

## حسین

\*

مریی پژوهشی گروه اکولوژی مرکز بین المللی علوم و تکنولوژی پیشرفته و علوم محیطی  
۲- استادیار گروه زیست شناسی دانشگاه شهید باهنر کرمان  
۳- کارشناس ارشد بیوشیمی مرکز بین المللی علوم و تکنولوژی پیشرفته و علوم محیطی  
تاریخ دریافت: // تاریخ پذیرش: //

pH

## کلید واژه

) نیست.

(

زمینه

SO<sub>3</sub> H<sub>2</sub>S SO<sub>2</sub>

(Acharya, 2001, Anushree, 2000)

بیشتر از

(Juszczak, 1995)

(Prayuenyong ,2002)

**مواد و روش‌ها**

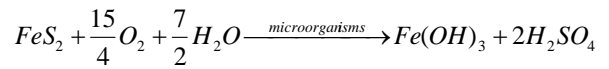
(Fuseler, 1996)

XRF (Schippersm, 1999)

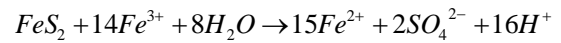
( ) ( )

( )

:( )



( )



SiO <sub>2</sub>	Al <sub>2</sub> O <sub>3</sub>	Fe <sub>2</sub> O <sub>3</sub>	CaO	SO <sub>3</sub>	Na <sub>2</sub> O	K <sub>2</sub> O	LOI
% /	% /	% /	% /	% /	% /	% /	% /

(Silverman ,1959) 9K

(Chen, 2000)

Juszczak, )

(1995

( )

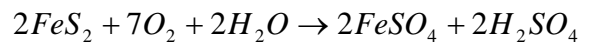
( )

(Fuseler, 1996)

( )

317 9K

:( )



9K (Silverman, 1959)	g.l	(Chen, 2000)	g.l
(NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub>		(NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub>	/
K <sub>2</sub> HPO <sub>4</sub>	/	K <sub>2</sub> HPO <sub>4</sub>	/
MgSO <sub>4</sub> 7H <sub>2</sub> O	/	MgSO <sub>4</sub> 7H <sub>2</sub> O	/
KCl	/	CaCl <sub>2</sub>	/
		Sulphur	

pH

cc

(Bosecker ,1997)

Bataghelia, )

(NH<sub>4</sub>)<sub>2</sub>SO<sub>4</sub> 3.7 g/l, H<sub>3</sub>PO<sub>4</sub> 0.8 g/l, KOH 4.8 g/l, (1997

MgSO<sub>4</sub>. H<sub>2</sub>O .52g/l]

....

/ /

/ /

Donati, )

(1995

/

/

وسيلة

pH .

( )

pH

Pronab, )

( )

(1996

pH

pH

(Oser, 1965)

(Donati, 1995)

Excel

Acharya .

%

/

(Acharya, 2001)

( )

Anushree

( )

pH

(Schippersm, 1999)

)

:( )

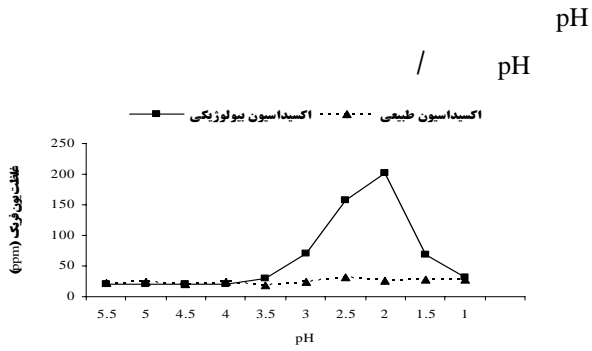
(

(Sasaki, 1995)

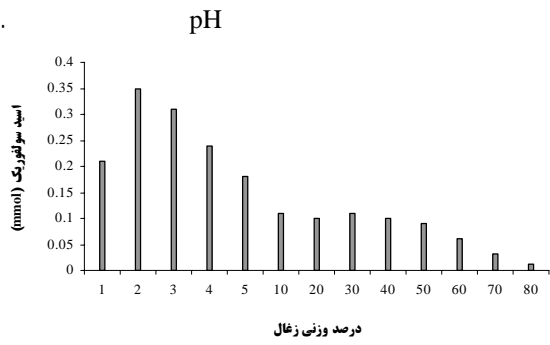
	+S	- S
<i>T.ferrooxidans</i>	/	/
<i>T. thiooxidans</i>	/	/
<i>T.ferrooxidans</i> + <i>T. thiooxidans</i>	/	/

pH ( ) pH

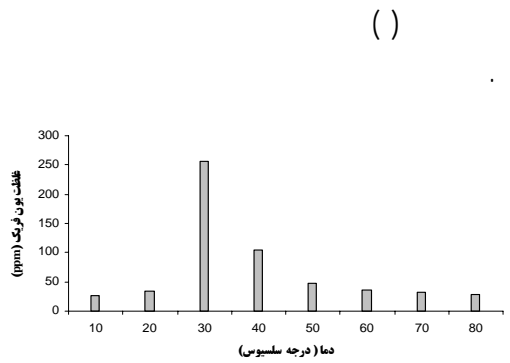
(Prayuenyong, 2002)



pH : ( ) / pH



دما



: ( )

