

This article was downloaded by:

On: 25 January 2011

Access details: *Access Details: Free Access*

Publisher *Taylor & Francis*

Informa Ltd Registered in England and Wales Registered Number: 1072954 Registered office: Mortimer House, 37-41 Mortimer Street, London W1T 3JH, UK



Journal of Sulfur Chemistry

Publication details, including instructions for authors and subscription information:

<http://www.informaworld.com/smpp/title~content=t713926081>

Book Reviews

To cite this Article (1989) 'Book Reviews', Journal of Sulfur Chemistry, 9: 2, 147 – 152

To link to this Article: DOI: 10.1080/01961778908047987

URL: <http://dx.doi.org/10.1080/01961778908047987>

PLEASE SCROLL DOWN FOR ARTICLE

Full terms and conditions of use: <http://www.informaworld.com/terms-and-conditions-of-access.pdf>

This article may be used for research, teaching and private study purposes. Any substantial or systematic reproduction, re-distribution, re-selling, loan or sub-licensing, systematic supply or distribution in any form to anyone is expressly forbidden.

The publisher does not give any warranty express or implied or make any representation that the contents will be complete or accurate or up to date. The accuracy of any instructions, formulae and drug doses should be independently verified with primary sources. The publisher shall not be liable for any loss, actions, claims, proceedings, demand or costs or damages whatsoever or howsoever caused arising directly or indirectly in connection with or arising out of the use of this material.

BOOK REVIEWS

EXPERIMENTAL ORGANOMETALLIC CHEMISTRY

A Practicum in Synthesis and Characterization, Andrea L. Wayda and Marcetta Y. Darensbourg (Eds.), ACS Symposium Series 397, ISBN 0-8412-1438-7, 1987, \$49.95 (USA); \$59.95 (export). xii + 299 pp.

The book contains 11 chapters where 62 authors outline some of the procedures they are using to synthesize and characterize organometallic compounds. The first chapter gives a short introduction to the development of techniques in organometallic chemistry. The second chapter describes cannula techniques for the manipulation of air-sensitive materials and three different kinds of application: (1) high pressure liquid chromatography analysis of air- and water-sensitive compounds using gel permeation chromatography, (2) low-temperature chromatography columns for routine use in organometallic separations, and (3) IR radiation as a heat source in vacuum sublimation. Chapter three is devoted to techniques in handling of highly reduced organometallics followed by five different types of application: (1) Preparation and isolation of crystalline samples using low-temperature solution techniques, (2) recrystallization apparatus for air-sensitive compounds, (3) inert atmosphere apparatus for UV photochemical reactions, (4) distillation flask for use with a heating mantle, and (5) greaseless stillheads for sensitive solvent purification. Chapters four and five describe the use of vacuum lines for handling air-sensitive organometallic compounds and designs for use in synthetic organometallic chemistry with the following applications: (1) assay of ligand-derived gases following outer-sphere oxidation, (2) semiautomatic gas titration device, and (3) giving labs the dry look: greaseless double manifold and schlenkware. Systems that allow diverse synthesis and purification procedures within an inert atmosphere glove box are described in chapter six with the following three types of application: (1) facile and inexpensive repair of dry boxes and glove boxes, (2) continuous inert gas purge glove boxes for organometallic synthesis, and (3) an inexpensive system that enables the cooling of reactions inside a glove box. Chapter seven describes the use of apparatus and techniques for the use of atoms and molecular high-temperature species in new material synthesis; the following applications are presented: (1) heated inlet system for cocondensation metal atom reactors, (2) recovery of air-sensitive products from metal atom reactors, (3) versatile sono-chemical reaction vessels, and (4) convenient pressure reactors for organometallic reactivity studies. The spectroscopic characterization of inorganic and organometallic complexes by metal and high-pressure NMR are described in chapter eight, the applications are here shown for the detection of dihydrogen complexes by the T_1 method and a convenient method for sealing and opening NMR tubes under air-free conditions. Chapter nine is devoted to new methods for acquiring IR spectral data in organometallic chemistry and catalysis with the following types of applications: (1) a simple low-temperature solution IR cell, (2) quantum yield determination by IR spectroscopy and (3) spectrophotometric cells for inorganic and organometallic com-

