

# RHEOLOGY APPLICATIONS NOTE

## RHEOLOGY REFERENCE BOOKS

Rheology is an interdisciplinary subject, contributed to by mathematicians, physicists, physical chemists, colloid and polymers scientists, biologists, chemical and mechanical engineers. The science is well served in that many books have been produced by the leading practitioners, and the general quality is very high. Listed below are texts published since 1970.

### General

Barnes, H.A., Hutton, J.F. and Walters, K., An Introduction to Rheology, Elsevier, Amsterdam, 1989 (199pp).

Ferguson, J. and Kemblowski, Z., Applied Fluid Rheology, Elsevier, London, 1991 (323pp).

Haddad, Y.M., Viscoelasticity of Engineering Materials, Chapman and Hall, London, 1995 (378pp).

Leonov, A.I. and Prokunin, A.N., Non-linear Phenomena in Flows of Viscoelastic Polymer Fluids, Chapman and Hall, London, 1994 (475pp)

Macosko, C., Rheology, Principles, Measurements and Applications, VCH, New York, 1994 (549pp)

Sobotka, Z., Rheology of Materials and Engineering Structures, Elsevier, Amsterdam, 1984

Tanner, R.I., Engineering Rheology, Clarendon Press Oxford, New York, 1985 (451pp).

### Rheological Techniques

Collyer, A.A. and Clegg, D.W. (eds), Rheological Measurement, Elsevier, London, 1988 (647pp).

Dealy, J.M., Rheometers for Molten Plastics, Van Nostrand Reinhold, New York, 1982

Walters, K., Rheometry, Chapman and Hall, London, 1975 (278pp).

Whorlow, R.W., Rheological Techniques, Ellis Horwood, Chichester, 1992 (460pp).

### Polymer Rheology

Aklonis, J.H. and McKnight, W.J., Introduction to Polymer Viscoelasticity, 2nd edition, Wiley, New York, 1983 (249pp).

Brydson, J.A., Flow Properties of Polymer Melts, Iliffe, London, 1970 (226pp).

Cheremisinoff, N.P., An Introduction to Polymer Rheology and Processing, CRC Press, 1993 (223pp).

Cogswell, F.N., Polymer Melt Rheology, Wiley, New York, 1981 (178pp).

Collyer, A.A., Polymer Rheology and Processing, Chapman and Hall, 1990.

Dealy, J.M. and Wissbrun, K.F., Melt Rheology and its Role in Plastics Processing (Theory and Application), Van Nostrand-Reinhold, New York, 1990 (663pp).

Ferry, J.D., Viscoelastic Properties of Polymers, 3rd edition, Wiley, New York, 1980 (641pp)

Han, C.D., Rheology in Polymer Processing, Academic Press, New York, 1976

Nielsen, L.E., Polymer Rheology, Dekker, New York, 1977.

Larson, R.G., Constitutive Equations for Polymer Melts and Solutions, Butterworths, Boston, 1988 (364pp).

Yanovsky, Y.G., Polymer Rheology, Chapman and Hall, 1993

### **Other Materials**

Banfill, P.F.G, (ed), Rheology of Fresh Cement and Concrete, Spon, London, 1991 (373pp).

Conference proceedings: many short papers covering all practical and theoretical aspects, useful for the specialist.

Carter, R.E., (ed), Rheology of Food, Pharmaceutical and Biological Materials with General Rheology, Elsevier, London, 1990 (339pp).

Faridi, H. and Faubion, J.M. (eds), Dough Rheology and Baked Product Texture, Van Nostrand Reinhold, New York, 1990 (605pp).

Lapasin, R. and Prici, S., Rheology of Industrial Polysaccharides, Chapman and Hall, London, 1995 (620pp)

Steffe, J.F., Rheological Methods in Food Process Engineering, Freeman, Michigan, 1992 (228pp).

### **Theoretical Rheology**

Christensen, R.U., Theory of Viscoelasticity, Academic Press, New York, 1971.

Flugge, W., Viscoelasticity, Springer-Verlag, New York, 1975.

Hull, H.H., The Thermodynamics of Rheology, Society of Plastics Engineers, New York, 1995 (135pp).

Tschoegl, N.W., The Phenomenological Theory of Linear Viscoelastic Behaviour, Springer-Verlag, Berlin, 1989 (769pp).

### **Others texts**

Besides the above, there are several excellent chapters on rheology in more general texts. Among these are:

Graessley, W.W., Viscosity and Flow in Polymer Melts and Concentrated Solutions, in Physical Properties of Polymers, (eds) Mark, J.E., Eisenberg, A., Graessley, W.W., Mandelkern, L., Samulski, E.T., Koenig, J.L. and Wignall, G.D., American Chemical Society, Washington DC, 1993, pp97-143.

Hunter, R.J., Rheology of Colloidal Dispersions, in Hunter R.J. Foundations of Colloid Science, Oxford 1989 (pp993-1052)

Reynolds, P.A., in The Physics and Chemistry of Surface Coatings, Royal Society of Chemistry

Strivens, T.A., An Introduction to Rheology and The Rheology of Paints, in Paint and Surface Coatings, Theory and Practice, (ed) R Lambourne, Ellis Horwood, London, 1987 (pp547-597).

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