thickness to 10 mm. the ability to measure on larger samples sizes is of particular use for samples containing small particles of aggregates such as bituminous mixes where bulk property determination of the mix is of practical interest.

The new fixtures are designed for use in conjunction with Bohlin's forced gas oven (ETC) and enable the characterization of dynamic properties, such as loss and storage moduli, over a wide temperature and frequency regime. The temperature range can be extended downwards to -150°C when the liquid nitrogen cooling option is employed.

Spring loaded and infinitely adjustable clamps are designed to make sample loading easy without the need to select spacers or shims according to the sample thickness. Uniformity and reproducibility of clamping pressure is ensured by the use of a pro-set torque driver to tighten the sample clamps. A particular feature of the Bohlin design is the ability to fully load and accurately align the sample within the clamps remotely from the rheometer unit. This accomplished using a special sample alignment jig and significantly simplifies the experimental set up procedure.

For further information on the above and all Bohlin products, contact us at sales@bohlin.co.uk or visit www.bohlin.com.

(Lynda Watson)

Bohlin Feuchte-Generator

Bohlin Instruments hat einen neuen Feuchte-Generatoir für Bohlin Rotationsrheometer und die Bohlin DMA2000 entwickelt. Damit sind erstmals sowohl rheologische Untersuchungen als auch DMA/DMTA Tests unter definierter relativer Luftfeuchtigkeit möglich. Der Generator kann im Temperaturbereich von 10 bis 80°C relative Luftfeuchtigkeit von 20-80 % vorgeben. Ein hochpräziser Feuchtesensor unmittelbar an der Probe ermöglicht die exakte Messung und Regelung der gewünschten Luftfeuchtigkeit. Neben konstanten Bedingungen sind auch Feuchtigkeitsänderunegn über die Zeit programmierbar. Das universelle Design erlaubt den Einsatz auch an anderen Messgeräten, z.B. an Thermowaagen oder auch als "Stand-alone" Geraet in Messzellen bis zu etwa einem Volumen von 200 mL. Die Grösse (Volumen) kann abhängig vom Gasfluss und den gewünschten Temperaturen, bzw. Feuchtigkeit, variieren.
(Ms. Ojukwu, info@bohlin.de)

Book Review

Polymer Physics

Michael Rubinstein and Ralph H. Colby

"Polymer Physics" provides a comprehensive introduction to physical chemistry and physics of polymers. It is intended to be utilised as a text book for teaching upper level undergraduates and first year graduate students about polymers. Thus it will suit as well for scientists (chemist, physics ...) who need to learn about the fascinating field of polymer science.

The book starts will an introductory section on general aspects of polymer characterization including basic information on molar mass distribution and molar mass measurements by osmometry, light scattering, viscometry, and size exclusion chromatography. The main body of the book is divided into four parts: I single chain conformations, II Thermodynamics of blends and solutions, III Networks and gelation and IV Dynamics. The first parts describes the various models of ideal chains starting with the freely rotating chain model, the wormlike chain model and the rotational isomeric state model. The radius of gyration is introduced and finally the size measurement by scattering methods and form factors are discussed. The last chapter "real chains" introduces excluded volume effects and the second osmotic virial coefficient. The second

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part starts with the Flory-Huggins-Theory of the thermodynamics of mixing. Then polymer solutions in theta, poor and good solvents are discussed covering dilute as well as semidilute solutions. The third part devoted to networks commences with an introduction to percolation and describes hyperbranched architectures that do not lead to gelation. Then the gelation concept is discussed in details within the scope of mean field and scaling models. It follows a chapter on thermodynamics and elasticity of rubber, discussing affine and phantom network models, as well as chain entanglements, and the swelling of networks. Linear viscoelasticity is discussed next and basic concepts of steady shear, creep and oscillatory shear are introduced. The forth part on polymer dynamics starts with a discussion of unentangled chains. Rouse and Zimm models are introduced. The influence of chain branching is mentioned and the technique of dynamic light scattering is described. Then the concepts of entanglements and reptation are introduced and the special viscoelastic properties are discussed. A discussion of star like polymers as well as H-polymers and combs follows. The very last chapter shortly introduces computer simulation techniques.

The book is of high value due to the fact that it covers both physical and physico-chemical properties of polymers. It thus fills a gap between books devoted to polymer characterisation covering mainly solution properties and books devoted to the behaviour of polymer melts. It is of high values as an introductory book for graduate students as well as for scientists and engineers who have no background in polymer science.

WR

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