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Book reviews

Industrial Gas Handbook: Gas Separation and Purification, F.G. Kerry. CRC Press/Taylor & Francis Group, Boca Raton, FL (2007). 549 pp., Price: US$ 169.95, ISBN: 978-0-8493-9005-2

"The molecular chemistry of gases is well known and it seems unlikely that any new discoveries will cause Lavoisier, the father of modern chemistry, to turn in his grave. On the other hand, there are always new applications to discover, or to develop some of which will require phenomenal quantities of well known industrial gases." So ends this book, written by a mechanical engineer based on his lifetime experience of 60 years—and I might add, well written.

The book has 14 chapters covering virtually every aspect of the topic offering ". . . detailed discussions and up-to-date approaches to process cycles for cryogenic separation of air, adsorption processes for front-end air purification, and related process control instrumentation." In addition, the book ". . . covers topics such as chronological development, industrial applications, air separation technologies, noble gases, front end purification systems, insulation, non-cryogenic separation, safety, cleaning for oxygen systems, economics, and product liquefaction, storage and transportation."

One feature I appreciated was a historical review (at appropriate points) of discoveries and developments of gases and their uses. This historical review starts with a discussion of the Eighteenth Century work of French physicist Guillaume Amontons in thermometry and mathematics which led to the supposition of absolute zero. This discussion of the historical background of the topic being reviewed provides the reader with some understanding of the development of the field.

The book has the following 14 chapters:

1. Gas separation and purification of industrial gases
2. Industrial applications
3. Separation technology
4. Rare (noble) gases
5. Front-end purification systems
6. Product liquefaction, storage, and transportation
7. Insulation
8. Special gases
9. Noncryogenic separations
10. Cryogenic equipment, materials, and machinery
11. Instrumentation and controls
12. Safety
13. Cleaning for oxygen systems
14. Economics

Safe gas handling practices are discussed in several places in the book. Several short sections discuss: (1) safety of liquid carbon monoxide, (2) dangerous side effects of nitrous oxide, (3) safety in LNG transmission and storage, and (4) pressure safety relief valves. All the foregoing are found in the chapter dealing with individual gases. Chapter 12, however, is totally devoted to safety.

To readers of this journal, Chapter 12 probably would be of the most interest as there can be grave consequences due to improper handling of fuels mixed with air or pure oxygen. Kerry discusses inflammability and detonation wave velocities of numerous gases as well as safe design procedures, limits of contaminants, as well as safe practices in general.

The book has many excellent features in addition to being very well written and thoroughly covering the topic. The prose is well-supplemented with numerous tables, figures, and pictures of equipment that add tremendously to the understanding of the processes being discussed.

In the text, Kerry includes the theory behind each operation as needed but does not take it to exhaustion. As appropriate, he includes worked examples to illustrate the theory. He has not, however, included student problems (probably because he has written a book for the practicing professional and not for academics, which he is not).

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Biotechnology for Fuels and Chemicals: The Twenty-Eighth Symposium, J.R. Mielenz, K.T. Klasson, W.S. Adney, J.D. McMillan (Eds.). Humana Press, Totowa, NJ (2007). 1009 pp., Price: US$ 149.00, ISSN: 0273-2289

While published as a book, this material is essentially four volumes (V136–140) of a journal entitled *Applied Chemistry and Biotechnology*. This book contains 77 papers presented at the Twenty-Eighth Symposium on Biotechnology for Fuels and Chemicals which was held 30 April–3 May, 2006 in Nashville, TN. With the growing interest in alternative fuels and chemicals, this symposium and its resulting publication were, to say the least, timely.

The conference had 10 sessions, the titles of which are listed below: