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چکیده

واژه‌های کلیدی:

مقدمه

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آزمون‌های آزمایشگاهی
روش انجام آزمایش

$$\Delta \varepsilon_{ji}(\sigma) = \varepsilon_j(\sigma) - \varepsilon_i(\sigma) ; j > i \quad ()$$

$$\varepsilon_j(\sigma) \quad \varepsilon_i(\sigma) \quad \sigma$$

j i ()

[]

(/ KN/m²)
[] ISRM

[]
()

ISRM

()

تهیه نمونه

()

[]

mm



نتایج آزمون‌ها

[]

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()
()

() $(\Delta\varepsilon_{2,1})$

() $(\Delta\varepsilon_{3,2})$

$(\Delta\varepsilon_{4,3})$

()

$(\Delta\varepsilon_{2,1})$

mm

()

σ	σ			(m)
C_1	B_1	A_1		/
			(mm)	
/	/	/	(mm)	/
σ	σ			
C_2	B_2	A_2		/
			(mm)	
/	/	/	(mm)	/
σ	σ			
C_3	B_3	A_3		/
			(mm)	
/	/	/	(mm)	

دستگاه آزمایش

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$(\Delta \varepsilon_{2,1})$

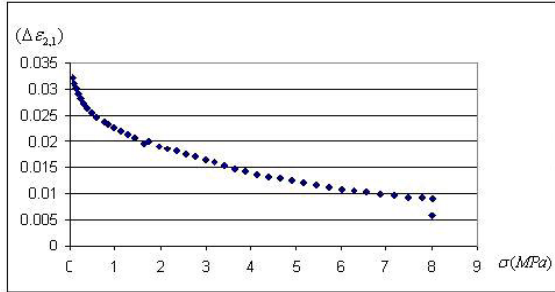
$(\Delta \varepsilon_{3,2})$

()

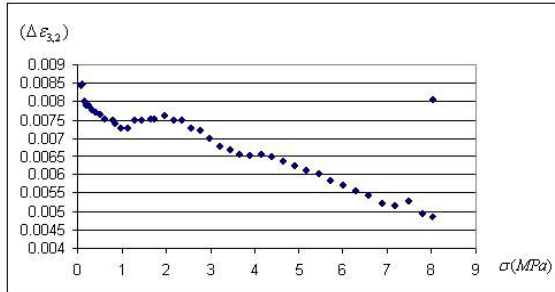
$(\Delta \varepsilon_{4,3})$

$(\Delta \varepsilon_{4,3})$

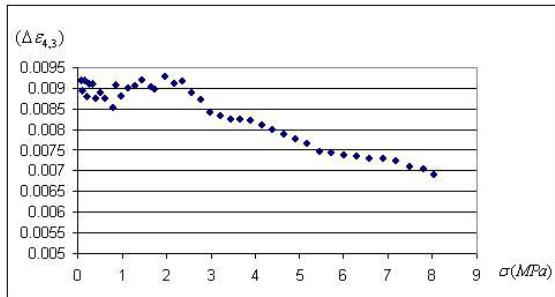
() ()



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B_1 - :

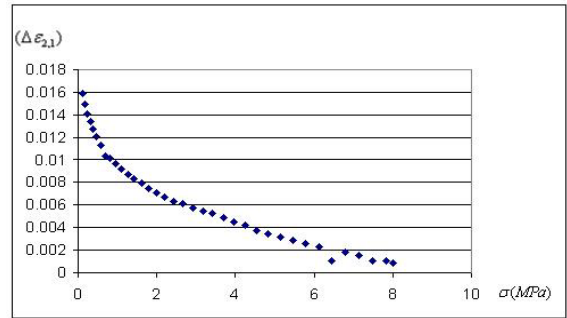
/ :

o	o		
C ₂	B ₂	A ₂	
/	/	/	(MPa)

