<i>Metal</i>	$K_f$	<i>n</i>	<i>Correlation constant (R<sup>2</sup>)</i>
<i>A . Rice hull</i>	$Cd^{2+}$	10.9	1.3	0.9977
	$Pb^{2+}$	6.1	1.2	0.999
	$Cr^{6+}$	0.81	1.05	0.9996
<i>A. Wheat husk</i>	$Cd^{2+}$	8.2	1.2	0.998
	$Pb^{2+}$	4.6	1.2	0.9994
	$Cr^{6+}$	0.7	1.07	0.996
<i>A . Straw</i>	$Cd^{2+}$	5.17	1.1	0.99
	$Pb^{2+}$	4.1	1.1	0.999
	$Cr^{6+}$	0.56	1.03	0.9999

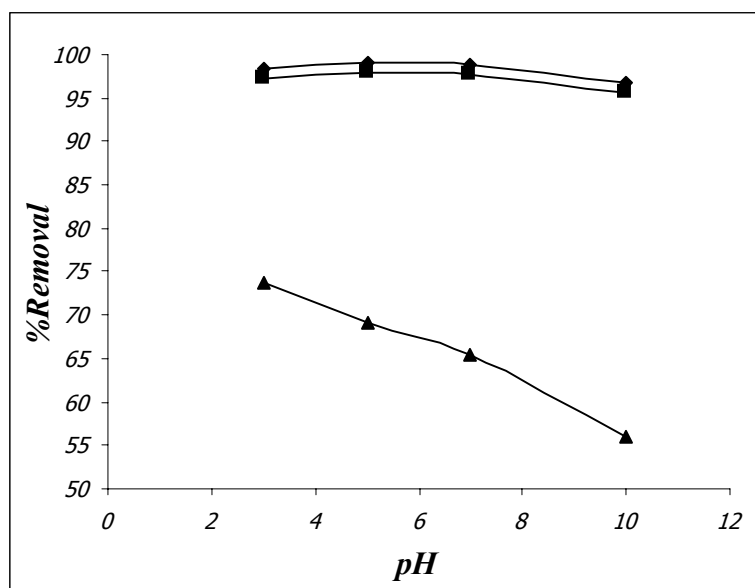
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<i>Adsorbent</i>	<i>Metal</i>	$Q_0$	<i>b</i>	<i>Correlation constant (R<sup>2</sup>)</i>
<i>A . Rice hull</i>	$Cd^{2+}$	57.8	0.24	0.9241
	$Pb^{2+}$	84.7	0.08	0.8815
	$Cr^{6+}$	138.9	0.005	0.9647
<i>A. Wheat husk</i>	$Cd^{2+}$	65.4	0.24	0.9787
	$Pb^{2+}$	69.9	0.07	0.9452
	$Cr^{6+}$	70.9	0.01	0.9366
<i>A . Straw</i>	$Cd^{2+}$	100	0.06	0.9745
	$Pb^{2+}$	129.9	0.3	0.9293
	$Cr^{6+}$	192.3	0.003	0.9621

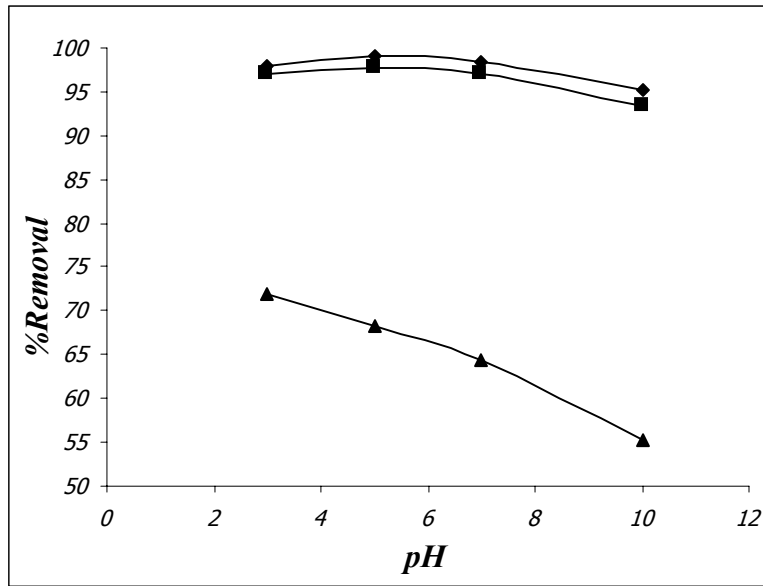
$pH$  (   
 $pH$    
 $pH$  .   
 $Cr^{6+}, Pb^{2+}, Cd^{2+}$



