

// ()
// , ,

*

:

:

/

:

H_2S

(%)

:

H_2S

:

(H_2S)

()

massoudi@sbmu.ac.ir

,
,
,

Hartikainen ()
CS₂ H₂S

%
Morgan (EBRT)
()

()

Park ()

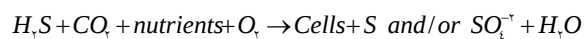
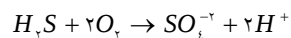
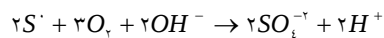
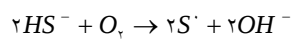
NH₃ H₂S ()

()

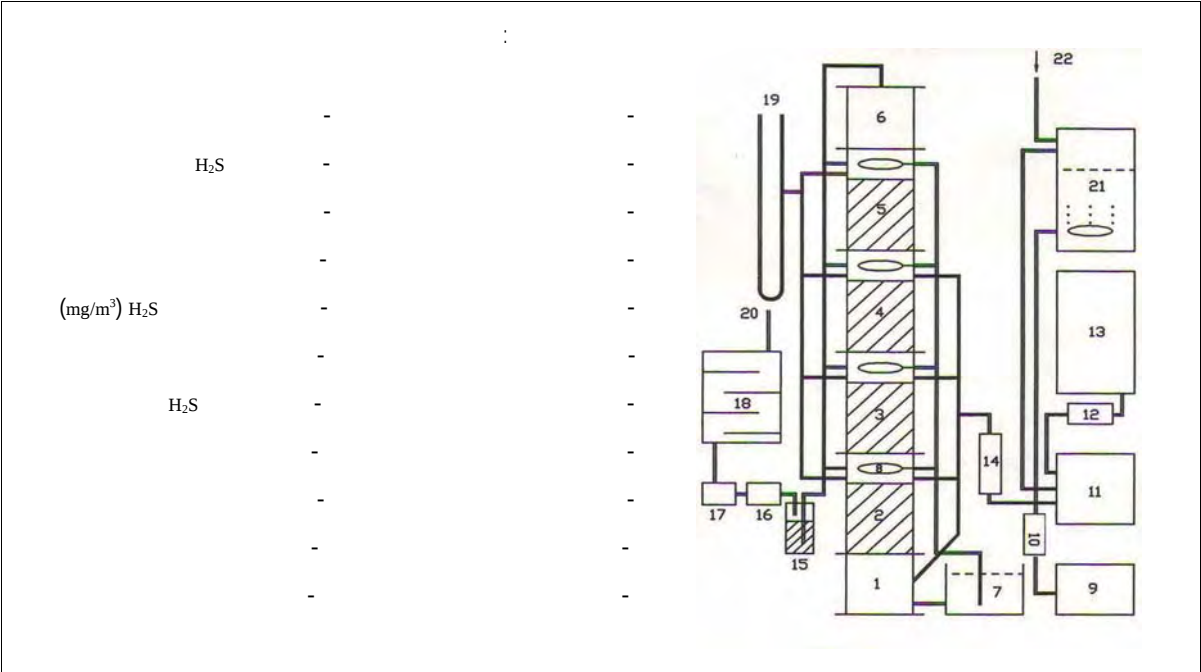
()

:()

()



/			
		/	
		)	
H ₂ S			
		.()	
		(	
pH .		.()	
.()		/ - /	
pH		H ₂ S	
pH		-	
		H ₂ S	
H ₂ S			
H ₂ S		/	
.()			
H ₂ S		H ₂ S	
H ₂ S			
Micropac plus		Na ₂ S	
± /		H ₂ S	
sumone		danfouse	
		$3Na_2S + 2H_3PO_4 \rightarrow 3H_2S + 2Na_3PO_4$	
		(%)	



H₂S

H₂S

(gr/m ³ .min)	(gr/m ³ .min)	(%)	(min) (EBRT)	(°C)	(%)	(mg/m ³)	(mg/m ³)	(Lit/min)
/	/	/	/			/	/	
/	/	/	/	/		/	/	
/	/	/	/			/	/	
/	/	/	/			/	/	
/	/	/	/			/	/	
/	/	/	/			/	/	
/	/	/	/			/	/	
/	/	/	/	/		/	/	
/	/	/	/			/	/	

