Additions and Corrections

Stereocontrolled Preparation of Tetrahydrofurans from Acid-Promoted Rearrangements of Allylic Acetals [*J. Am. Chem. Soc.* **1991**, *113*, 5354–5365]. MARK H. HOPKINS, LARRY E. OVERMAN,* and GILBERT M. RISHTON

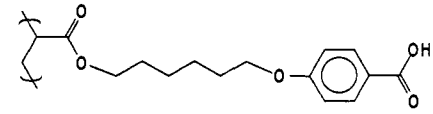
In a recent substructure search of *Chemical Abstracts* we discovered a series of papers by Mousset, Martinet, and co-workers that are directly relevant to the transformations reported in this and the following publication. In 1969 these investigators reported the formation of 3-formyltetrahydrofurans as side products in the montmorillonite clay-promoted synthesis of acetals from *meso*-2,5-dimethyl-1,5-hexadien-3,4-diol.[1] These workers clarified the stereochemistry of the tetrahydrofuran products and proposed a Prins-pinacol mechanism nearly identical to the one established by our investigations.[1c,2] The use of other Lewis acids and the extension of this rearrangement to the synthesis of 3-acetyltetrahydrofurans from acid-promoted rearrangements of acetals derived from 1,5-alken-3,4-diols and 4-phenyl-1-alken-3,4-diols was also described.[3]

(1) (a) Martinet, P.; Mousset, G.; Colineau, M. *C. R. Acad. Sci., Ser. C* **1969**, *268*, 1303. (b) Martinet, P.; Mousset, G. *Bull. Soc. Chim. Fr.* **1970**, 1071. (c) Martinet, P.; Mousset, G. *Bull. Soc. Chim. Fr.* **1971**, 4093.
(2) (a) Chambenois, D.; Mousset, G. *C. R. Acad. Sci., Ser. C* **1972**, *274*, 715. (b) Chambenois, D.; Mousset, G. *Bull. Soc. Chim. Fr.* **1974**, 2969.
(3) (a) Chambenois, D.; Mousset, G. *C. R. Acad. Sci., Ser. C* **1972**, *274*, 2088. (b) Malardeau, C.; Mousset, G. *Bull. Soc. Chim. Fr.* **1977**, 988.

Use of Intermolecular Hydrogen Bonding for the Induction of Liquid Crystallinity in the Side Chain of Polysiloxanes [*J. Am. Chem. Soc.* **1992**, *114*, 6630–6639]. UDAY KUMAR, TAKASHI KATO, and JEAN M. J. FRÉCHET*

Page 6632: Structure **15** was shown incorrectly. The correct structure **15** is a poly**acrylate** as shown below:

15



Photochemical and Photophysical Studies of Bicyclo[4.3.0]non-1(6)-en-2-one [*J. Am. Chem. Soc.* **1992**, *114*, 7029–7034]. DAVID I. SCHUSTER,* JAN WONING, NIKOLAS A. KAPRINIDIS, YANPING PAN, BING CAI, M. BARRA, and CHRISTOPHER A. RHODES

It is stated on p 7030, first paragraph, and again in the Conclusions that the title compound (BNEN) does not undergo [2 + 2] photocycloaddition to alkenes. Although that is indeed the case for the specific systems described in this paper, photocycloaddition of BNEN to (*Z*)- and (*E*)-2-butene was reported by Cargill some time ago [*J. Org. Chem.* **1973**, *38*, 1218–1221] in a paper that was specifically cited in Schuster's 1989 review of enone photochemistry (ref 1e). This unfortunate lapse in memory in no way affects the principal conclusions of the present paper.

Computer Software Reviews

CoPlot 2.1/CoDraw 2.1/CoStat 4.1. CoHort Software: P.O. Box 1149, Berkeley, CA, 94701. List price $159.00 each or $395.00 for all three plus shipping (student prices $99.00 each or $259.00 for all three plus shipping); volume discounts and network versions are available. The requirements are as follows: IBM PC or PS/2 compatible computer using DOS 2.0 or higher (3.0 for networked versions) with 640K memory (510K available) for CoPlot and 512K memory (420K available) for CoDraw or CoStat. CoPlot uses 900K hard drive disk space, CoDraw 700K, and CoStat 600K. All three programs can be run using only floppy drives, but a hard drive is recommended. All programs can use, but do not require, a Microsoft compatible mouse or a digitizer (SummaSketch or Kurta IS/ONE). A graphics card is required for CoPlot and CoDraw. The programs are not copy protected.

CoHort Software has designed three independent software packages that can be used in conjunction with one another to assist the scientist in analyzing and graphing scientific data. The CoPlot package provides a menu-driven user interface for interactively creating a variety of plot types from imported or entered data and generates output for a large variety of hardcopy devices. CoDraw is a general purpose drawing program that can be used interactively or with user constructed command files to create technical drawings. CoStat is a statistical software package that provides a wide variety of statistical tests, regression analyses, correlation measurements, etc. and the ability to produce simple plots of the results.