plexes under inert atmospheric conditions. The handling of reactive compounds for X-ray structure analysis with the application to in situ crystal growth for X-ray diffraction studies is represented in chapter ten and finally chapter eleven describes the experimental characterization of electronic structure and bonding in organometallic molecules by photoelectron spectroscopy.

The book is for both graduate students and professional people who work in experimental chemistry in both academic and industrial places. Throughout the whole book many excellent drawings accompany the text which makes the book very useful. This book should be present in the lab as a natural thing in line with e.g. a vacuum pump.

Karl Anker Jørgensen
Kemisk Institut
Aarhus Universitet
DK-8000 Århus C
Denmark

M. G. Voronkov, N. S. Vyazankin, E. N. Deryagina, A. S. Nakhmanovich and V. A. Usov, *Reactions of Sulfur with Organic Compounds*, Consultants Bureau, a Division of Plenum Publishing Corporation, New York and London, 1987, 421 pp. \$79.50 in the US and Canada, \$95 in other countries. ISBN 0-306-10978-6.

This book must be considered the bible of the reactions of sulfur with organic compounds. It is written by a strong Russian team under the leadership of Professor M. G. Voronkov, one of Russia's most distinguished sulfur chemists from the Institute of Organic Chemistry at the Siberian Division of the USSR Academy of Sciences in Irkutsk.

For many years Russian sulfur chemists have been very active in this field, however, most of their papers were published in the Russian language and are therefore not readily available to Western chemists. This book thus offers easy access to this hitherto "unpublished literature".

The book consists of 8 chapters.

1. Structure and physical properties of elemental sulfur (20 pp., 402 refs.)
2. Methods of preparation and chemical properties of different modifications of sulfur (11 pp., 122 refs.)
3. The action of sulfur upon hydrocarbons (60 pp., 679 refs.)
4. Organic halides (37 pp., 164 refs.)
5. Organic sulfur compounds (12 pp., 85 refs.)
6. Oxygen-containing compounds (50 pp., 354 refs.)
7. Nitrogen-containing compounds (47 pp., 284 refs.)
8. Reactions of sulfur with organometallic compounds (66 pp., 421 refs.)

Since the world's first publication of the reaction of sulfur with organic materials given in the Book of Genesis (chapter 19, verses 24 and 25):

"Then the Lord rained upon Sodoma and upon Gomorrah brimstone (sulfur) and

fire from the Lord out of heaven; and he overthrew those cities, and alle the plain, and all the inhabitants of the cities, and that which grew upon the ground”.

The 2500 references on the reaction of sulfur with organic compounds quoted in this book have appeared in the literature. The present overview gives chemists not specially devoted to sulfur chemistry insight in the great variety of sulfur compounds formed from elemental sulfur and various organic compounds. The reaction products described range from simple compounds such as carbon disulfide to complicated polycyclic sulfur dyes. For the sulfur chemist Voronkov's book is the bible where he can find answers to all questions concerning sulfur and its reactions with organic compounds.

However, the book has one serious drawback, it only includes literature up to 1980. In the preface the English editor Prof. J. S. Pizey states that the text has recently been updated and revised. The book is produced directly from the camera-ready typewritten manuscript in 1987. It is therefore difficult to understand why it has not been possible to include the literature up to say 1986; it could have been done in an appendix and would have been of great value to the users of this work.

The book is nicely typed but the drawings show a rather inhomogenous variety of formula systems. Sometimes thiophen is a regular pentagon, sometimes it has right angles, sometimes it is small and sometimes big. Sometimes the atom symbols are typewritten with different types and sometimes typeset. On pages 134 and 135 for instance 7 different formula systems have been used. This is, however, only a small complaint for a book which has a high information density and very few errors.