/								
-								
H ₂ S								
(gr/m ³ .min)	(gr/m ³ .min)	(%)	(min) (EBRT)	(°C)	(%)	(mg/m ³)	(mg/m ³)	(Lit/min)
/	/	/	/	/		/	/	
/	/	/	/	/		/	/	
/	/	/	/			/	/	
/	/	/	/	/		/	/	
/	/	/	/	/		/	/	
/	/	/	/	/		/	/	
/	/	/	/	/		/	/	
/	/	/	/	/		/	/	
/	/	/	/	/		/	/	

-								
H ₂ S								
(gr/m ³ .min)	(gr/m ³ .min)	(%)	(min) (EBRT)	(°C)	(%)	(mg/m ³)	(mg/m ³)	(Lit/min)
/	/		/	/			/	
/	/		/	/			/	
/	/		/	/			/	
/	/		/	/			/	
/	/		/	/			/	
/	/		/	/			/	
/	/		/	/			/	
/	/		/	/			/	
/	/		/	/			/	

H₂S

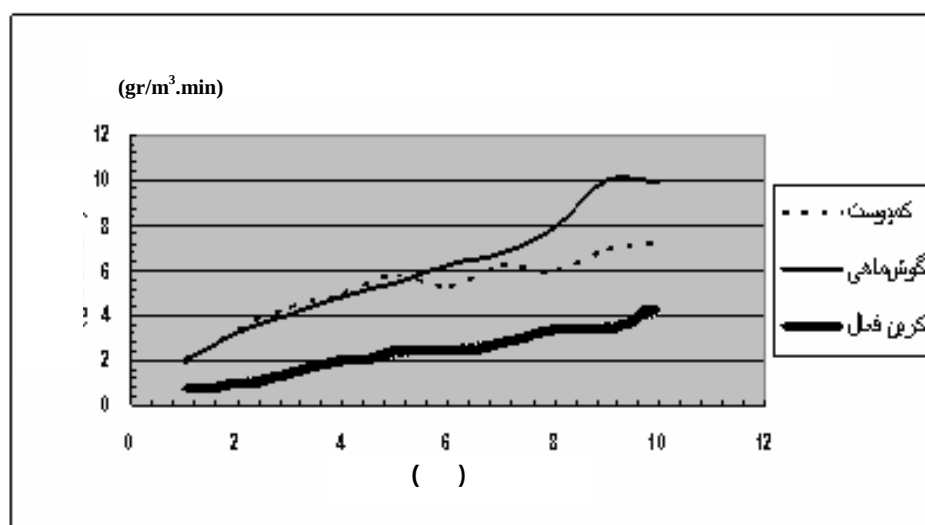
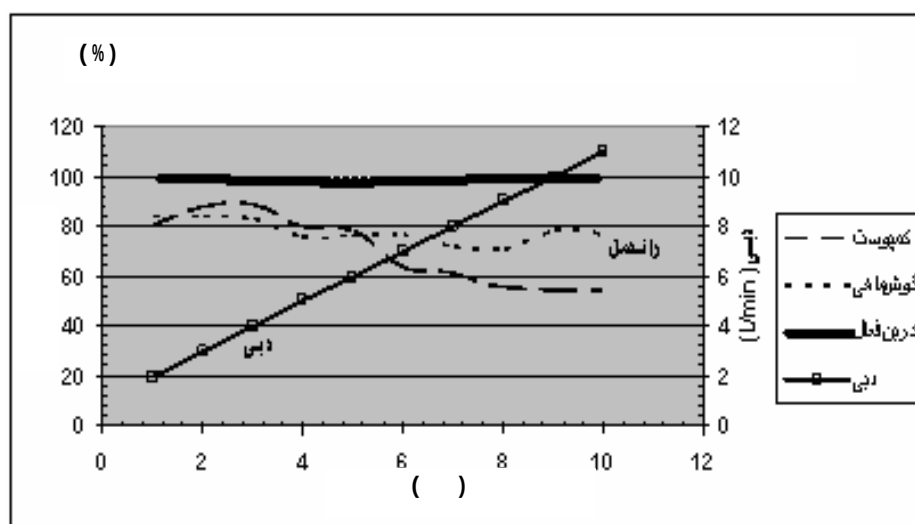
(EBRT)