Installation of all three packages is straightforward except for the procedure necessary to configure the internal memory. CoPlot, CoDraw, and CoStat are initially configured to use the main memory of the microcomputer (often 640K). The programs can also access EMS memory (but not extended memory directly) or a RAM disk. The manuals offer a short tutorial on the steps necessary to use this extra memory, but users not familiar with the memory structure of current microcomputers may find the instructions confusing. This portion of the installation procedure is more automated in other similar software packages.

Each of the manuals for the three programs follow the same format, which consists of a series of small tutorials at the beginning followed by a fairly complete reference section. The tutorials focus on subjects that are of interest to the scientist and cover all the basic aspects of the program. Included with each manual is an extensive list of more recent revisions for all three programs. Considering the maturity of these programs, the revisions should have been included in the manual proper.

CoPlot and CoDraw share the same menu-driven style interface. This user interface is somewhat cumbersome to use because a relatively small amount of information is set before the user in each menu. However, the design is logical and the user can quickly pop in and out of the many menus. The menu design leaves a relatively small work space for the figure or plot so that even with a high-resolution monitor the image may appear unclear or distorted. Fortunately, the user can zoom-in on any portion of the figure or temporarily erase the menu in order to examine a small portion of the design.

A distinct advantage of the CoPlot and CoStat packages over similar programs is the focus on scientific applications. For instance, the CoPlot package has the capability to make "multi-channel" graphs which allow the user to simultaneously display output obtained from a time-resolved experiment during which several variables were monitored. One can also form other useful plot types such as three-dimensional and polar graphs. The program CoStat offers a wide variety of statistical procedures for analysis of scientific data. A list of all the procedures would be prohibitively long, but a few of the more prominent are as follows: determination of correlation coefficients; analysis of variance; tests of skewness and kurtosis; calculation of binomial, normal, and Poisson distributions; chi-square tests of goodness of fit; Kendall and Spearman coefficients of rank correlation; Kruskal–Wallis test (non-parametric tests); and multiple and polynomial regression.

As listed at the beginning of this review, CoPlot, CoDraw, and CoStat can be bought as a set. This integrated package gives the user a powerful and convenient method of handling data and producing finished plots. For example, one can import data into CoStat, analyze it, and then enter CoPlot while still in CoStat to form a graphical representation of the analysis or data. This can be accomplished because CoPlot and CoStat use the same data file format. The editor that manipulates the data files can also perform operations (FFT's for example) the results of which can be used in either program. The CoPlot and CoDraw programs are also integrated through the use of a common drawing format. One can create a plot using CoPlot, export it to an external "drawing" file, import this file into CoDraw, and then add details to the figure before printing the

final hard copy. This ability to easily combine standard plots with drawings is unique among programs of this type and offers additional flexibility not found in most plotting-only programs.

The program CoDraw provides the user with the ability to draw lines, circles, rectangles, arrows, Bézier lines, and irregularly shaped figures. CoDraw can also incorporate superscripts, subscripts, and Greek characters easily into figures, but the formation of molecular structures is quite laborious (the publisher recommends a dedicated software package designed expressly for this purpose). One annoying omission in the program is the inability to make solid-filled circles, certainly a commonly used figure. As in CoPlot, the user is allowed to choose from a wide variety of formats when exporting the finished design—a definite advantage over other drawing programs.

As mentioned earlier, the CoPlot program has many features that make it attractive for use by scientists. However, we noticed some limitations in data handling that make it difficult to use with multiple data sets. Each graph can only display nine data sets at a time from the internal spreadsheet. We found this to be a bothersome restriction, as we often wanted to plot many more than nine data sets at a time—for instance, a stacked plot of two groups of seven spectra showing changes with temperature. There are also constraints on the total number of graphs and comments that can be included in a figure, although the annotation restrictions can be overcome if the figure is sent through CoDraw before the hardcopy is produced.

All in all, CoPlot, CoDraw, and CoStat perform as described by CoHort Software. All three packages contain features that make them useful for scientific applications, but there are some limitations to CoPlot that may make it ill-suited for complicated projects. We feel that if one wants a simple, well-integrated and low-priced package, then this package is a good choice.

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*Book Reviews**

Introduction to the Thermodynamics of Solids. By J. L. Ericksen (formerly Department of Aerospace Engineering and Mechanics, University of Minnesota). Chapman and Hall: London and New York. 1991. xii + 204 pp. $49.95. ISBN 0-412-39840-0.

This textbook is the first volume of the series *Applied Mathematics and Mathematical Computation*, which includes texts and monographs at graduate and research level. The series editors are R. J. Knops and K. W. Morton.

The book is based on a course offered at the University of Minnesota to seniors and beginning graduate students from various engineering and scientific departments. Although it may be of interest to a variety of chemists and other scientists, it is likely to be of greatest value to those working in the fields of mechanical and aerospace engineering. Readers are assumed to have a mastery of classical thermodynamics, statics, deformations of solid bodies, and calculus. The author has set out to cover considerable ground in only about 200 pages, which has led to some deficiencies in explanation. The book is carefully written, but it would be improved if each chapter began with a summarizing paragraph.

