JOURNAL OF THE CHEMICAL SOCIETY

Chemical Communications

Number 9 1984

CONTENTS

- 561 Bridged Bromine Radicals. An Electron Spin Resonance Study S. Paul Maj, Martyn C. R. Symons, Patrick M. R. Trousson
- 562 Helical Aggregates of Chiral N-(2-Hydroxydodecyl) Amino Acids Hisao Hidaka, Masahiko Murata, Toshiaki Onai
- 564 The Observation of Long-range Benzene-Benzene Interactions Michael N. Paddon-Row, Harish K. Patney, J. Barrie Peel, Gary D. Willett
- 566 Phosphocations with Co-ordination Number 2 and 3: Phosphenium-iminophosphonium Bisphosphocations Marie-Rose Marre, Michel Sanchez, Robert Wolf
- 567 Anomalous Magnetic Property and Capability of Reducing Oxygen to Water of Heat-treated Chloro(tetraphenylporphyrinato)iron(III) Osamu Ikeda, Hiroshi Fukuda, Hideo Tamura
- 569 Phosphine Complexes of Main Group Elements: Crystal Structure of {Li[C(PMe₂)₃](tetrahydrofuran)}₂ Hans H. Karsch, Gerhard Müller
- 570 Photolysis of Pentamethylcyclopentadiene in the Presence of Trifluoroacetic Acid: Generation and E.s.r. Spectrum of the Pentamethylcyclopentadiene Radical Cation John L. Courtneidge, Alwyn G. Davies, Safieh N. Yazdi
- 571 A Synthesis of the Spiroacetal Moiety of Milbemycin β₃ Philip Kocienski, Stephen D. A. Street
- 573 Highly Conducting Charge Transfer Complexes of Benzo-1,3,2-dithiazol-2-yl and Its Derivatives with Tetracyanoquinodimethane Gotthelf Wolmershäuser, Martin Schnauber, Thomas Wilhelm
- 574 Synthesis and X-Ray Structure of a Cyclopropane Precursor Alkene-Carbene Complex of Tungsten in which the Two Functions are Parallel Cecilio Alvarez Toledano, Henri Rudler, Jean-Claude Daran, Yves Jeannin
- 576 Reactivity of Carbene Complexes of Tungsten bearing a Carbon Carbon Double Bond in a Side Chain: Metathesis Reactions of the Double Bond Cecilio Alvarez Toledano, Andrée Parlier, Henri Rudler, Jean-Claude Daran, Yves Jeannin
- 578 Total Synthesis of (+)- and (-)-Frontalin Albert W. M. Lee
- 579 Preparations of Chiral δ-Lactones via Enantiotopically Specific Pig Liver Esterase-catalysed Hydrolyses of 3-Substituted Glutaric Acid Diesters Christopher J. Francis, J. Bryan Jones
- 581 Indirect Nuclear Spin-Spin Coupling Constants of Nitrogen-15 to Silicon-29 in Silylamines Eriks Kupče, Edvards Liepiňs Olga Pudova, Edmunds Lukevics
- 582 X-Ray Structure of Cu₂(medpco)Cl₄, a Complex with the Potentially Binucleating N-Oxide Ligand N, N'-Bis(2-N, N-dimethylaminoethyl)pyridine-2,6-dicarboxamide 1-Oxide (medpco) Michael Antolovich, David J. Phillips, A. David Rae
- 583 Chemistry of Pyrrocorphins: Methylative Opening of the Macrocycle between Rings A and D, a Side Reaction in the Peripheral C-Methylation of a 20-Methyl-pyrrocorphinate Christian Leumann, Albert Eschenmoser
- 585 Allylsilane Cyclisations in Organic Synthesis; Formation of a Cyclopentane via Cyclisation of an Epoxy-allylsilane
 Siah Tan, Andrew N. Mather, Garry Procter, Alan H. Davidson
- 586 Synthesis and Structural Characterisation of [Ag₆{Fe(CO)₄}₃{(Ph₂P)₃CH}]: a Distorted Tricapped Octahedral Silver-Iron Cluster Clive E. Briant, Richard G. Smith, D. Michael P. Mingos
- 588 Enthalpies of Transfer and 'Hydrophobic Hydration.' Tetrabutylammonium Bromide in the Propan-1-ol + Water System Gerard Carthy, David Feakins, W. Earle Waghorne
- 589 On the Reduction of Iodate in Briggs-Rauscher Type Chemical Oscillators D. O. Cooke
- 590 A Short Stereospecific Synthesis of a 2,6-Diarylmonoepoxylignanolide Clive P. Till, Donald A. Whiting
- 591 A 1H and 13C N.M.R. Study of the Pyrene Dianion and Proposed Tetra-anion Bertil Eliasson, Tore Lejon, Ulf Edlund
- 594 The Reversible Co-ordination of Nitric Oxide by the Manganese(II) Phosphine Complexes, MnX₂(PR₃), in the Solid State and in Tetrahydrofuran Solution David S. Barratt, Charles A. McAuliffe
- 595 A New Type of Decaosmium Cluster Geometry: the Synthesis and X-Ray Structure Analysis of Os₁₀(S)₂(CO)₂₃ Julian P. Attard, Brian F. G. Johnson, Jack Lewis, Julian M. Mace, Mary McPartlin, Angelo Sironi
- 597 A Novel Synthetic Route to (±)-Perhydrogephyrotoxin Toshiro Ibuka, G.-Namg Chu, Fumio Yoneda
- 599 The Constitution of Griseochelin Lajos Radics
- 602 Synthesis of Ethyl Phenylpyruvate and Related Compounds using Chromium Tricarbonyl Complexes Bertrand Caro, Jean-Yves Le Bihan, Jean-Pierre Guillot, Siden Top, Gérard Jaouen
- 603 Extended Metal-Metal Interactions in Fluorophosphine Complexes of Iridium(1) Peter B. Hitchcock, Stephen Morton, John F. Nixon
- 604 Protonation of 2,7-Di-t-butylthiepines. The First Observation of Homothiopyrylium Ions Kagetoshi Yamamoto, Shoko Yamazaki, Atsuhito Matsukawa, Ichiro Murata