H_2S

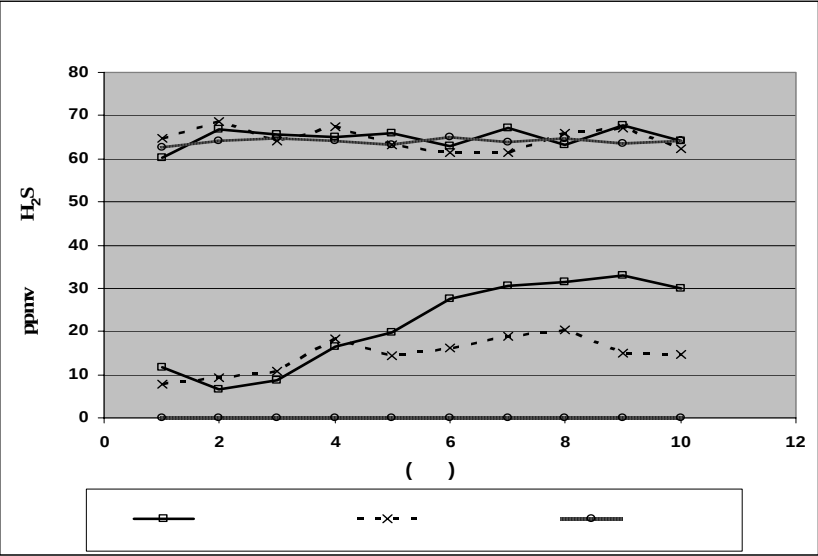
(%)

 H_2S

pH: - /



(EC)



SPSS

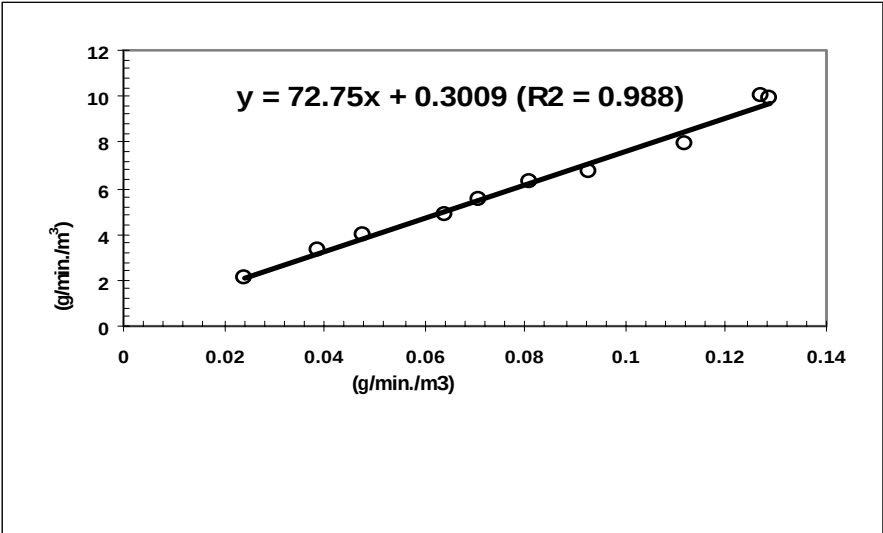
(EBRT)

paired t-test

($P < /$)

