

## Additions and Corrections

**Assembly of High-Valent Oxomanganese Clusters in Aqueous Solution. Redox Equilibrium of Water-Stable  $Mn_3O_4^{4+}$  and  $Mn_2O_2^{3+}$  Complexes** [*J. Am. Chem. Soc.* 1990, 112, 7255]. JOSEPH E. SARNESKI, H. HOLDEN THORP,\* GARY W. BRUDVIG, ROBERT H. CRABTREE, and GAYLE K. SCHULTE

Page 7256, Table I: The empirical formula for complex 2 was inadvertently misstated. The formula for complex 2 is  $[Mn_3O_4(bpy)_4(OH_2)_2](ClO_4)_4 \cdot 5H_2O$ . Two of the solvent molecules were modeled as half-occupancy, giving an empirical formula for the crystal of  $C_{40}H_{44}O_{26}N_8Cl_4Mn_3$ . This error does not affect the remainder of the crystallographic data or analysis.

**Insertion Reactions of CO and  $CO_2$  with Ruthenium Benzyl, Arylamido, and Aryloxo Complexes: A Comparison of the Reactivity of Ruthenium-Carbon, Ruthenium-Nitrogen, and Ruthenium-Oxygen Bonds** [*J. Am. Chem. Soc.* 1991, 113, 6499-6508]. JOHN F. HARTWIG, ROBERT G. BERGMAN,\* and RICHARD A. ANDERSEN

Page 6501, column 2: Line 11 should read ...with  $P_B$  resonating downfield and  $P_C$  resonating upfield from  $P_A$ ....

Page 6505, column 1: Line 3 should read ... $MeRu(\eta^2-CH_2PMe_2)(PMe_3)_3$ ....

Page 6506, column 1: Line 10 from bottom should read ... complex 3....

Page 6506, column 2: Line 11 from bottom should read ... formation of 7 in alkane solvents....

Page 6508, column 1: Line 15 should read ...78.2 mg of  $(PMe_3)_3Ru(\eta^2-CH_2PMe_2)(Me)$ ....

Page 6503: Many of the patterns in Table III are probably better described as  $A_2MX$ , rather than  $A_2BC$  systems.

We are grateful to Mrs. Ming-de Wang of the University of Ottawa for calling these errors to our attention.

**Is Triquinacene Homoaromatic? An MM3 Study of Triquinacene and Its Hydrogenation Products** [*J. Am. Chem. Soc.* 1992, 114, 1165-1168]. J. W. STORER and K. N. HOUK\*

Page 1167, Figure 3: The X-ray distances A-D, B-D, and C-D were reported as 2.89 Å. This value is incorrect and should be 2.32 Å. There is no discrepancy between the MM3 optimized geometry of 1 and the X-ray structure.

Page 1167, Figure 4: The structure of 1 labeled  $C_3$  actually has  $C_{3v}$  symmetry; the  $C_{3v}$  energy of 1 is 58.63 kcal/mol. We thank Professor Jerome M. Schulman for this information.

## Book Reviews\*

**Biosensors.** By Elizabeth A. H. Hall. Prentice Hall: Englewood Cliffs, NJ. 1991. viii + 351 pp. \$56.00. ISBN 0-13-084526-4.

As the author points out, this text is intended to provide a basic theoretical and practical introduction to biosensors. This objective is achieved by dividing the work into two major parts—Sensor Techniques: The Concepts and Analytical Principles; and The Biosensor Genus: Its Friends and Relations. The first part translates into a series of six chapters starting with a general introduction to biosensors followed by a chapter on basic biochemistry as well as chapters on principles of potentiometry, amperometry, spectroscopy, and semiconductor electrodes. The general introduction is well-written and provides a valuable perspective concerning the nature of analytical problems to which sensors might be applied, emphasizing not only biomedical applications but also process control and environmental and military uses. Indeed, throughout the text, strong emphasis is placed on how the biosensor will be used and what information it will provide. To cover fundamentals in the remaining first five chapters of 160 pages is a clear impossibility, and rigor has been necessarily sacrificed. For some of the derivations and even some concepts, the reader would have to rely on supplementary texts.

The second part of the book, consisting of five chapters, deals with applications including such topics as cell-based sensors, amperometric, potentiometric, and optical biosensors, and a chapter dealing with miscellaneous techniques. Particularly refreshing is the attempt to put in perspective the developments of the last 10-15 years. The chapters are amply fortified with references to the original literature.

In summary, this is a well-written text which accomplishes the stated objectives. It is strongly recommended for readers who wish to understand the chemical and biochemical rationale for sensor development and utilization. Because of its relatively reasonable price, it would be a good choice for a beginning graduate level course in analytical chemistry or biotechnology.

George S. Wilson, *University of Kansas*

**Practical Fluorescence. Second Edition, Revised and Expanded. Modern Monographs in Analytical Chemistry Series 3.** Edited by George G. Guibault (University of New Orleans). Dekker: New York. 1990. ix + 812 pp. \$185.00. ISBN 0-8247-8350-6.

In recent years fluorescence has emerged as an important analytical technique because of its sensitivity, selectivity, and dynamic range.

Fluorescence already rivals radioisotopes in sensitivity, and single molecule detection is on the horizon. New techniques, such as optical sensors, imaging, multidimensional methods, and room temperature phosphorescence, have arisen to keep pace with the many new applications in the environmental and life sciences. The simplicity and accessibility of fluorescence contribute to its widespread use. Books on fluorescence are few and soon outdated, so a new one is welcome.

Like its predecessor, the new edition of *Practical Fluorescence* is a compendium of prevailing luminescence lore. It comprises 13 chapters, six of which are authored or coauthored by the editor, and over 2800 references up to 1989. Each chapter lists review articles on related topics. The book is clearly written with an index that is helpful if not comprehensive. The introductory chapter assumes no prior knowledge of fluorescence and covers basic concepts. This chapter suffers from being somewhat behind the times; it is almost verbatim from the previous edition. The chapter on instrumentation has been mostly rewritten. It has a good description of the components of a spectrofluorometer, but no information about equipment for measuring fluorescence lifetimes. This is disappointing in that lifetime measurements are coming on line as an additional dimension, and the future promises much greater use of them. Two chapters by Wehry on the effects of structure and environment on fluorescence and phosphorescence are excellent. Together they provide a thorough grounding in the salient spectroscopic and photophysical features of organic molecules and metal ions.

The rest of the book is devoted to analytical applications of fluorescence in chemistry and the life sciences. Two chapters on inorganic and organic substances are revised and expanded from the previous edition. These chapters, which catalog fluorescent assays for a large number of compounds, comprise almost a quarter of the book. A new chapter by Wehry on environmental analysis focuses on selectivity. Problems and strategies for selective analysis in complex mixtures are discussed, including chromatographic separation, excitation-emission matrices, low-temperature and time-resolved techniques, and optrodes. The new chapter on phosphorescence by Hurtubise emphasizes room temperature phosphorescence. It covers both experimental and theoretical aspects and describes instrumentation for steady-state, time-resolved, and solid-surface measurements. The revised chapter on pesticides contains new material on TLC detection with fluorogenic reagents, but it is largely unchanged. The new chapter on chemiluminescence by Coulet and Blum covers novel analytical techniques including flow injection analysis using immobilized reagents and photobiosensors. Recent applications of lu-

\*Unsigned book reviews are by the Book Review Editor.