



Book reviews

Catalytic Air Pollution Control: Commercial Technology, 2nd Edition

Ronald M. Heck, Robert J. Farrauto, Suresh T. Gulati (Eds.), Wiley/Interscience, New York, NY, 2002, 411 pp., US\$ 99.95, ISBN 0-471-43624-0

During my graduate studies (over 40 years ago) my class was challenged to design a catalytic pollution control system for automobile exhaust control. If memory serves me correctly, my team was able to design a converter small enough that it did not need its own trailer; however, it used more fuel than what was needed to power the car. Technology has come a long way since then as evidenced by this book. The introduction of automobile catalytic control was in 1976 according to the authors. They are much more efficient than my design. Not only are volatile organic compounds (VOCs) efficiently oxidized using commercially available catalytic systems, but also nitric oxides are controlled via reduction to elemental nitrogen. The third application of catalysts is to decompose ozone in the cabins of high-flying commercial aircraft.

Written by two well-published scientists employed by a major catalyst producer, the book is an authoritative treatise on catalytic design, theory, production, and utilization. According to the authors “This book is designed to be a stand-alone introductory reference or textbook on the commercially available catalytic systems used today for reducing harmful emissions for both mobile and stationary sources. It is like no other book currently available, since it describes modern catalytic air pollution abatement techniques from a practical point of view. The subjects are discussed in clear and succinct language, with emphasis on real-world catalytic system performance.”

“Part I provides an introduction to the fundamental basic principles of catalysts, catalyst preparation, characterization, kinetics, and deactivation, and is included to familiarize the reader with some of the important principles that govern industrial and environmental pollution control catalysis. It is not intended to be an exhaustive treatment but will provide a solid working knowledge of the relevant industrial concepts. It should be particularly valuable for those who have no prior knowledge of catalysis, but it also contains information seldom covered in purely fundamental textbooks. Thus, it provides new information to experienced catalyst scientists and engineers.”

Chapter titles for Part I are:

- Catalyst Fundamentals;
- The Preparation of Catalytic Materials: Carriers, Active Components, and Monolithic Substrates;

- Catalyst Characterization;
- Monolithic Reactors for Environmental Catalysts;
- Catalyst Deactivation.

“Part II discusses the application of catalytic systems for mobile source emission control, the automobile catalytic converter, diesel oxidation catalysts (the newest major application of environmental catalysis), and the decomposition of ozone in high-flying aircraft.”

Chapter titles for Part II are:

- Automotive Catalyst;
- Automotive Substrates;
- Diesel Engine Emissions;
- Diesel Catalyst Supports;
- Ozone Abatement Within Jet Aircraft.

“Part III describes the stationary application of catalysts, including volatile organic compounds, reduction of nitric oxides, and oxidation of gaseous carbon monoxide and hydrocarbons.”

Chapter titles for Part III are:

- Volatile Organic Compounds;
- Reduction of NO_x;
- Carbon Monoxide and Hydrocarbon Abatement from Gas Turbines.

“Finally, Part IV, on emerging technologies, covers those catalytic air pollution control research processes that, if developed, will dramatically change current catalytic technology for environmental control.”

Chapter titles for Part IV are:

- Fuel Cells;
- Ambient Air Cleanup.

The coverage is comprehensive, well-illustrated and exceedingly well referenced.

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Gary F. Bennett

Air Pollution Control Equipment Selection Guide

Kenneth C. Schiffner, Lewis Publishers, Boca Raton, FL, 2002, US\$ 144.95, 248 pp., ISBN: 1-5871-6069-2

Kenneth Schiffner with contributions by seven colleagues has authored an easy-to-read text describing the selection process for air pollution control equipment. Schiffner and colleagues write in a conversational format which is not normally found in texts, but this format does not detract from the information provided. In each section, the author says