

Review of the Handbook of Mixing Science and Practice

Edited by Edward L Paul, Victor A Atiemo-Obeng, and Suzanne M Kresta, Wiley-InterScience, Hoboken, NJ, 2004, 1377 pp. \$165.00
Sponsored by the North American Mixing Forum

Anyone who deals with processing at the laboratory, pilot and/or the commercial scale needs to have access to this handbook. It is an extensive compilation of both the theory and practice of mixing in both tank-type and tubular systems. It is very well organized and has been carefully edited. The table of contents for the 22 chapters is most useful for quickly finding the information one needs.

The introduction written by the editors deserves to be carefully read. It puts into perspective the well-mixed approach, the concept of zones within the vessel to account for situations where the well mixed approach can lead to serious errors and computational fluid dynamics approach which is just beginning to have an impact on difficult mixing problems

The introduction usefully summarizes the various sections of the book, outlining the characteristics of each beginning with Mixing Fundamentals: Chapters 1–5 and continuing with Mixing Equipment, Miscible Liquid Blending (“the easiest mixing task”), Solid Liquid Suspension, Gas-Liquid Contacting, Liquid-Liquid Mixing (“one of the most difficult and least understood mixing problem”), Mixing and Chemical Reactions/Reactor Design, Heat transfer and Mixing and finally Special Topics for Various Industries.

A final section in the introduction presents a series of diagnostic charts which should prove valuable as a guide to a wide range of mixing issues.

The various chapters have been written by a group of experienced engineers and faculty who have been active in mixing research and application. Each chapter has extensive references, and each has a table of notation. Many of the chapters are co-authored by an individual with extensive practical experience and an academic. This provides some theoretical background coupled with applications which have proven to be useful for

solving pragmatic mixing problems. Many of the chapters present pertinent experimental data, and there are many very good photographs and drawings of equipment. Although each chapter deals with different subjects careful editing has produced a good deal of very useful cross referencing among the chapters. A CD ROM accompanies the book which contains video clips of mixing processes.

The book is designed to be of value to the practicing engineer who must solve mixing problems with time constraints and often with uncertain information. It meets these goals and will prove invaluable to anyone faced with a mixing analysis or mixing design problem. The editors and authors have produced a very useful handbook.

T W Fraser Russell

Allan P Colburn Professor

Chemical Engineering,
University of Delaware, Newark, DE 19716
Email T. W. F. Russel at russel@che.udel.edu.

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Erratum

In the online and printed versions of “Moving Transversal Hot Zones in Adiabatic, Shallow Packed-Bed Reactors” by Viswanathan and Luss (DOI: 10.1002/aic.10647, pp. 705-717, February 2006), the expression for the Jacobian in Eq. 33 is incorrect. The correct form is:

$$\mathbb{J} = \begin{bmatrix} \frac{\partial(\mathbb{G}_1 - \mathbb{R})}{\partial x} & \frac{\partial(\mathbb{G}_1 - \mathbb{R})}{\partial y} & \frac{\partial \mathbb{G}_1}{\partial c} \\ \frac{\partial(\mathbb{G}_2 - \mathbb{R})}{\partial x} & \frac{\partial(\mathbb{G}_2 - \mathbb{R})}{\partial y} & 0 \\ -N_c \frac{\partial \mathbb{G}_1}{\partial x} & -N_c \frac{\partial \mathbb{G}_1}{\partial y} & -1 - N_c \frac{\partial \mathbb{G}_1}{\partial c} \end{bmatrix} \quad (33)$$

All the numerical calculations were performed using the correct expression. This error did not affect any other equations, figures, and results reported in the article.

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