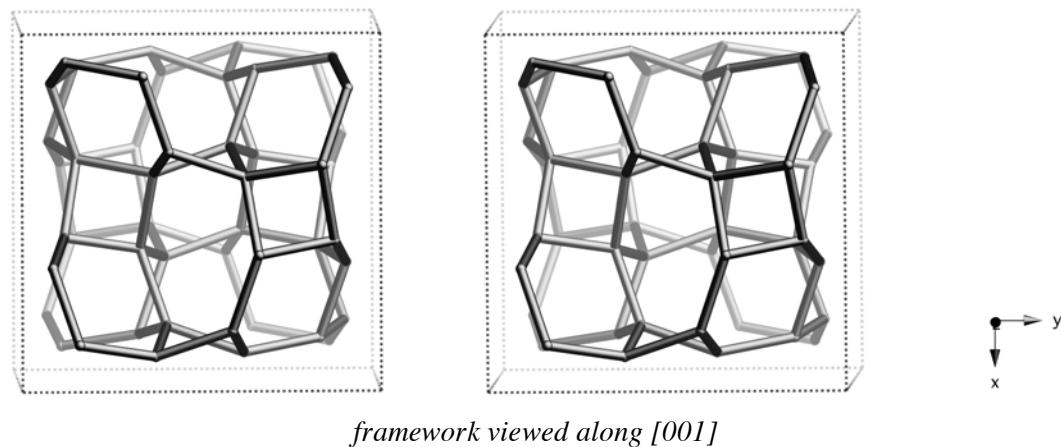


# ANA

*Ia $\bar{3}d$*

## Framework Type Data



**Idealized cell data:** cubic, *Ia $\bar{3}d$* ,  $a = 13.6\text{\AA}$

### Coordination sequences and vertex symbols:

T <sub>1</sub> (48,2)	4	10	22	39	60	87	118	154	196	242	4·4·6·6·8 <sub>4</sub> ·8 <sub>4</sub>
-----------------------	---	----	----	----	----	----	-----	-----	-----	-----	----------------------------------------

**Secondary building units:** 6-2 or 6 or 4-[1,1] or 1-4-1 or 4

### Materials with this framework type:

*Analcime <sup>(1-3)</sup>	Cs-Na-(H <sub>2</sub> O) [Ga-Si-O]-ANA <sup>(13)</sup>	Hsianghualite <sup>(24)</sup>
[Al-Co-P-O]-ANA <sup>(4)</sup>	Cs <sub>16</sub>  [Cu <sub>8</sub> Si <sub>40</sub> O <sub>96</sub> ]-ANA <sup>(14)</sup>	Leucite <sup>(25)</sup>
[Al-Si-P-O]-ANA <sup>(5)</sup>	K-I [Be-B-P-O]-ANA <sup>(15)</sup>	Na-B <sup>(26)</sup>
[Ga-Ge-O]-ANA <sup>(6)</sup>	K-I [B-Si-O]-ANA <sup>(16)</sup>	Pollucite <sup>(27)</sup>
[Zn-As-O]-ANA <sup>(7)</sup>	Li-I [Li-Zn-Si-O]-ANA <sup>(17)</sup>	Synthetic analcime <sup>(28)</sup>
(NH <sub>4</sub> ) <sub>4</sub> -I [Be-B-P-O]-ANA <sup>(8)</sup>	Li-Na [Al-Si-O]-ANA <sup>(18)</sup>	Synthetic hsinghualite <sup>(29)</sup>
(NH <sub>4</sub> ) <sub>4</sub> -I [Zn-Ga-P-O]-ANA <sup>(9)</sup>	Na-I [Be-B-P-O]-ANA <sup>(19)</sup>	Synthetic wairakite <sup>(30)</sup>
Cs- [Al-Ge-O]-ANA <sup>(10)</sup>	AlPO-24 <sup>(20)</sup>	Wairakite, compositional variants <sup>(31)</sup>
Cs- [Be-Si-O]-ANA <sup>(11)</sup>	AlPO <sub>4</sub> -pollucite <sup>(21)</sup>	
Cs-Fel [Si-O]-ANA <sup>(12)</sup>	Ammonoleucite <sup>(22)</sup>	
	Ca-D <sup>(23)</sup>	

### References:

- (1) Taylor, W.H. *Z. Kristallogr.*, **74**, 1-19 (1930)
- (2) Knowles, C.R., Rinaldi, F.F. and Smith, J.V. *Indian Mineral.*, **6**, 127- (1965)
- (3) Ferraris, G., Jones, D.W. and Yerkess, J. Z. *Kristallogr.*, **135**, 240-252 (1972)
- (4) Feng, P., Bu, X. and Stucky, G.D. *Nature*, **388**, 735-741 (1997)
- (5) Artioli, G., Pluth, J.J. and Smith, J.V. *Acta Crystallogr.*, **C40**, 214-217 (1984)
- (6) Bu, X., Feng, P., Gier, T.E., Zhao, D. and Stucky, G.D. *J. Am. Chem. Soc.*, **120**, 13389-13397 (1998)
- (7) Feng, P., Zhang, T. and Bu, X. *J. Am. Chem. Soc.*, **123**, 8608-8609 (2001)
- (8) Zhang, H.Y., Chen, Z.X., Weng, L.H., Zhou, Y.M. and Zhao, D.Y. *Microporous Mesoporous Mat.*, **57**, 309-316 (2003)