: ( )

( )

( )

( )

ppm

(Juszczak, 1995)

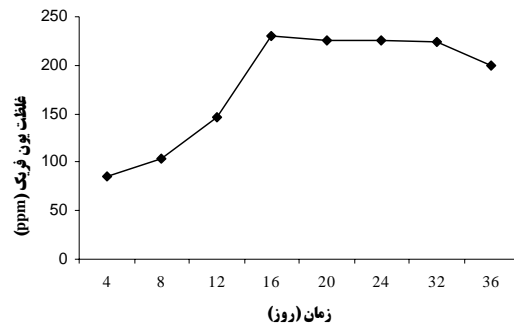
(Juszczak, 1995)

....

### نتیجه گیری کلی

( )  
( )

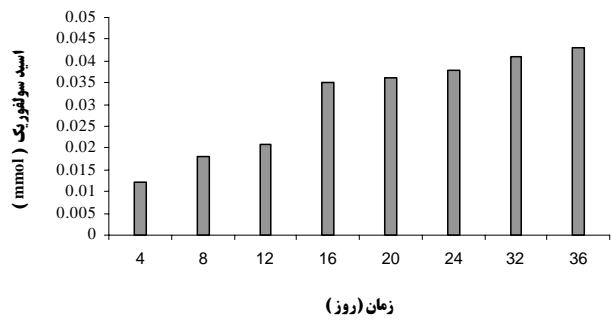
pH



:( )

### یادداشت‌ها

- 1-Biodesulphurization
- 2-Thiobacillus ferrooxidans
- 3-Thiobacillus thiooxidans
- 4-Thiobacillus caldus
- 5-Sulfolobus acidocaldarius
- 6-Acidianus brierlyei
- 7-Metallosphaera sedula
- 8-Desulfobrio desulfuricans
- 9-Leptospirillum ferrooxidans



:( )

---

Acharya, C., Kar, R.N. and Sukla, L.B. 2001. Bacterial removal of sulphur from three different coals. *Fuel*. 80: 2207 – 2216.

Anushree, M., Manisha, G. D. and Pradip, K. R. 2000 .Biodesulphurization of coal: rate enhancement by sulphur-grown cells. *Biotechnology Letters*. 22: 273 – 276.

Batagelia, F.,et al. 1998. The mutual effect of mixed thiobacilli and leptosprilli population on pyrite bioleaching. *Mineral Engineering*. 11(2): 195 - 205.

Bosecker, K. 1997. Bioleaching, metal solubilization by microorganisms. *FMES Microbiology Reviews*. 20: 591-604.

Chen, S. and Lin, J. 2001. Bioleaching of heavy metals from sediment: significance of pH. *Chemosphere*. 44: 1093-1102.

Onati, E.,et al. 1995. Bioleaching of covellite using pure and mixed cultures of *Thiobacillus ferrooxidans* and *Thiobacillus thiooxidans*. *Process Biochemistry*. 31: 129 – 134.

Fuseler, K.,et al. 1996. A common pathway of sulfide oxidation by sulfat- reducing bacteria. *FEMS Microbiology Letters*. 144: 129–134.

Juszczak, A.,et al. 1995. Microbial desulphurization of coal with *Thiobacillus ferrooxidans* bacteria. *Fuel*. 74: 725 – 728.

Oser, B. L. 1965. Hawk's Physiological chemistry, 14th ed. New York: McGraw Hill.1094-1096.

Prayuenyong, P. 2002. Coal biodesulphurization processes. *Journal Science Technology*. 24: 493–507.

Pronab, K. B. and Mrinal, K. B. 1996. Sulphur in Assam coal. *Fuel Processing Technology*. 46: 83 – 97.

Sasaki, K.,et al. 1995. Confirmation of sulphur- rich layer on pyrite after oxidative dissolution by Fe (III) ions around pH 2. *Geochimica et Cosmochimica Acta*. 59: 3155 – 3158.

Schippersm, A., Rohwerder, T. and Sand, W. 1999. Intermediary sulphur compounds in pyrite oxidation: implications for bioleaching and biodepyritization of coal. *Appl Microbiology Biotechnol*. 52: 104 – 110.

Silverman, M. P. and Lundgren, D.G. 1959. Studies on the chemo-autotrophic iron bacterium *ferrobacillus ferrooxidans*. In: An improved medium and a harvesting procedure for securing high cell yields. *Journal of Bacteriology*. 77: 642 – 647.