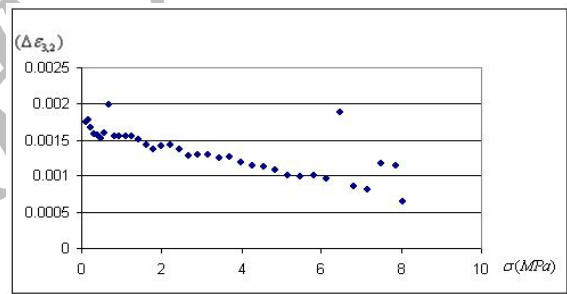
/ :

o	o		
C ₃	B ₃	A ₃	
/	/	/	(MPa)

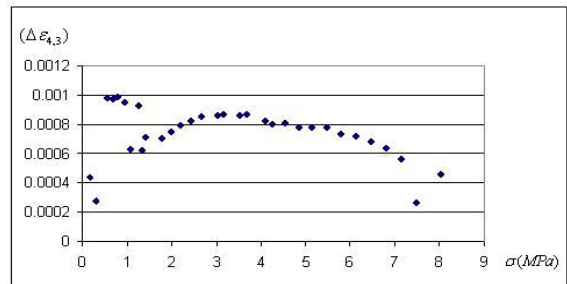
()



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A_1 - :

:

o	o			(m)
C ₁	B ₁	A ₁		/
/	/	/	(MPa)	

/ /

/

() ()

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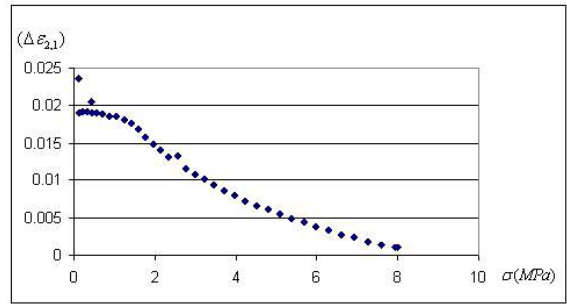
$$\sigma_P = \frac{1}{2}(\sigma_1 + \sigma_2) + \frac{1}{2}(\sigma_1 - \sigma_2) \cos 2\theta \quad ()$$

$$\sigma_Q = \frac{1}{2}(\sigma_1 + \sigma_2) + \frac{1}{2}(\sigma_1 - \sigma_2) \cos 2(\theta + \alpha) \quad ()$$

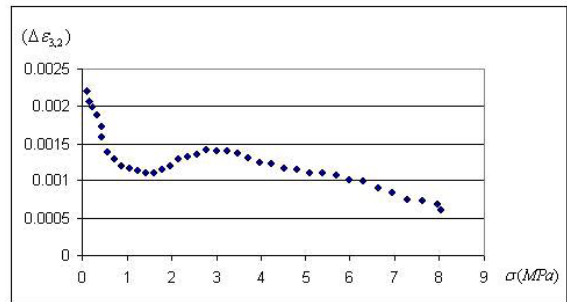
$$\sigma_R = \frac{1}{2}(\sigma_1 + \sigma_2) + \frac{1}{2}(\sigma_1 - \sigma_2) \cos 2(\theta + \alpha + \beta) \quad ()$$

:

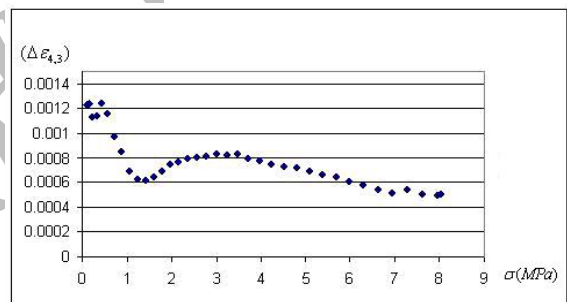
σ_2 (MPa)	σ_1 (MPa)	(m)
/	/	/
/	/	/
/	/	/



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R ² (%)	σ_2 (MPa)	σ_1 (MPa)	α' (°)	(m)
/	/	/	/	/
/	/	/	/	/
/	/	/	/	/

