

BOOK REVIEWS

Jerzy J. GANCZARZYK: *Activated Sludge Process. Theory and Practice*. Marcel Dekker, Inc. New York and Basel. 1983. (270 pages)

The book is the 23rd in the series Pollution Engineering and Technology and gives a detailed survey of this method of biological wastewater treatment. The definition of the process as well as its historical development are given in the introduction. The following nine chapters discuss the process from different aspects in detail.

In chapter entitled Principles of the Activated Sludge Process the concept and stoichiometry of aerobic treatment, nutrient requirements, biology of activated sludge, flocculation of micro-organisms, transport and diffusion phenomena, different kinds of nitrogen and phosphorus transformation as well as elimination of pathogenic bacteria and viruses are discussed.

In the next chapter factors affecting activated sludge process such as wastewater flow and quality, aeration time, volume and sludge loading, sludge volume index, wastewater temperature and concentration are treated.

A whole chapter is devoted to the introduction of the various modifications of the process.

Aeration from theoretical and practical view-point as well as the different types of aerators are the subject of the fifth chapter.

The sixth chapter is giving a survey of sludge separation and thickening discussing the purpose and different methods of these processes such as gravity separation, separation by flotation, centrifugal thickening. Settling and thickening properties of activated sludge are dealt with also in this chapter.

The title of the following chapter is Dewatering, Utilization and Disposal of Excess Activated Sludge. It discusses the properties of activated sludge, dewatering by filtration, thermal conditioning, aerobic and anaerobic digestion, wet air oxidation and pyrolysis of sludge, sludge drying and incineration and sludge utilization.

The possibilities of adapting activated sludge micro-organisms for the decomposition of organic substances different from municipal sewage organic components, the effect of heavy metals on activated sludge performance, the role of pH and the level of dissolved solids, pretreatment of industrial effluents, processing of phenolic wastewater and pulp mill effluents and other examples are given in the chapter dealing with industrial wastewater treatment.

Basic design approach, process economics, computerized design, process engineering are the topics of the ninth chapter.

The last chapter deals with the operation and maintenance of activated sludge plants e.g. starting up procedures, process control, analysis of control data, automated control, alarm systems and computer facilitated operation. Operational problems and preventive maintenance are discussed also in this chapter.

Each chapter is followed by several references. A glossary giving the short explanation of terms used in the text as well as the numerous photographs and figures of the book help the

readers in better understanding even if they are not very familiar with this field of wastewater treatment.

Tables for conversion English measures to metric and vice versa are also given.

The book is closed by an alphabetic Index.

L. Ackermann

Alvin B. STILES: Catalyst Manufacture-Laboratory and Commercial Preparations. Chemical Industries Series, Vol. 14. Marcel Dekker Inc.—New York and Basel 1983 176 pages, 37 figures.

Catalyst manufacture is one of the most important fields of industrial chemistry and, at the same time, it is one of the most secretive of all chemical industrial activities. In spite of the latter, the book of Prof. Stiles can provide practical information and sufficient working knowledge without infringing upon any proprietary information. The book is intended not only for those familiar with the discipline of catalyst manufacture, but also for those who are indirectly involved in these activities such as managers, engineering project estimators and planning, design and production engineers.

The book consists of two sections. The first section deals with the unit operations and equipment used in catalyst manufacture, whether that manufacture is bench, semi-works or commercial scale. In this section precipitation, solution and slurry transfer, filtration, drying, calcining, rewashing and ion exchange, densification of calcined and ion-exchanged catalytic material, pulverization, pilling or extrusion, spray drying, crushing and screening to produce granules, and coating are described. All the 37 figures in the book can be found in this section. The theoretical background to these operations and to their influence on catalytic activity and stability is not discussed, this is beyond the scope of this book.

The second section gives a short general description and a step-by-step account of the details of preparation of sixteen catalyst "families". These catalyst families are the following: Automotive exhaust catalysts; petroleum processing catalysts (synthetic zeolites, reforming-, hydrotreating and alkylation catalysts); catalysts for synthesis gas processing, ammonia synthesis catalysts, methanol synthesis catalysts; hydrogenation catalysts; dehydrogenation-, oxidation-, ammoxidation-, oxichlorination catalysts; catalysts for vinyl acetate synthesis from ethylene and acetic anhydride, supported precious metals catalysts, palladium on powdered carbon, polymerization catalysts, dehydration catalysts and Claus process catalysts.

The effects of parameter-variations in the preparation steps on the catalyst activity and stability are not discussed, and no examples of this kind are given.

At the end of the book there are 54 references, mainly from the U.S. patent literature; and an index of the topics described.

The book supplies important guidelines and information on the preparation and production of almost all currently used catalyst groups in a single source and thus, it is recommended to everyone involved in catalyst preparation and—more generally—in catalytic processes.

G. Széchy