

chain models of polymers, the notions of a polymer-overlap concentration and screening of excluded volume interactions, topological interactions, free-draining versus nonpenetrating hydrodynamic interactions of polymer chains, definitions of branched polymer types, and mean-field network theories. In addition to offering general tutorials on core polymer science concepts, Graessley dwells on topics of particular interest to engineering polymer scientists and on areas of research to which he has contributed. For example, he devotes much space to the equation-of-state description of the thermodynamic properties of polymer liquids. He also covers in detail the theoretical attempts to understand the solubility of polymer blends based on measurements of cohesive energy densities, or solubility parameters, in conjunction with the Flory-Huggins model of the free energy of mixing polymer fluids.

Moreover, Graessley offers an extended and clear discussion of the dilute-solution properties of polymers that includes his experimental contributions to this basic area of polymer science. His treatment of dilute-solution properties simultaneously considers this problem from the standpoint of testing theoretical under-

standing of polymer structure-property relationships, and as a source of information about polymer interactions. Thus, practical experimental methodologies are emphasized in addition to theoretical models and their validation. Examples of the experimental methodologies include plotting procedures to deduce virial coefficients from scattering, viscosity, and diffusion data; observing the comparative advantages of neutron and light scattering from such plotting procedures; and using chromatography for polymer characterization and universal calibration.

In summary, *Polymeric Liquids and Networks* manages to capture much of the conventional wisdom of the science of synthetic polymers and highlights some of the rich phenomenology of polymer networks and theories attempting to describe those observations. The text is a wealth of information on the more technical matters of characterizing the structure and interactions of polymer solutions and understanding the miscibility of polymer blends in terms of polymer structural properties and measures of interpolymer interaction. The book should be a valuable resource for newcomers who are trying to understand essential concepts of

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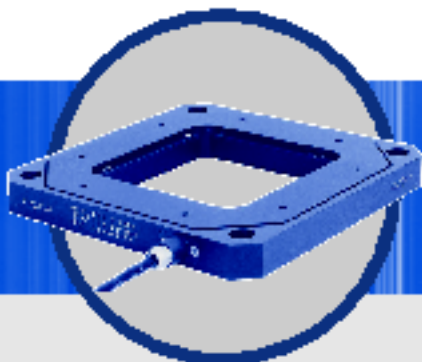
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