- 606 Dipolar Cycloaddition Reactions of N-Tetrahydropyranylnitrone Shadreck Mzengeza, Ralph A. Whitney
- 607 Laser Flash Photolysis of Hydridotetrakis(diethyl phenylphosphonite)cobalt(1). Direct Evidence for the Existence of a Co-ordinatively Unsaturated Species Shigero Oishi, Keiko Tajime, Akeri Hosaka, Isao Shiojima
- 609 Metal Cluster Expansion by Addition of Low-valent Group 4B Reagents: Crystal and Molecular Structure of $[Os_3SnH_2(CO)_{10}\{CH(SiMe_3)_2\}_2]$; a Compound with Hydrogen Bridging Osmium and Tin Christine J. Cardin, David J. Cardin, Hans E. Parge, John M. Power
- 610 Conformational Isomerism and Its Relation to the Mutarotation of Isocolchicine William Gaffield, Robert E. Lundin, Robert M. Horowitz
- 612 Synthesis and Crystal Structure of the Silver(1) Alkyl Species, [{2-(Me₃Si)₂C(Ag)C₅H₄N}₂], a Dimeric Compound Void of Electron-deficient Bonding Rocco I. Papasergio, Colin L. Raston, Allan H. White
- 613 Novel Photoisomerization of 2,3-Bis-(p-methoxyphenyl)benzofuran into 2,6-Dimethoxy-9-(2-hydroxyphenyl)anthracene Paul R. West, Sunil K. Chaudhary, John M. Vernon, Reginald H. Mitchell
- 614 Tremorgenic Neurotoxins from Perennial Ryegrass causing Ryegrass Staggers Disorder of Livestock: Structure Elucidation of Lolitrem B Rex T. Gallagher, Allan D. Hawkes, Pieter S. Steyn, Robert Vleggaar
- 617 A Synthesis of Conjugated Dienes from Aromatic, Five-membered Heterocycles Ernest Wenkert, Michael H. Leftin, Enrique L. Michelotti
- 618 A Surface Complex produced on Supported Rhenium Catalysts during High-pressure Hydrogenation of Carbon Monoxide Masaharu Komiyama, Toshihiro Okamoto, Yoshisada Ogino
- 619 Preparation of Bicyclic Lactones: Precursors for the Synthesis of Paniculides B and C Raymond Baker, Colin L. Gibson, Christopher J. Swain, David J. Tapolczay
- 621 Regio- and Stereo-selective Reaction of 1,3-Dialkyl-substituted Allyl Anions with Aldehydes *via* η³-Allyltitanium Compounds **Yuichi Kobayashi, Kensuke Umeyama, Fumie Sato**
- 623 Calculated Energetics of Rearrangement and Fragmentation on the S₀ Surface of Thioformaldehyde Susan A. Pope, Ian H. Hillier, Martyn F. Guest
- 624 Photo-activation of Methane at 12 K by (η⁵-Cyclopentadienyl)- and (η⁵-Pentamethylcyclopentadienyl)-dicarbonyl-rhodium and -iridium Complexes Antony J. Rest, Ian Whitwell, William A. G. Graham, James K. Hoyano, Alexander D. McMaster
- 626 High Molecular Weight Hydrocarbons from the Fischer-Tropsch Process with a Pre-oxidized Ruthenium Zeolite Catalyst Marc Audier, Jacek Klinowski, Robert E. Benfield