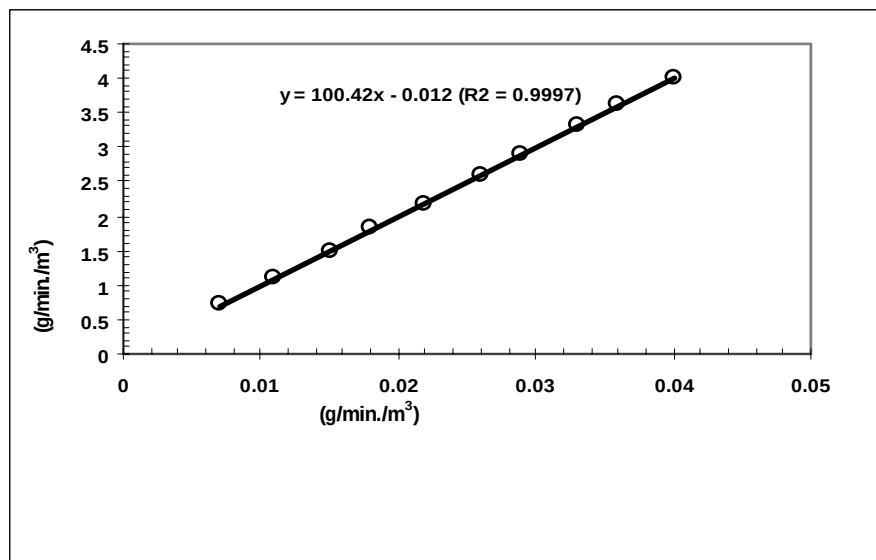
EBRT

($P < /$)



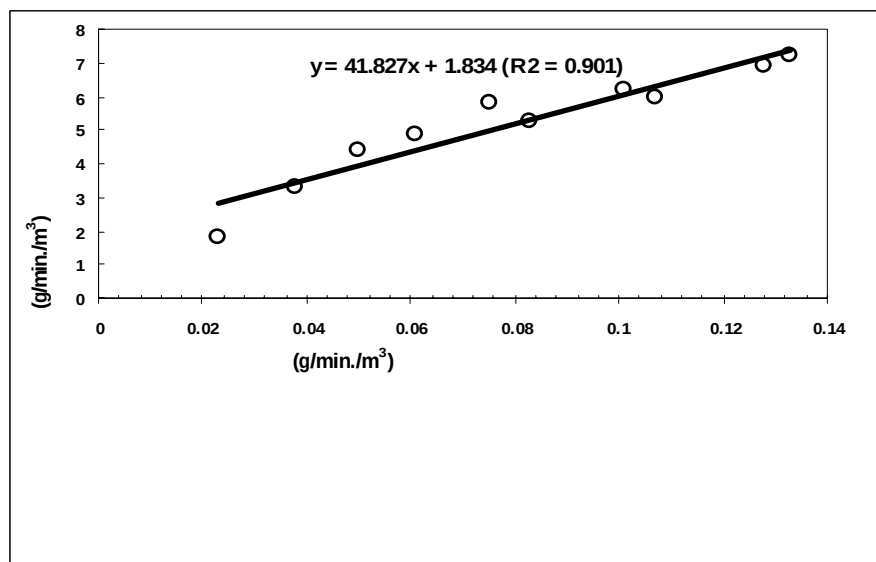
H_2S

(EC)

 H_2S

(EC)

-

 H_2S

(EC)

-

EC

/ /

(EC)