The book deals with aspects related to power and energy in mechanical engineering problems and places little or no emphasis on chemical aspects, such as solid solutions and phase equilibria, which have been covered by a book entitled *Thermodynamics of Solids*, 2nd ed., by R. A. Swalin, published by John Wiley and Sons: New York, 1972.

Chapter 1, Generalities, explains the first and second laws of thermodynamics and the concepts of thermal and mechanical thermodynamic equilibrium and ballistic free energy.

Chapter 2, Constitutive Theory of Heat Transfer for Bars and Plates, introduces the thermodynamics of rigid bars through the Clausius–Duhem and Clausius–Planck inequalities. This chapter develops the basic criteria for equilibrium in the absence of phase transition and a theory of heat transfer (1) for a rigid mechanically-isolated bar, (2) for a thermoelastic bar, and (3) for shearing of plates. Finally, some experimental approaches are outlined to enable the behavior of the above systems to be characterized thermodynamically. Unfortunately, the parentheses notation employed in this chapter is somewhat confusing. For example, a multiplication operator should be included after θ_B in equation 2.1.21.

Chapter 3, Equilibrium Theory of Bars, considers two situations; bars subjected to dead loads and bars in hard devices. The chapter discusses stability in solid bars and problems associated with metastable configurations and finally introduces the equal area rule or the Maxwell line. The material is clearly presented.

The first section of Chapter 4, Equilibrium Theory of Plates, discusses Martensite, Austenite and Martensitic transformations that are related to the crystal symmetry of the material. The second section considers bifurcation diagrams, which provide a picture of the response of a system when a control variable is changed. The material is attractively presented, but the application of the Martensitic transformation is not well explained.

Chapter 5, Balloon Problems, considers spherical balloons made of a homogeneous, isotropic, incompressible material to which rubber closely approximates and applies the concepts developed in Chapter 3. Incidentally, equation 5.1.5 is lacking the division operator, i.e. r^3/R^3.

Chapter 6, Biaxial Stretch in Rubber Sheets, considers the stability associated with biaxial stretching of a thin flat sheet of rubber at constant temperature. This chapter first deals with the idealized problem and then introduces the Treloar instability. This chapter would be more convincing if the application of the Martensitic transformation, introduced in Chapter 4, were better explained.

Chapter 7, Moving Discontinuities, consists of four sections: shock waves in bars, breaking bars, and two peeling problems. This chapter provides convincing theoretical background for the dynamics of failure of solids and of adhesion of one material to another.

Chapter 8, Mixture Theory, considers the thermodynamics of multicomponent systems, including such materials as α or β brass (containing copper and zinc) and wood containing various proportions of sorbed water which produces a change in volume. The treatment presented can apply to quite complex systems for which the phase diagrams and, indeed, the chemical nature of the solid materials need not to be known. Chemists who are more familiar with treatments based on phase equilibria may be stimulated by this difference of approach.

In Chapter 9, Equilibrium of Liquid Crystals and Rods, the first section, liquid crystals energies, recognizes that nematic liquid crystals, such as those in display devices, encounter equilibrium situations that resemble those in solids. The second section considers the orientation of liquid crystals by fields and walls. The third section considers the theoretical background to the measurement of mechanical moduli of liquid crystals. The behavior under strong fields may be explained by Fréedericsz transitions. The fourth and last section considers elastica theory, introduced by Euler to explain the behvior of straight, long, thin bodies whcn compressed along the major axis. The necessary elementary theory is well-developed in this chapter.

Chapter 10, Reconsideration of the Generalities, is the final chapter. As its name suggests, this chapter reconsiders the thermodynamic background presented in Chapter 1 in the light of the material presented in the rest of the book. Chemists to whom the material in the rest of the book is rather unfamiliar will instantly recognize much of the material in this chapter and may wish to read Chapters 1 and 10 first before embarking on a study of the rest of the book. Chapter 10 is eminently readable.

The book lists 72 references placed between Chapter 10 and the Index. The references have been judiciously chosen to be particularly useful and to range from the very elementary to the rather sophisticated. The references include textbooks, monographs, and reviews to seminal research papers. The Index is very short, but it is comprehensive enough to be useful. The book is recommended reading for scientists interested in the mechanics of solids.

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Introduction to Stereochemistry & Conformational Analysis. By Eusebio Juaristi (Centro de Investigación y de Estudios Avanzados del Instituto Politécnico Nacional, Mexico). John Wiley & Sons, Inc.: New York. 1991. xv + 331 pp. ISBN 0-471-54411-6.

This book is, as the name states, an "Introduction" and displays some of the advantages and disadvantages associated with any "Introduction". Thus, as the author notes, some areas may be covered lightly or even

*Unsigned book reviews are by the Book Review Editor.