AUTHOR INDEX

Alvarez Toledano, Cecilio, 574, 576 Antolovich, Michael, 582 Attard, Julian P., 595 Audier, Marc, 626 Baker, Raymond, 619 Barratt, David S., 594 Benfield, Robert E., 626 Briant, Clive E., 586 Cardin, Christine J., 609 Cardin, David J., 609 Caro, Bertrand, 602 Carthy, Gerard, 588 Chaudhary, Sunil K., 613 Chu, G.-Namg, 597 Cooke, D. O., 589 Courtneidge, John L., 570 Daran, Jean-Claude, 574, 576 Davidson, Alan H., 585 Davies, Alwyn G., 570 Edlund, Ulf, 591 Eliasson, Bertil, 591 Eschenmoser, Albert, 583 Feakins, David, 588 Francis, Christopher J., 579 Fukuda, Hiroshi, 567 Gaffield, William, 610 Gallagher, Rex T., 614 Gibson, Colin L., 619 Graham, William A. G., 624 Guest, Martyn F., 623 Guillot, Jean-Pierre, 602 Hawkes, Allan D., 614

Hidaka, Hisao, 562 Hillier, Ian H., 623 Hitchcock, Peter B., 603 Horowitz, Robert M., 610 Hosaka, Akeri, 607 Hoyano, James K., 624 Ibuka, Toshiro, 597 Ikeda, Osamu, 567 Jaouen, Gérard, 602 Jeannin, Yves, 574, 576 Johnson, Brian F. G., 595 Jones, J. Bryan, 579 Karsch, Hans H., 569 Klinowski, Jacek, 626 Kobayashi, Yuichi, 621 Kocienski, Philip, 571 Komiyama, Masaharu, 618 Kupče, Eriks, 581 Le Bihan, Jean-Yves, 602 Lee, Albert W. M., 578 Leftin, Michael H., 617 Lejon, Tore, 591 Leumann, Christian, 583 Lewis, Jack, 595 Liepiňs, Edvards, 581 Lukevics, Edmunds, 581 Lundin, Robert E., 610 McAuliffe, Charles A., 594 Mace, Julian M., 595 McMaster, Alexander D., 624 McPartlin, Mary, 595 Maj, S. Paul, 561 Marre, Marie-Rose, 566 Mather, Andrew N., 585

Matsukawa, Atsuhito, 604 Michelotti, Enrique L., 617 Mingos, D. Michael P., 586 Mitchell, Reginald H., 613 Morton, Stephen, 603 Müller, Gerhard, 569 Murata, Ichiro, 604 Murata, Masahiko, 562 Mzengeza, Shadreck, 606 Nixon, John F., 603 Ogino, Yoshisada, 618 Oishi, Shigero, 607 Okamoto, Toshihiro, 618 Onai, Toshiaki, 562 Paddon-Row, Michael N., 564 Vernon, John M., 613 Papasergio, Rocco I., 612 Parge, Hans E., 609 Parlier, Andrée, 576 Patney, Harish K., 564 Peel, J. Barrie, 564 Phillips, David J., 582 Pope, Susan A., 623 Power, John M., 609 Procter, Garry, 585 Pudova, Olga, 581 Radics, Lajos, 599 Rae, A. David, 582 Raston, Colin L., 612 Rest, Antony J., 624 Rudler, Henri, 574, 576 Sanchez, Michel, 566 Sato, Fumie, 621 Schnauber, Martin, 573 Shiojima, Isao, 607

Sironi, Angelo, 595 Smith, Richard G., 586 Steyn, Pieter S., 614 Street, Stephen D. A., 571 Swain, Christopher J., 619 Symons, Martyn C. R., 561 Tajime, Keiko, 607 Tamura, Hideo, 567 Tan, Thuan Siah, 585 Tapolczay, David J., 619 Till, Clive P., 590 Top, Siden, 602 Trousson, Patrick M. R., 561 Umeyama, Kensuke, 621 Vleggaar, Robert, 614 Waghorne, W. Earle, 588 Wenkert, Ernest, 617 West, Paul R., 613 White, Allan H., 612 Whiting, Donald A., 590 Whitney, Ralph A., 606 Whitwell, Ian, 624 Wilhelm, Thomas, 573 Willett, Gary D., 564 Wolf, Robert, 566 Wolmershäuser,, Gotthelf, 573 Yamamoto, Kagetoshi, 604 Yamazaki, Shoko, 604 Yazdi, Safieh N., 570 Yoneda, Fumio, 597



TWO NEW BOOKS FOR TEACHERS AND STUDENTS OF CHEMISTRY RSC PAPERBACKS

In 1983 The Royal Society of Chemistry introduced a new series of inexpensive texts for students and teachers. Topics covered relate to those subjects which are commonly featured in courses on chemistry and related areas, which are currently taught in schools, universities

Prices quoted below apply to both RSC Members and non-RSC Members.