:    
  :    
  :    
 pH -

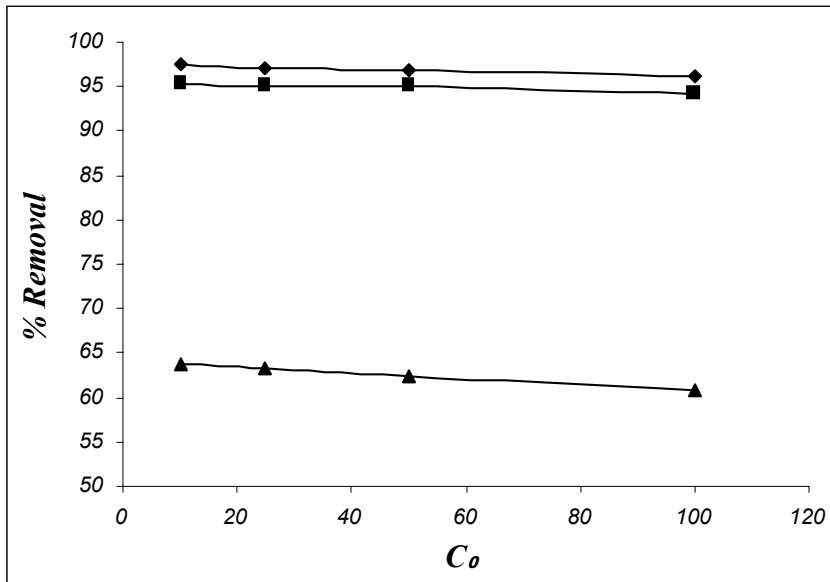


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  :    
  :    
 pH -

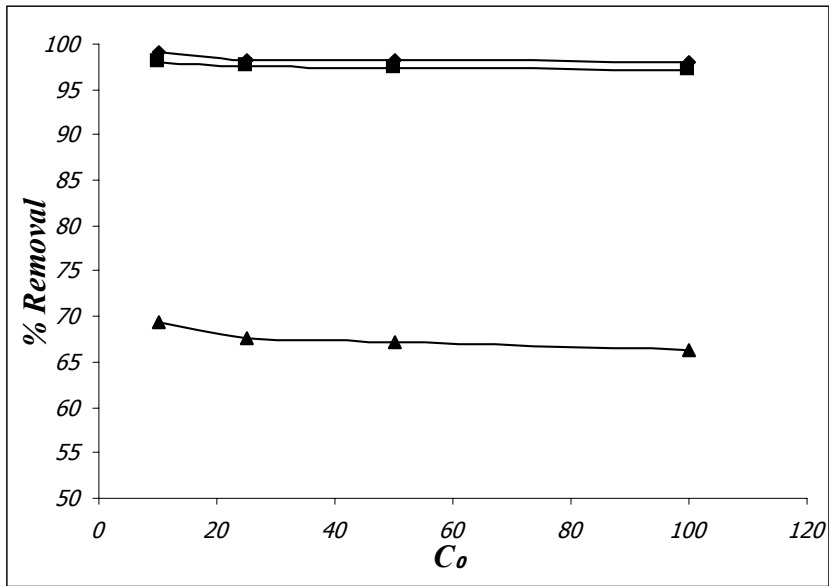


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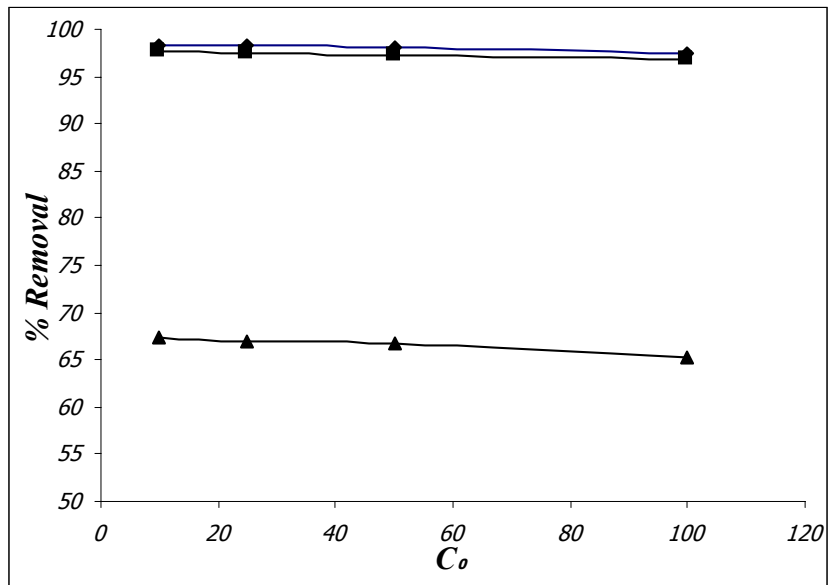
$\dot{y}$   
 10gr     ppm    $\ddot{y}$     $\ddot{y}$



$C_0$ : ppm     :    
  :    
  :



$C_0$ : ppm     $\blacksquare$ :     $\blacklozenge$ :     $\blacktriangle$ :

