

BOOK REVIEW

V. V. DIL'MAN and A. D. POLYANIN, **Methods of Model Equations and Analogies in Chemical Engineering.** Khimiya, Moscow, 1988.

THE BOOK suggests a number of promising theoretical and experimental methods for investigating the process of heat/mass transfer and of chemical hydrodynamics. The authors developed new principles for constructing engineering formulae which, ultimately, allow the sought-after relations to be obtained in a simple analytical form (in the form of finite formulae or algebraic equations). The thus obtained approximate formulae are very informative, making it possible to use the same formula to describe a variety of identical problems, phenomena or processes (which differ by the shape of the surface, flow structure, etc.).

Of great interest is the technique which is suggested by the authors for processing experimental data with the aid of 'asymptotic coordinates' and which applies equally to similar processes and phenomena.

The book presents solutions to a large number of specific problems which are of practical interest for the analysis of mass/heat transfer and chemical engineering processes. Thus, a detailed study is made of convective mass transfer compounded by a volumetric or a surface chemical reaction with arbitrary kinetics; determination is given to the mass transfer

arbitrary kinetics; determination is given to the mass transfer coefficient of an arbitrarily shaped particle moving in a liquid; investigation is made of the time dependence of Sherwood number for a droplet or a solid particle; the resistance coefficient is obtained for bodies of revolution orientated arbitrarily in a flow; a formula is derived for a turbulent diffusion flow over the starting length of a tube as well as an equation which describes the propagation of a dynamically passive impurity in a flow, etc.

The book encompasses the results of the latest investigations carried out by the authors and published in Soviet and foreign journals and well known to heat and mass transfer specialists. (At present there are no books in the U.S.S.R. and abroad which deal with the problems considered in this monograph.) The results of these works and new approximate analytical methods and formulae suggested can be used directly in engineering practice.

By all means, the book will attract the attention of specialists working in the fields of chemical engineering, chemical mechanics, microkinetics, hydrodynamics, heat/mass transfer, and other areas of science and technology.

R. I. NIGMATULIN
Institute of Mechanical Engineering
Moscow State University
Moscow, 119899, U.S.S.R.