FOOD: The Chemistry of its Components



By T. P. Coultate

Softcover 202pp 0 85186 483 X (1984)

Price £5.95 (\$11.00)

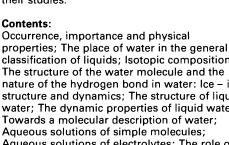
This book gives a detailed account of the chemistry of the principal substances of which our food is composed. Both the macro-components, the carbohydrates, lipids and proteins, which can be classified by their chemical structures, and the micro-components, the colours, flavours, vitamins and preservatives, which are classified in terms of function are considered. Throughout the book, Dr Coultate's theme is the relationship between the chemical structure of a substance and its contribution to the properties and behaviour of foodstuffs-whether observed in the laboratory, the factory, the kitchen or the dining room.

Contents:

Introduction, carbohydrates, lipids, proteins, colours, flavours, vitamins, preservatives, EEC numbers of food additives. Subject index. This book will be of particular benefit to students and teachers of food science and related courses in universities, colleges of further education and schools.

ORDERING RSC Members should send their orders to: The Membership Officer, The Royal Society of Chemistry, 30 Russell Square, London WC1B 5DT. Non-RSC Members should send their orders to: The Royal Society of Chemistry, Distribution Centre, Blackhorse Road, Letchworth, Herts SG6 1HN

The Royal Society of Chemistry, **Burlington House Piccadilly** London W1V 0BN



WATER

By Felix Franks

Softcover 102pp

0 85186 473 2 (1984)

Price £2.50 (\$6.00)

The book considers the present state of our

physical properties and how these give rise to a unique structure, its influence on the

knowledge of liquid water, its remarkable

interactions between solutes, its role in maintaining biologically active structures, its involvement in chemical reactions and the problems posed by its management and in

providing sufficient amounts of water of

properties of water is fundamental to gaining

an appreciation of many scientific processes

and principles. Science students and teachers

will, therefore, find Water not only interesting

reading, but also of considerable relevance to

An understanding of the behavioural

adequate quality.

their studies.

Contents:

Revised 1st Edition

classification of liquids; Isotopic composition; The structure of the water molecule and the nature of the hydrogen bond in water: Ice - its structure and dynamics; The structure of liquid water; The dynamic properties of liquid water; Towards a molecular description of water; Aqueous solutions of simple molecules; Aqueous solutions of electrolytes; The role of water in the stabilisation of biologically significant structures; Reactions in aqueous solutions; Water in the environment - quality, availability and exploitation; Summary and future prospects.

CLASSIFIED **ADVERTISEMENTS**

QUEEN MARY COLLEGE University of London CHEMISTRY DEPARTMENT

Applications are invited from those who will be under 35 on 1 October 1984 for a New Blood LECTURESHIP in ORGANIC CHEMISTRY tenable from that date. Candidates in any area of organic Chemistry will be considered, but excellence and potential for achievement in the field of organic synthesis, particularly in the development of novel reagents, is the preferred field. Salary scale (under review): £7190–£14125 p.a. plus £1186 London Allowance. Application forms and further details obtainable from The Senior Personnel Officer, Queen Mary College, Mile End Road, London E1 4NS (Telex 893750), to be returned by 11 May. Applicants resident abroad please send c.v. and list of publications and ask 3 referees to write directly to QMC.

IMPERIAL COLLEGE OF SCIENCE AND TECHNOLOGY **DEPARTMENT OF CHEMISTRY** POSTDOCTORAL RESEARCH **ASSISTANT**

Applications are invited for a glaxo fellowship in synthetic organic chemistry. The project, which is in collaboration with Dr S. M. Roberts of Glaxo Group Research, involves the synthesis of naturally occuring cyclopentenones. The appointment is initially for one year from 1 October 1984, and is renewable for a further vear. The salary is on the 1A scale (£7190-8530 p.a. plus £1186 London allowance) and depends on age and experience. Applications with a curriculum vitae and the names of two referees should be sent as soon as possible to:

Dr C. J. Moody, Department of Chemistry, Imperial College London SW7 2AY