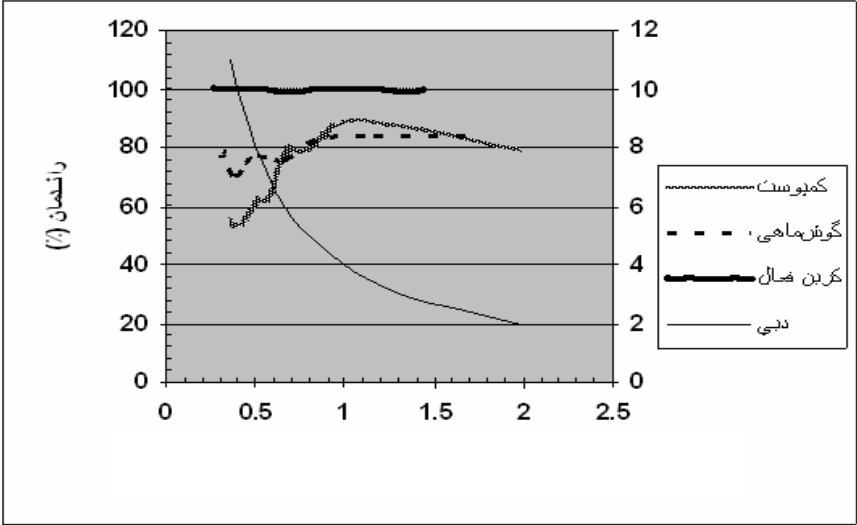
g/min.m³ /

/ /

g/min.m³ /

EC

(P< /)



H₂S EBRT -

()

H₂S

/ /

()

(EBRT)

/ /

()

H₂S

...

(... CS₂ NH₃ VOC)

)

.(

REFERENCES

1. Syracuse Research Corporation., United States. Agency for Toxic Substances and Disease Registry. Toxicological profile for hydrogen sulfide. 2004 Available from: URL: <http://www.atsdr.cdc.gov/toxprofiles/tp114.html>

-
2. Jones K, Martinez A, Rizwan M, Boswell J. Sulfur toxicity and media capacity for H₂S removal in biofilters packed with a natural or a commercial granular medium. *J Air Waste Manag Assoc* 2005; 55(4): 415-20.
 3. Gonzalez-Martinez S, Millan T, Gonzalez-Barcelo O. Biological aerated filtration of municipal wastewater using a low-cost filtration media. *Water Sci Technol* 2007; 55(7): 255-62.
 4. Jones K, Martinez A, Maroo K, Boswell J, Deshpande S, Boswell J, et al. Kinetic Evaluation of H₂S and Ammonia Biofiltration for Air Emissions Control. *J Air Waste Manag Assoc* 2003; 45(4): 251-62.
 5. Lee EY, Cho KS, Ryu HW. Simultaneous removal of H₂S and NH₃ in biofilter inoculated with *Acidithiobacillus thiooxidans* TAS. *J Biosci Bioengin* 2005; 99(6): 611-5.
 6. van Groenestijn JW, Hesselink PGM. Biotechniques for air pollution control. *Biodegradation* 1993; 4(4): 283-301.
 7. Wani AH, Branion RMR, Lau AK. Degradation kinetics of biofilter media treating reduced sulfur odors and VOCs. *J Air Waste Manag Assoc* 1998; 48(12): 1183-90.
 8. Hirai M, Ohtake M, Shoda M. Removal kinetics of hydrogen sulfide, methanethiol and dimethyl sulfide by peat biofilters. *J Ferment Bioeng* 1990; 70(5): 334-9.
 9. Hartikainen T, Ruuskanen J, Martikainen PJ. Carbon disulfide and hydrogen sulfide removal with a peat biofilter. *J Air Waste Manag Assoc* 2001; 51(3): 387-92.
 10. Montoya A, Sendt K, Haynes BS. Gas-phase interaction of H₂S with O₂: A kinetic and quantum chemistry study of the potential energy surface. *J Phys Chem* 2005; 109(6): 1057-62.
 11. Morgan-Sagastume JM, Noyola A, Revah S, Ergas SJ. Changes in physical properties of a compost biofilter treating hydrogen sulfide. *J Air Waste Manag Assoc* 2003; 53(8): 1011-21.
 12. Park SJ, Nam SL, Choi ES. Removal of odor emitted from composting facilities using a porous ceramic biofilter. *Water Sci Technol* 2001; 44(9): 301-8.
 13. Kim HS, Kim YJ, Chung JS, Xie Q. Long-term operation of a biofilter for simultaneous removal of H₂S and NH₃. *J Air Waste Manag Assoc* 2002; 52(12): 1389-98.
 14. Chung YC, Lin YY, Tseng CP. Operational characteristics of effective removal of H₂S and NH₃ waste gases by activated carbon biofilter. *J Air Waste Manag Assoc* 2004; 54(4): 450-8.