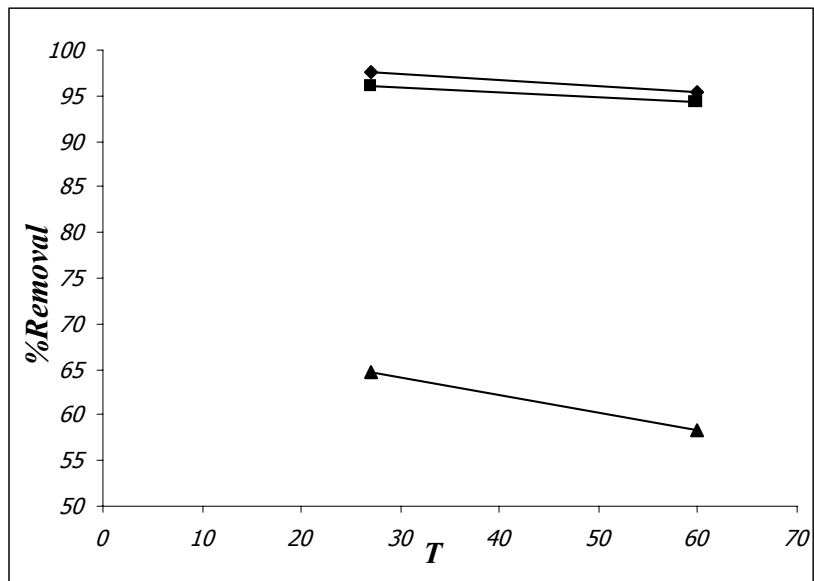


$C_0$ : ppm     $\blacksquare$ :     $\blacklozenge$ :     $\blacktriangle$ :

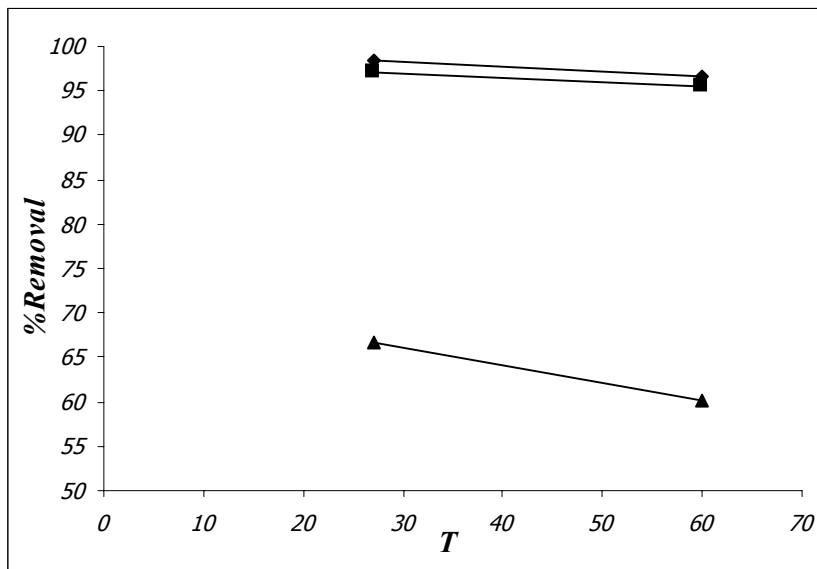
27  $60^{\circ}C$

$^{\circ}C$

pH

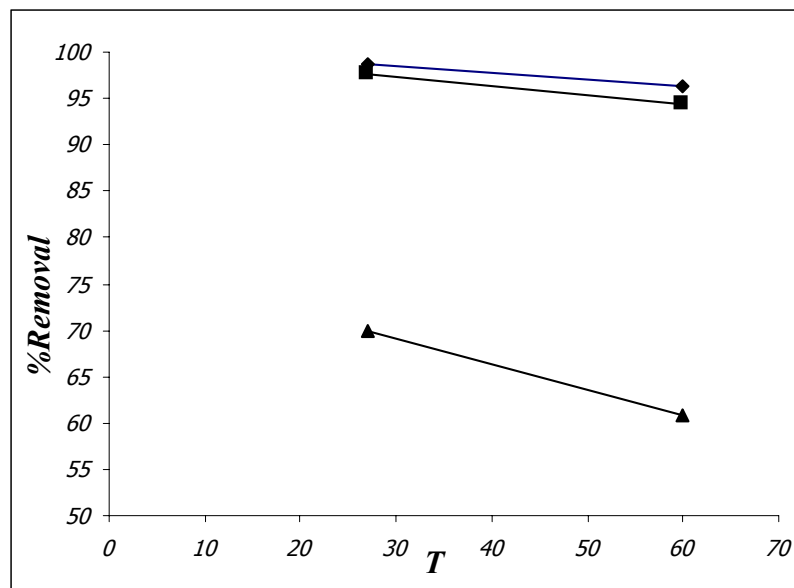


T: °C    ♦:                    ♦:                    ▲:



T: °C    ■:                    ♦:                    ▲:





T: °C    ■:    ◆:    ▲:

pH

pH = 5

pH    pH=3

%)

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**Reference**

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