ChE **book review**

The Dynamics of Fluidized Particles

By Roy Jackson

Cambridge University Press, Cambridge, CB2, 2RU, UK (2000); 339 pages, $69.95 (2000)

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In the author's own words in the preface, "This book addresses the motion of systems of solid particles immersed in a fluid that may be a liquid or a gas..." This motion is indeed ubiquitous in natural as well as man-made environments. Moreover, this motion attributable to the interaction between the two environments has been accelerating in both frequency and magnitude. Often, it is detrimental to the ecosystem that is shared by humans, animals, and plants.

In fact, it has frequently brought about catastrophic events. Some of the well-publicized instances are large-scale landslides due to the loss of vegetation on hillsides around Los Angeles from excessive housing development and the mammoth floods around the Yangtze River basin caused by the serious erosion accompanied by the flow of silt into the river from the over-cultivation of farmland and extensive deforestation. On the other hand, the motion of systems of particles, if induced under tightly controlled and well-managed conditions, can create immeasurable benefits to our daily lives. For example, it is involved in a wide variety of processes yielding the products essential to our very existence, e.g. foodstuffs, fuels, and cement.

Obviously, common principles underlie the motion of systems of particles found in sundry situations. Naturally, it is highly desirable that such principles be learned, explored, and understood in a unified manner. As far as this reviewer knows, a concise volume containing a systematic and comprehensive account of these principles has been totally lacking. Anyone who would even simply browse through the book will readily realize it has definitely filled this void.

At this juncture, the book may be the only suitable textbook on the market for a one-semester graduate course on fluidization. Certainly, it would be highly recommended as a supplementary textbook or reference in different courses such as transport phenomena, multiphase flows, and chemical-reaction engineering. In the author's own words again, "...The book is intended as an introduction to this field for graduate students and others entering it for the first time, but by drawing together widely scattered material..." For the convenience of those who would be interested in a quick glimpse of the book's contents, the chapters are listed below:

1. *The Mathematical Modeling of Fluidized Suspensions*
2. *Equations of Motion*
3. *Fluidization and Defluidization*
4. *Stability of the Uniformly Fluidized State*
5. *Bubbles and Other Structures in Fluidized Beds*
6. *Riser Flow*
7. *Standpipe Flow*

This reviewer is confident that the book will be a "Schlichting" of particle dynamics if it is continually updated and expanded for years to come. ❐