

position in between the fields of protoenstatite and low-clinoenstatite on one hand and protoenstatite and enstatite on the other hand, it would be very informative to have an exact knowledge about the structures of the respective end members. In the case of the rhombic enstatite exact and concordant structure analyses are available (WARREN and MODELL, 1930; LINDEMANN, 1961), but there is a controversy on the structures of low-clinoenstatite and protoenstatite between MORIMOTO *et al.* (1960) and SMITH (1959) on one side and LINDEMANN (1960) on the other side. Thus a new structural investigation of the polymorphs of $MgSiO_3$ seems to be necessary. These investigations have been started.

References

- AKIMOTO, S., T. KATURA, Y. SYONO, H. FUJISAWA and E. KOMADA (1965) Polymorphic transitions of pyroxenes $FeSiO_3$ and $CoSiO_3$ at high pressures and temperatures, *J. Geophys. Res.* **70**, 5269-5278.
- BOWEN, N. L. and J. F. SCHAIRER (1935) The system $MgO-FeO-SiO_2$, *Am. J. Sci.* **29**, 151-217.
- BOYD, F. R. and J. L. ENGLAND (1965) The rhombic enstatite-clinoenstatite inversion, *Ann. Rept. Geophys. Lab. Carnegie Inst. Wash.* 1964-1965, 117-120.
- BROWN, W. L. and J. V. SMITH (1963) High-temperature X-ray studies on the polymorphism of $MgSiO_3$, *Z. Krist.* **118**, 186-212.
- FOSTER, W. R. (1951) High-temperature X-ray diffraction study of the polymorphism of $MgSiO_3$, *J. Am. Ceram. Soc.* **34**, 255-259.
- HARALDSEN, H. (1930) Beiträge zur Kenntnis der thermischen Umbildung des Talks, *Neues Jahrb. Mineral., Abhandl., Beilage Band 61 A*, 139-164.
- LINDEMANN, W. (1960) Strukturuntersuchung der Kettensilikate unter besonderer Berücksichtigung der Mg-Pyroxene, Habilitationsschrift, Universität Erlangen.
- LINDEMANN, W. (1961) Beitrag zur Enstatitstruktur (Verfeinerung der Parameterwerte), *Neues Jahrb. Mineral., Monatsh.* (10), 226-233.
- LINDEMANN, W. (1961) Gitterkonstanten, Raumgruppe und Parameter des γ - $MgSiO_3$, *Naturwissenschaften* **48** (11), 428-429.
- LINDEMANN, W. (1951) Darstellung und Kristallstruktur des γ - $MgSiO_3$, Dissertation (Univ. Erlangen).
- MAJUMDAR, A. J., H. A. MCKINSTRY and RUSTUM ROY (1964) Thermodynamic parameters for the α - β -quartz and α - β -cristobalite transitions, *J. Phys. Chem. Solids* **25**, 1487-1489.
- MORIMOTO, N., D. E. APPLEMAN and H. T. EVANS, JR. (1960) The crystal structure of clinoenstatite and pigeonite, *Z. Krist.* **114**, 120-147.
- PEROTTA, A. J. and D. A. STEPHENSON (1965) Clinoenstatite: High-low inversion, *AAAS* **148**, 1090-1091.
- SARVER, J. F. and F. A. HUMMEL (1962) Stability relations of magnesium metasilicate polymorphs, *J. Am. Ceram. Soc.* **45**, 152-156.
- SCHWAB, R. G. (1967) Die Bedeutung und die experimentelle Beherrschung des Sauerstoffpartialdruckes bei der Synthese und Untersuchung Fe^{2+} -haltiger Silikate, *Neues Jahrb. Mineral., Monatsh.* (7/8), 244-254.
- SMITH, J. V. (1959) The crystal structure of protoenstatite $MgSiO_3$, *Acta Cryst.* **12**, 515-519.
- WARREN, B. E. and D. I. MODELL (1930) The structure of enstatite $MgSiO_3$, *Z. Krist.* **75**, 1-14.

= 86 cal/mole)
e in an exo-
quenching
ermal, but at

ce has to be
ature modi-
ot identical
EROTTA and
ining prod-

result, that
 $MgSiO_3$ in
temperature
stability of
ent of about
 $FeSiO_3$.
-clinoensta-
ably be still
re it is possi-
out of talc
atite has its