# ANA

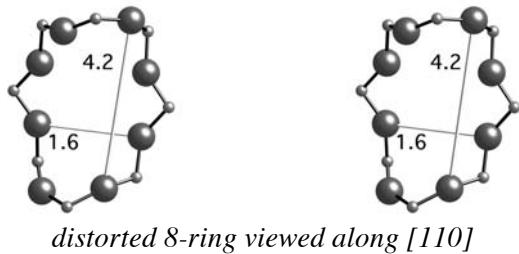
## Type Material: Analcime

### Type Material Data

**Crystal chemical data:**  $\text{Na}_{16}(\text{H}_2\text{O})_{16}\text{Al}_{16}\text{Si}_{32}\text{O}_{96}$ -ANA  
cubic,  $I\bar{a}3d$ ,  $a = 13.73\text{\AA}$ <sup>(3)</sup>

**Framework density:**  $18.5 \text{ T}/1000\text{\AA}^3$

**Channels:** irregular channels formed by highly distorted 8-rings



### References (cont.):

- (9) Logar, N.Z., Mrak, M., Kaucic, V. and Golobic, A. *J. Solid State Chem.*, **156**, 480-486 (2001)
- (10) Tripathi, A. and Parise, J.B. *Microporous Mesoporous Mat.*, **52**, 65-78 (2002)
- (11) Torres-Martines, L.M., Gard, J.A., Howie, R.A. and West, A.R. *J. Solid State Chem.*, **51**, 100-103 (1984)
- (12) Kopp, O.C., Harris, L.A., Clark, G.W. and Yakel, H.L. *Am. Mineral.*, **48**, 100-109 (1963)
- (13) Yelon, W.B., Xie, D., Newsam, J.M. and Dunn, J. *Zeolites*, **10**, 553-558 (1990)
- (14) Heinrich, A.R. and Baerlocher, Ch. *Acta Crystallogr.*, **C47**, 237-241 (1991)
- (15) Zhang, H.Y., Chen, Z.X., Weng, L.H., Zhou, Y.M. and Zhao, D.Y. *Microporous Mesoporous Mat.*, **57**, 309-316 (2003)
- (16) Millini, R., Montanari, L. and Bellussi, G. *Microporous Materials*, **1**, 9-15 (1993)
- (17) Park, S.H., Gies, H., Toby, B.H. and Parise, J.B. *Chem. Mater.*, **14**, 3187-3196 (2002)
- (18) Seretkin, Y.V., Bakakin, V.V. and Bazhan, I.S. *J. Struct. Chem.*, **46**, 659-671 (2005)
- (19) Zhang, H.Y., Chen, Z.X., Weng, L.H., Zhou, Y.M. and Zhao, D.Y. *Microporous Mesoporous Mat.*, **57**, 309-316 (2003)
- (20) Wilson, S.T., Lok, B.M., Messina, C.A., Cannan, T.R. and Flanigen, E.M. *J. Am. Chem. Soc.*, **104**, 1146-1147 (1982)
- (21) Keller, E.B. *Ph.D. Thesis, ETH, Zürich, Switzerland* (1987)
- (22) Hori, H., Nagashima, K., Yamada, M., Miyawaki, R. and Marubashi, T. *Am. Mineral.*, **71**, 1022-1027 (1986)
- (23) Ames, L.L. and Sand, L.B. *Am. Mineral.*, **43**, 476-480 (1958)
- (24) Wen-Hui, H., Saho-Hua, T., Kung-Hai, W., Chun-Lin, C. and Cheng Chi, Y. *Am. Mineral.*, **44**, 1327-1328 (1959)
- (25) Peacor, D.R. *Z. Kristallogr.*, **127**, 213-224 (1968)
- (26) Barrer, R.M. and White, E.A.D. *J. Chem. Soc.*, 1561-1571 (1952)
- (27) Nel, H.J. *Am. Mineral.*, **29**, 443-451 (1944)
- (28) Ghobarkar, H. and Franke, W. *Cryst. Res. Technol.*, 1071-1075 (1986)
- (29) Ghobarkar, H., Schaeff, O. and Knauth, P. *Annal. Chimie, Science Matériaux*, **24**, 209-215 (1999)
- (30) Ghobarkar, H. *Cryst. Res. Technol.*, K90-92 (1985)
- (31) Takeuchi, Y., Mazzi, F., Haga, N. and Galli, E. *Am. Mineral.*, **64**, 993-1001 (1979)