

Kinetic studies by the present authors^{4,19} evaluate effects of pressure, temperature, displacive shearing stresses and even of minute traces of moisture in several solid-state reactions involving amorphous or crystalline compounds. The use of displacive shearing stresses have helped resolve the polymorphic relations in ThSiO_4 .²⁰

Densification of glasses²¹ and crystallisation of glasses²² under pressure have received considerable attention.

Acknowledgment

This high pressure research programme above 10 kb is supported by the Office of Naval Research, Metallurgy Branch. Various aspects of this programme were covered with the active co-operation and assistance of Messrs. Myers, E. Hryckowian and R. Zeto.

References

- ¹ Bridgman, P. W., *Phys. Rev.*, 1935, 48, 825
- ² Griggs, D. T., & Kennedy, G. C., *Amer. J. Sci.*, 1956, 254, 722
- ³ Coes, L., *Science*, 1953, 118, 131
- ⁴ Drickamer, H. G., 'Optical studies at high pressure' in 'Progress in Very High Pressure Research', Bundy, Hibbard & Strong, eds., 1961 (New York: John Wiley & Sons)
- ⁵ Dachille, F., & Roy, R., 'Influence of "Displacive-Shearing" Stresses on the Kinetics of Reconstructive Transformations Effected by Pressure in range 0—100,000 Bars', in 'Reactivity of Solids', De Boer, J. H., 1961, p. 504 (New York: Elsevier)
- ⁶ Drickamer, H. G., & Larsen, H. A., *J. phys. Chem.*, 1957, 61, 1249
- ⁷ Griggs, D. T., Turner, F. J., & Heard, H. C., *Mem. geol. Soc. Amer.*, 1960, No. 79
- ⁸ Bridgman, P. W., *Proc. Amer. Acad.*, 1942, 74, 425
- ⁹ Myers, M. B., Dachille, F., & Roy, R., *Amer. Ceram. Soc. Bull.*, 1962, 41, 225
- ¹⁰ Kennedy, G. C., & LaMori, P. N., 'Some Fixed Points on the High Pressure Scale', in 'Progress in Very High Pressure Research', Bundy, Hibbard & Strong, eds., 1961 (New York: John Wiley & Sons); Bundy, F. P., *J. Engng for Industry*, 1961, (May), 207
- ¹¹ Dachille, F., & Roy, R., 'Opposed Anvil Pressure Devices in Modern very High Pressure Techniques', ed. R. H. Wentorf, 1962 (Washington, D.C.: Butterworths Publications)
- ¹² White, W. B., Dachille, F., & Roy, R., *J. Amer. Ceram. Soc.*, 1961, 44, 170
- ¹³ Azzaria, L., & Dachille, F., *J. phys. Chem.*, 1961, 65, 889
- ¹⁴ Dachille, F., & Roy, R., *J. Amer. Ceram. Soc.*, 1959, 41, 78
- ¹⁵ Dachille, F., & Roy, R., *Amer. Ceram. Soc. Bull.*, 1962, 41, 225
- ¹⁶ Bates, C., White, W. B., & Roy, R., 'A new high-pressure form of ZnO ' (in preparation)
- ¹⁷ Dachille, F., & Roy, R., *Amer. J. Sci.*, 1960, 258, 225
- ¹⁸ Stubican, V., & Roy, R., *Proc. XVIIIth Int. Congr. pure appl. Chem.* (Montreal), 1961, p. 72 (abstract) (Univ. of Toronto Press)
- ¹⁹ Zeto, R. J., Dachille, F., & Roy, R., *Amer. ceram. Soc. Bull.*, 1962, 41, 245
- ²⁰ Dachille, F., & Roy, R., *Abstr. Geol. Soc. Amer., Annu. Mtg.*, 1961, Special Paper 68, p. 158
- ²¹ Cohen, H. M., & Roy, R., *J. Amer. ceram. Soc.*, 1961, 44, 523
- ²² Blinov, V., & Roy, R., *Amer. ceram. Soc. Bull.*, 1962, 41, 253

APPENDIX

| | | | |
|------------|---------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-------------------------------------------------------------------------------------------------|
| 66 HS | Molybdenum high-speed steel, Type 6-5-4-2. AISI-SAE Designation M-2 Source—Bethlehem Steel Co. | Stellite-25 | A cobalt-base alloy with good high-temperature properties Source—Haynes Stellite |
| Speed Star | Also an M-2 steel Source—Carpenter Steel Co. | Titanium carbide | Nickel cemented titanium carbide in various compositions as Kennatium, by Kennametal Inc. |
| TK | Tungsten base—9%, hot work type. AISI-SAE Designation H21 Source—Carpenter Steel Co. | Tungsten carbide | Cobalt cemented tungsten carbide in various compositions Source—General Electric; Kennametal |
| Rene' 41 | Also known as Alloy R-41 Vacuum melted, nickel base alloy with high strength in the 650—980° range Source—General Electric; Haynes Stellite | Tungsten | Special shapes made by Metallwerk Plansee, Tirol, Austria |