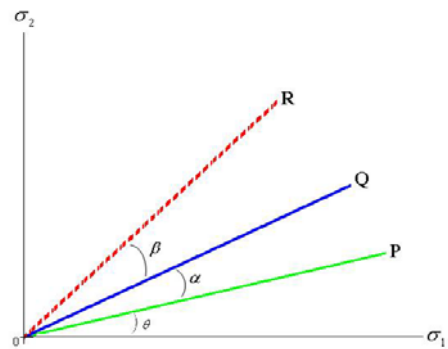
σ_1, σ_2

σ_1

α

C₁

- :



[] :

تجزیه و تحلیل

R Q P

σ_2

σ_1

() ()

$\sigma_R, \sigma_Q, \sigma_P$

[]

$$\nu = / \quad E = \text{GPa}$$

$$\Delta\varepsilon_{2,1}$$

(%)	(MPa)			(MPa)
	/	/	/	σ_1
	/	/	/	σ_2

نتیجه گیری

فهرست علائم

(MPa)			σ_1	
(MPa)			σ_2	
(MPa)	Q		σ_Q	
(MPa)	R		σ_R	
()	σ_1	P	θ	
()	P	Q	α	
()	Q	R	β	(/)
()		σ_1	α	(/)
(GPa)			E	
(--)			ν	
(MPa)			σ	
(MPa)	i		$\varepsilon_i(\sigma)$	
(MPa)	P		σ_P	

مراجع

- 1 - Brady, B. H. G. and Brown, E. T. B. (1993). *Rock mechanics for underground mining*. London: Chapman and Hall, PP: 157-158.
- 2 - Ahmadi M. and Samandary B. (2007). *Feasibility study of stress estimation by rock cores*, 3rd Iranian Rock Mechanics Conference October 2007 Amirkabir University of Technology Tehran Iran (in Persian).
- 3 - Villaescusa, E., Seto, M. and Baird, G. (2002). "Stress measurement from oriented core". *Int. J. Rock Mech. Min. Sci.* Vol. 39, PP. 603- 615.

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- 4 - Seto, M., Nag, D. K. and Vutukuri, V. S. (1999). "In situ stress measurement from rock cores using the acoustic emission method and deformation rate analysis". *Geotechnical and Geological Engineering*. Vol. 17, PP. 241-266.
 - 5 - Yamamoto, K., Kuwahara, Y. and Kato, N. (1990). "Deformation rate analysis: A new method for in situ stress estimation from inelastic deformation of rock samples under uni-axial compressions". *Tohoku Geophysics Journal*. Vol. 33, No 2, PP. 127- 147.
 - 6 - Seo, M., Utagawa, M. and Katsuyama, K. (2002). "Some fundamental studies on the AE method and its application to in-situ stress measurements in Japan". *Int. Workshop on the Application of Geophysics in Rock Engineering*. Toronto, Canada.
 - 7 - Holcomb, D. J. and Stevens, J. L. (1980). "The reversible Griffith crack: A viable model for dilatancy." *J. Feasibility Res*, Vol. 85, PP. 7101-7107.
 - 8 - Brown, E. T. (1981). *Rock characterization Testing & Monitoring ISRM Suggested method*, Pergamon press.
 - 9 - Goodman, R. E. (1989). *Introduction to rock mechanics*. 2nd. Edition Wiley, New York.
 - 10 - Dipl – Geophys, Koing. E. (2005). *In situ stress measurement with the interfiles borehole Slater along borehole DL2R*. No. 2506. Bakhtiyari Dam.

واژه های انگلیسی به ترتیب استفاده در متن

- 1 - Anelastic Strain Recovery (ASR)
- 2 - Differential Strain Curve Analysis (DSCA)
- 3 - Acoustic Emission (AE)
- 4 - Deformation Rate Analysis (DRA)
- 5 - Borhole
- 6 - Coring
- 7 - Instron