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Book Review

Kinetic and Thermodynamic Lumping of Multicomponent Mixtures
Edited by Gianni Astarita and Stanley I. Sandler, Elsevier, Amsterdam-Oxford-New York-Tokyo, 1991

The book is the proceedings of a Symposium on Kinetic and Thermodynamic Lumping of Multicomponent Mixtures held at the American Chemical Society Meeting in Atlanta, GA in April 1991.

The idea of lumping information together into a more manageable subset is used, more or less consciously, in a large variety of fields. The thermodynamic and kinetic behaviour of multicomponent mixtures is an area where the requirements of lumping have been clearly identified and important progresses have been made up to now.

The invited papers, such as 'The Mathematics of Continuous Mixtures', 'Lumping of Discrete Kinetic Systems', 'An Industrial Viewpoint on Lumping', 'Modeling of the Kinetics of Complex Processes Based upon Elementery Steps', 'Continuous Thermodynamics for Phase-Equilibrium Calculations in Chemical Process Design' review the lumping of multicomponent mixtures in the context of different problems. The contributed papers deal with a large variety of kinetic and thermodynamical applications.

The major part of both invited and contributed papers deal, besides some theoretical aspects of lumping, with problems connected to reactions of hydrocarbon mixtures like catalytic cracking, hydrocracking, olefin oligomerization, paraffin isomerization, asphaltene pyrolysis and to phase equilibria of hydrocarbon mixtures.

The only paper dealing with lumping in a completely different area, viz. the invited paper 'Lumping Revisited: Global Environment Changes' by James Wei is very remarkable, revealing the general character and the usefulness of the lumping procedure. The author studies the Global Warming by using two types of lumping schemes. One of them is the Global Circulation Model, used today to predict the global climate in the next century, the other is the Carbon Emission Budget, for which several particular lumping schemes are possible and as the author states 'it would be wonderful to have a generally accepted lumping scheme for the carbon emission budget, so that all the statistics and projections would be kept consistently and be compatible for communications among policy makers'.

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Unfortunately, the volume does not contain more similar papers to wake up the interest of people working in other areas, where lumping also might be useful.

By preparing this proceedings volume the goal of the editors was to present an introduction for people entering this field and they succeeded to accomplish this goal. For more experienced researcher, especially for those working in the field of petroleum chemistry, the volume may serve as useful reference book.

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