and depend on this knowledge base. The author should be commended for this successful effort.

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Advances in Atomic Spectroscopy, Vol. 3. Edited by Joseph Sneddon (McNeese State University, Louisiana). JAI Press, Inc.: Greenwich, CT. 1997. x + 227 pp. $109.50. ISBN 0-7623-0072-8.

As the third in the series, this monograph on atomic spectroscopy comprises one extended and four brief chapters by experts addressing plasma source mass spectrometry (PSMS), graphite furnace atomic absorption spectrophotometry (GFAAS), and direct current arcs and plasma jets.

In the initial chapter (32 pages) on PSMS, A. Fisher and L. Ebdon principally examine inductively coupled plasma (ICP)-MS literature resources, plasma characteristics including interferences, instrumentation, sample introduction techniques, and some applications and isotope analysis. The novice will find this chapter useful for its references and emphasis on selected examples, many of which were published in 1994 or 1995, and perceptive evaluations that highlight practical issues. Experienced ICP-MS readers will agree that this compact chapter only briefly examines modern systems, current theory, and difficult applications. Not a substitute for longer critical articles or books on the topic, this chapter reflects the extensive experience of the authors and is a useful snapshot of a rapidly developing field.

Multielement graphite furnace and flame AAS are featured in the second short chapter (29 pages) by J. Sneddon and K. Farah. Descriptions of research and commercial multielement instrumentation systems are followed by sections on flame and furnace applications in this historical survey through 1994. Potential problems that limit applications of these multielement AAS instruments are described. Readers will find this chapter informative, but as the authors emphasize, further developments remain before the potentials of the techniques are achieved even with commercial systems.

Direct current arcs and plasma jets are described by R. Avni and I. Brenner in an extensive 139-page chapter. They examine fundamental characteristics of atmospheric pressure dc arc discharges, dc plasma jets, and applications of the former. Classical in content, the chapter summarizes the accumulated knowledge of arc properties and applications. These topics have not been updated for more than a decade in other publications. The chapter is well written, and topics are treated with sophistication by the experienced authors. Unfortunately, characteristics and applications of the only commercially successful dc plasma jet are missing, although a significant literature and research base exists. Neither the dc arc nor research plasma jets are in fashion today, but interested readers will find this detailed review of arc developments and selected applications during the past 40 years useful background. For example, the authors connect parallels between arc chemistry with current electrothermal vaporizer systems.

In the final chapter by J. Sneddon (22 pages), an impaction-GFAAS system for the determination of metals in air is described. Theory, instrumentation, and experimental results are presented in this synopsis of research directed by the author during a decade or so. Sufficient information is provided, so that a reader can decide whether an impaction-GFAAS system might be worth developing for some particular application.

Overall the volume does not achieve the "vanguard" article/review status promised by the editor, since the rapidly developing topic (PSMS) can become dated in a few years, and AAS and dc arc spectroscopy are mature areas. The book would have been much more valuable to researchers had it been published a decade ago. Perhaps most useful as a historical library reference, this volume will satisfy only a few readers. Fortunately, relatively few typographical errors were found. For example, Planck's constant is misidentified on page 4. The index covers only the major topics. In summary, this volume will be helpful to a limited readership.

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Advances in Transition Metal Coordination Chemistry. Volume 1. Series Editor: Chi-Ming Che. Volume Co-Editor: Vivian W. W. Yam (The University of Hong Kong). JAI Press: Greenwich, CT. 1996. xii + 293 pp. $109.50. ISBN 1-55938-335-6.

A new series from JAI Press devoted to transition metal chemistry debuts with an excellent volume largely devoted to systems containing metal−ligand multiple bonds. Five of the six contributions herein adhere to this theme, and practitioners in the area will find much of interest here.

In chapter one, Recent Progress in the Chemistry of Metal-Carbon Triple Bonds, Andreas Mayr and Samyoung Ahn provide a thorough review of the literature covering the period 1990 through mid-1994. This is the largest chapter of the book, comprising 103 pages and 187 references, and it is very well done. Physical and theoretical studies of alkylidyne complexes are summarized first, and three tables provide useful compendia of structurally characterized systems, $\delta(M^{13}CR)$ chemical shifts, and UV/vis data. Methods of forming metal−carbon triple bonds are covered next, and an extensive section on reactions of alkylidyne complexes completes this review. The latter two sections are particularly successful in systematizing a great deal of reactivity.

In chapter two, Formation of Metal-Ligand Multiple Bonds in Redox Reactions, Jim Mayer summarizes his group's extensive studies of multiple bond formation by the $[MCl_2(PR_3)_4]$ complexes of W and Mo, and uses this body of work to provide comparative insight to the general area of redox reactions which form and cleave multiple bonds. The result is a satisfying analysis which provides a unifying thermodynamic, kinetic, and mechanistic interpretation of these reactions.

Electronic structure and excited-state behavior of metal oxo complexes are the focus of the next two chapters. Vincent Miskowski, Harry Gray, and Mike Hopkins provide in-depth coverage of the electronic spectra of L_nMO and L_nMO_2 systems, beginning with an angular overlap model MO picture and proceeding to detailed descriptions of both metal-centered and LMCT transitions. A comprehensive discussion of the spectra of d^2-MO_2L_4 systems concludes the chapter. The excited-state reactivity of the $[ReO_2L_4]^+$ system is highlighted in the contribution from Wentian Liu and Holden Thorp entitled Excited-State Proton Transfer Reactions of Multiply-Bonded Ligands. Drawing on approaches familiar from excited-state electron-transfer studies, a concise presentation summarizing proton-transfer reactions from various donors to excited states of terminal oxo complexes is provided. Taken together, these two chapters reinforce and complement each other admirably.

In chapter five, Chi-Ming Che and Vivian Yam collect and summarize electrochemical studies of high-valent oxo complexes of Ru, Os, and Re. The bulk of the coverage, which is thorough and systematic, deals with proton-coupled multielectron-transfer reactions occurring in aqueous solution; for each element, a short section summarizing pertinent electrochemical studies in nonaqueous media is also provided.

The volume concludes with a contribution from Xiao-Zeng You and Yong Zhang entitled Conducting Metallic Complexes, which provides a broad, introductory-level survey of both charge-transfer salts and low-dimensional coordination polymers displaying electrical conductivity. Although the topic stands apart from the remainder of the book, the contribution does fulfill one of the editor's commendable aims for the series, namely, to heighten awareness of the voluminous research being conducted in China on transition metal systems.

The volume incorporates a subject index, and is generally free from typographical errors. The editor is to be congratulated for attracting a distinguished group of authors who have produced a cohesive and useful addition to the literature on metal−ligand multiple bonds.

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