A review of: "THEODORE PROVDER, Editor: Computer Applications in Applied Polymer Science, A.C.S. Symposium Series 197, American Chemical Society, Washington, D.C., 1982"

George E. Ham

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Book Review

THEODORE PROVDER, Editor: Computer Applications in Applied
Polymer Science, A.C.S. Symposium Series 197, American Chemical
Society, Washington, D.C., 1982

This book illustrates, as well as any, the problems inherent in de-
veloping a symposium and, in turn, a symposium volume for publica-
tion. Even the most carefully prepared symposium is faced with the
problems of interweaving of subject matter written by different
authors. This problem is especially severe in the case of Computer
Applications in Applied Polymer Science. The editor has divided the
book into three main sections. The first section deals with polymer-
ization process modeling and control, the second with instrumentation
automation for polymer characterization and modeling, and the third,
more general in nature, covers various aspects of computer use for
mathematical modeling, such as degradation kinetics, solution proper-
ties, water/cosolvent evaporation, and emulsification.

In point of fact, the diversity of topics in each one of these sections
is so great that there is little in the way of a common thread binding
the various papers together. The following listing, though not com-
plete, serves to illustrate the range of topics under polymerization
process modeling and control: control of an isothermal/polystyrene
reactor; computational aspects of free radical polymerization kinetics
with chain-length-dependent termination; analysis of molecular weight
distribution using multicomponent models; use of continuous system
modeling program to simulate polymerization, polycondensation, and
polymer modification reactions; copolymerization reaction engineering;
controlled and uncontrolled semibatch solution; copolymerization of
styrene with methyl acrylate; computerized quantitative analysis of co-
polymers by IR spectroscopy; and modeling the equilibrium swelling
of latex particles with monomers.

Under instrument automation, the subjects are as diverse: an
automated Ferranti-Shirly viscometer, computer simulation of nip
flow in roll coating, finite element modeling of nonisothermal polymer

flows, measurement of polarization in thermoplastic elastomers with application to morphological studies, and analysis of an epoxy curing reaction by differential scanning calorimetry.

Finally, in mathematical modeling, the topics include an advanced thermal analysis system polymer heat capacity data bank, computerized viscoelastic master plots for vibration damping applications, applications of a computer to degradation kinetics of polyvinylhalides, mathematical treatment of emulsification of benzene and styrene, and design analysis of acrylonitrile-butadiene-styrene pipe compound experiment. If these topics have any general relationship with one another, I would appreciate the reader enlightening me.

In a larger sense, the proliferation of symposium volumes in recent years points up a growing dilemma of the scientist and publisher with respect to suitable approaches to the gathering and dissemination of scientific knowledge and advances. Perhaps we have to come to this latest computer-generated "elephant" in order to recognize the seriousness of the problem.

George E. Ham