The book is strongly recommended to every chemist who is active in sulfur chemistry and should be on the shelf in any chemistry library.

Carl Th. Pedersen
Department of Chemistry
Odense University
DK-5230 Odense M
Denmark

Daniel E. Meyer, Wendy A. Warr, Richard A. Love (editors): *Chemical Structure Software for Personal Computers*. ACS Professional Reference Book, American Chemical Society, Washington D.C., 1988. ISBN 0-8412-1583-3, 0-8412-1539-1 (pbk.). Price: US\$ 39.95–US\$ 59.95, depending on binding and place of distribution.

Chemists will find this booklet very useful when purchasing structure software for a personal computer, especially those who are not familiar with personal computers or structure software. It is written by experts whose language is comprehensible to non-experts within that field. The classification of the various — often overlapping — types of software gives a good survey of the jungle of programs in this field.

The book is a directory of available programs which can create and handle chemical structure diagrams on a personal computer. The programs described can be used on IBM PC-compatible computers (53), Macintosh (18), the Apple II series (5) and under the UNIX operative system (2).

The book contains the following chapters: 1. Current Status of Computer-Assisted Drawing of Chemical Structures. 2. Structure-Drawing Software. 3. Graphics Terminal Emulation Software. 4. Structure Management Software. 5. Software for Three-Dimensional Molecular Graphics and Modeling. 6. Special-Application Software for Chemical Structures. And three appendices: 1. Software by Category and Type of Personal Computer. 2. Industrial Prices of Software for Chemical Structures. 3. Academic Prices of Software for Chemical Structures.

Chapter 1 gives a short survey of the relevant hardware and a description of the classification of software corresponding to Chapters 2–6.

Each of these chapters is prefaced with a short general discussion of the chapter's software. Then follows a more detailed information of the products with a list of hardware demands, price and distributor. The product descriptions are based on information from producers, and not all products have been tested by the editors.

In Chapter 2 are shown the product's drawing of a common test structure for most product descriptions.

Chapter 4 deals with programs which permit graphic input, registration of substances in a data base and retrieval of records by structure or substructure search.

Chapter 6 deals with products suitable for creating structure input for (uploading) or obtaining structure output from (downloading) mainframes or minicomputers. The various products are generally connected to specific programs on larger computers.

It may hardly be possible to select a suitable program on the basis of this book alone, but it minimizes the number of possibilities to just a few programs which should then be studied in more detail on the basis of information from the distributor.

One problem about a book like the present one is that it is soon outdated (time of submission was June 1988). Another problem is that it is difficult to give an exhaustive survey of products, and the editors do not claim that they do so either. However, the editors promise further editions with updatings. Until then, the present edition is highly recommendable.

Jacob Danielsen
Kemisk Institut
Aarhus Universitet
DK-8000 Århus C
Denmark

M. L. Occelli: *Fluid Catalytic Cracking, Role in Modern Refining*, American Chemical Society, Washington, D.C., 1988, 353 p., \$79.95 (US, Canada), \$95.95 (Export).

The book belongs to the ACS Symposium Series and contains 19 papers, presented at the 194th meeting of the Division of Petroleum Chemistry of the ACS in New Orleans 1987.

