

activity are reviewed in Chapter 18 (Peter Billsten, Uno Carlsson, and Hans Elwing). This chapter introduces the reader to the use of silica nanoparticles for binding studies of a series of protein mutagens, illustrating how small deviations in protein structure influence activity. Overall, this is an outstanding guide to the field and a valuable addition to any library.

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Chemistry and Mode of Action of Crop Protection Agents. By Leonard G. Copping (LGC Consultants, Essex, UK) and H. Geoffrey Hewitt (University of Reading, UK). The Royal Society of Chemistry: Cambridge, UK. 1998. 146 pp. ISBN 0-854-04559-7.

This book provides a very comprehensive and thorough coverage of the chemistry and mode of action of herbicides, insecticides, and fungicides. The authors state that the book is designed as a general introduction to those studying agricultural science, to advisors, consultants, academics, and industrialists. The book is very easy to read, yet it provides a detailed and technical discussion of agrochemicals, including chemical structures, classes, and the modes of action. Each of the five chapters concludes with a series of questions and references, with answers to the questions provided at the back of the book.

The first chapter provides an introduction to the topic of pesticides, including history, future needs, world market, and sales. The authors also discuss the biological screening that is a necessary part of the development of new agrochemicals and describe the various phases involved in testing. This section provides a valuable insight into the process of developing new pesticides.

The second chapter provides a thorough background on the history and uses of herbicides. The authors discuss the biochemistry of photosynthesis and herbicides that affect photosynthesis. The biochemistry and mode of action of other herbicides is also presented, such as herbicides that interfere with amino acid biosynthesis, auxin-type herbicides, lipid biosynthesis inhibitors, and inhibitors of cell elongation. This chapter also discusses herbicide selectivity and resistance.

The topic of insecticides is presented in the third chapter. A discussion of the types of insecticides that have been historically used is followed by biochemical modes of action. Because insecticides have traditionally been nerve toxins, the authors present a nice discussion of insect nervous system disruption, with a table that summarizes targets, in vivo activators, and commercial insecticide classes. The authors discuss the major insecticide classes, including organophosphorus types, carbamate types, and those that interfere with neurotransmitter ligand recognition sites or ion channels. A discussion of alternative methods of pest control is also presented in this chapter, including the use of insect growth hormones, pheromones, naturally occurring compounds, living systems (baculoviruses, bacteria, entomopathogens, nematodes, predators, and parasites), and transgenic crops. The chapter concludes with a discussion of insect resistance to various insecticides.

The focus of chapter four is fungicides. An introduction provides a description of fungi, a brief history of agricultural diseases caused by fungi, and methods of treatment. The chapter includes a thorough discussion of the biochemical processes that are targets for fungicide activity, such as sterol, nucleic acid, or protein biosynthesis, and chemicals used to achieve control.

The book concludes with a discussion of plant growth regulators used to modify crop yield or quality. Discussions of plant hormones, targets for plant growth regulators, and commercial plant growth regulators are included.

This book would be a very valuable reference for researchers and practitioners in agricultural chemistry, providing both background

information and detail. The references provided at the end of each chapter direct the reader to more detailed information on specific topics. The book could also be used as a textbook for courses such as chemical ecology, agricultural chemistry, biochemistry of pesticides, or ecotoxicology.

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World Records in Chemistry. By H.-J. Quadbeck-Seeger, R. Faust, G. Knaus, and U. Siemeling. Wiley/VCH: Weinheim, Germany. 1999. 348 pp. \$44.95. ISBN 3-527-29754-7.

As is suggested by its title, this volume is not a textbook but a collection of intriguing facts and figures relating to chemists, chemistry, and their impact on the world. It is essentially the chemical equivalent of the well-known *Guinness Book of Records*. As such, it covers an impressive range of subject matter, from the largest clusters to the most toxic compounds, the most widely used plastic to the most profitable chemical company, the most frequently cited publication to the most expensive element, and just about everything in between. The "records" are either derived from chemical facts (e.g., strongest bond, most stable carbanion) or industrial figures (e.g., largest markets, production costs). The industrial segments are perhaps a bit lengthy and are often slanted toward the German perspective, the country where the book was first published.

The presentation of such a vast amount of diverse information in a readable form is a daunting task, in which the authors have generally, but not always, succeeded. Accompanying each record is a brief explanation, which is usually sufficient to place it in its proper context, and which also provides an interesting narrative, without which this book would simply be a dry listing of facts. The text is further enhanced by the inclusion of many informative diagrams, charts, and structures throughout. In many cases, the records serve to relate chemical facts and their public significance (e.g., the role of explosives in airbags is described in the chapter on "Molecular Energy"), and such an aspect might make this an interesting book for those members of the general public who have an interest in chemistry and the role it plays in their lives. Chemistry has rather poor image with this type of audience, but this book clearly illustrates the positive contributions that chemistry makes (e.g., to the economy and healthcare) and so should help counteract such negativity. New and prospective students in the chemical sciences may also find their curiosity tweaked by any one of the fascinating facts in this book. Should this be the case, numerous references (as recent as late 1998) provide ample links for further reading.

One criticism of this book is the curious arrangement of the chapters, which are organized alphabetically by title rather than by subject matter, giving the book a rather disjointed feel. Thus, the first four chapters cover "Atoms and Molecules", "Biotechnology Industry", "Catalysts", and "The Chemical Industry" in that order. Of course, the dynamic nature of chemical research dictates that the records will fall with time, and so this book is liable to date quicker than most.

While this book is not essential reading for anyone, it covers such a range of material that it surely has something for everyone. Overall, it provides an intriguing, sometimes surprising, and even fun (one section describes "Spectacular Blunders") look at the wide world of chemistry.

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