

in the areas in which he has done important research: simplified statistical thermodynamic model for mixed-gas adsorption, diffusion in zeolite crystals, adsorber dynamics and the Sorbex system. The two chapters on adsorber dynamics are probably the most readable and informative single review available. However, as stated in the preface of the book, emphasis is placed on the subjects with which the author is most familiar. Thus, zeolite is emphasized throughout the book, on all above-mentioned subjects. In a few instances, the author's opinions are a bit strong. A most notable example is in the use of Darken's relation to interpret the dependence of diffusivity in zeolite on sorbate concentration.

Areas that deserve more coverage are: other sorbents, especially activated carbon, mixed-gas adsorption and cyclic adsorption processes. The potential theory for mixed-gas adsorption, which is important for carbon, is not covered. Cyclic processes, especially the pressure swing adsorption cycles, can use more coverage. After all, it is the pressure swing adsorption process that has promoted adsorption to a key separations tool in industry, and in which many future innovations are likely to be made.

On balance, this is a superbly written book. It can be used as an introduction or as a textbook. It also goes into enough depth for use as an excellent reference by researchers as well as by adsorber users and designers. □

FIRE SAFETY SCIENCE

*Edited by C. E. Grant and Patrick Pagni
Hemisphere Publishing Corp., 79 Madison Ave.,
New York, 10016; 1226 pages \$135 (1986)*

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Fire has been used by man as a tool from the beginnings of his rise as the dominant species on earth. The power of fire, however, causes it to become a source of destruction and accidental death when it or other concentrated sources of energy are misused. The study of accidental fire in enclosed spaces where people live and work is an area rapidly becoming a distinct discipline because of its great economic importance. The science of safety from accidental fires draws together investigators from many different disciplines, mainly mechanical engineering and structural engineering, and to a lesser degree architecture, mathematics, chemistry, and chemical engineering.

Fire Safety Science is the collection of papers pre-

sented at the First International Symposium on Fire Safety Science. It also records the formation of the International Association for Fire Safety Science.

The book is very well edited and produced. Although camera-ready manuscripts produced on various typewriters and word processors were used, the print quality in all but one case (too small and dark) was very good, making the book easily readable. The editors exercised good control over manuscripts from authors in non-English speaking countries, because all of them seem to be in very good, highly-understandable English. The various sections of the book are well segmented and logically placed.

The book is a highly comprehensive collection of topics on accidental fire, ranging from basic theory of fire physics and chemistry through detection, risk analysis, and smoke toxicity to fire suppression. The book is a good blend of theoretical and experimental research topics and practical, design-oriented papers.

There are ten main divisions in the book: Fire Physics, Structural Behavior, Fire Chemistry, People-Fire Interactions, Translation of Research into Practice, Detection, Specialized Fire Problems, Statistics Risk and System Analysis, Smoke Toxicity and Toxic Hazard, and Suppression. Although there is a section specifically labeled Smoke Toxicity and Toxic Hazard, there is substantial coverage of this critical hazard of fires in several other sections as well. There seems to be a good balance between fire physics and smoke physics.

The section on Fire Physics is written such that chemical engineers with good training in fluid dynamics and turbulent flow simulation can understand it. The sections on Fire Chemistry, Detection, Specialized Fire Problems, and Smoke Toxicity and Toxic Hazard are heavy in chemistry and are thus easily accessible to chemical engineers and chemists. Sections on Structural Behavior, People-Fire Interactions, Statistics Risk and System Analysis, and Suppression, tend to be much more specialized but understandable to any well-trained engineer.

Interestingly, even though the fundamentals of fire physics and chemistry represent just another class of chemical reaction engineering, very few of the paper authors were clearly chemists or chemical engineers. Fire physics and chemistry is an area in which chemists and chemical engineers could probably make rapid contributions both in research and application to fire detection and suppression programs. Hopefully, this well-edited, comprehensive book on all aspects of fire research and application will lead some chemical engineers to contribute to this very important field. □