1. M. L. Occelli: *Recent Trends in Fluid Catalytic Cracking Technology*, 16 pages, 59 ref.

2. A. Corma, V. Fornes, A. Martinez and J. Sanz: Tetrahedral and Extraframework Aluminium in Ultrastable Y Zeolites, 17 p., 16 ref.
3. K. Rajagopalan and G. W. Young: Hydrocarbon Cracking Selectivities with Dual-Function Zeolite Catalysts, 15 p., 19 ref.
4. A. Corma, V. Fornes, F. Melo and J. Perez-Pariente: Zeolite Beta: Structure, Activity and Selectivity for Catalytic Cracking, 15 p., 18 ref.
5. P. H. Schipper, F. G. Dwyer, P. T. Sparrell, S. Mizrahi, J. A. Herbst: Zeolite ZSM-5 in Fluid Catalytic Cracking: Performance, Benefits and Applications, 23 p., 18 ref.
6. J. S. Magee and J. W. Moore: Mechanisms of Product Yield and Selectivity Control with Octane Catalysts, 14 p., 9 ref.
7. G. C. Edwards, K. Rajagopalan, A. W. Peters, G. W. Young and J. E. Creighton: Strategies for Catalytic Octane Enhancement in a Fluid Catalytic Cracking Unit, 13 p., 8 ref.
8. E. H. Hirschberg, R. J. Bertolacini: Catalytic Control of SO_x Emissions from Fluid Catalytic Cracking Units, 32 p., 50 ref.
9. L. Rheaume and R. E. Ritter: Use of Catalysts to Reduce SO_x Emissions from Fluid Catalytic Cracking Units, 16 p., 9 ref.
10. M. L. Ocelli: Cracking Metal-Contaminated Oils with Catalysts Containing Metal Scavengers, 20 p., 15 ref.
11. P. F. Schubert and C. A. Altomare: Effects of Ni and V in Catalysts on Contaminant Coke and Hydrogen Yields, 13 p., 19 ref.
12. M. L. Ocelli and J. M. Stencel: Characterization of Dual-Function Cracking Catalyst Mixtures, 20 p., 17 ref.
13. G. L. Wollery, A. A. Chin, G. W. Kirke and A. Huss, Jr.: X-ray Absorption Study of Vanadium in Fluid Cracking Catalysts, 14 p., 14 ref.
14. F. J. Elvin, J.-E. Otterstedt and J. Sterte: Processes for Demetalization of Fluid Cracking Catalysts, 8 p., 13 ref.
15. D. Tichit, F. Fajula, F. Figueras, C. Gueguen and J. Bosquet: Influence of Preparation Conditions on the Catalytic Properties of Al-Pillared Montmorillonites, 16 p., 26 ref.
16. J. R. Harris: Effect of Aging of Pillaring Reagent on the Microstructure and Cracking Activity of Pillared Clay, 13 p., 10 ref.
17. J. -E. Otterstedt, B. Gevert and J. Sterte: Catalytic Cracking of Heavy Oils, 13 p., 30 ref.
18. J. W. Wells, Catalytic Cracking of a Wilmington Vacuum Gas Oil and Selected Hydrotreated Products, 29 p., 8 ref.
19. W. P. Hettinger, Jr.: Development of a Reduced Crude Cracking Catalyst, 33 p., 24 ref.
18. J. W. Wells, Catalytic Cracking of a Wilmington Vacuum Gas Oil and Selected Hydrotreated Products, 29 p., 8 ref..
19. W. P. Hettinger, Jr.: Development of a Reduced Crude Cracking Catalyst, 33 p., 24 ref..

Fluid Catalytic Cracking (FCC) is the widely used process for producing gasoline from petroleum fractions. The book gives an excellent survey of historic development, preparation, composition, solid geometry, activity and selectivity of modern catalysts.

Novel systems are characterized with usual data and with data evaluated by modern physical methods; IR, Raman, NMR, X-ray methods give data which have practical value and are the basis for mechanistic conceptions.

For sulfur chemists chapters 8 and 9 are of particular interest. The formation of sulfur, H_2S and unknown sulfur compounds in the reactor and regenerator of FCC units is discussed. The SO_x emissions with the flue gas of the regenerator can be reduced by specially designed catalysts and additives.

F. Boberg
Technische Universität Clausthal
Institut für Organische Chemie
Leibnizstraße 6
D-3392 Clausthal-Zellerfeld
Bundesrepublik Deutschland