

CHEMISTRY 514
SPRING, 2005

LITERATURE OF INORGANIC CHEMISTRY

Beyond the text and supplemental text, there are many sources of detailed information about aspects of inorganic chemistry. Some useful sources for CHE 514 are listed below. This outline is not exhaustive. Many older but still useful books and many primary journals are not listed.

I. Textbooks

A. General inorganic chemistry (selected)

1. Basic

a. *Introduction to Modern Inorganic Chemistry, 6th Edition*, K. M. MacKay, R. A. MacKay, and W. Henderson, Nelson Thornes Ltd. (2002). Textbook for CHE 514.

b. *Basic Inorganic Chemistry*, Third Edition, F. A. Cotton, G. Wilkinson and P. L. Gaus; Wiley-Interscience (1995).

c. *Inorganic Chemistry, 2nd edition*, G. L. Miessler and D. A. Tarr; Prentice Hall (1998).

d. *Inorganic Chemistry, Third Edition*, D. F. Shriver and P. W. Atkins; W. H. Freeman & Co. (1999). Not favorably reviewed. Many errors.

e. *An Introduction to Inorganic Chemistry*, K. F. Purcell and J. C. Kotz; Saunders College Publishing (1997). I have not seen the latest edition.

f. *Essentials of Inorganic Chemistry 1* (Oxford Chemistry Primers 28), D. M. P. Mingos; Oxford University Press (1995).

g. *Essentials of Inorganic Chemistry 2* (Oxford Chemistry Primers 66), D. M. P. Mingos; Oxford University Press (1998).

2. Advanced

a. *Chemistry of the Elements, Second Edition*, N. N. Greenwood and A. Earnshaw; Butterworth-Heinemann (1997). Supplemental textbook for CHE 514.

b. *Advanced Inorganic Chemistry, 6th Edition*, F. A. Cotton, G. Wilkinson, C. A. Murillo, M. Bochmann; John Wiley & Sons (1999). Latest edition of a classic text.

c. *Concepts and Models of Inorganic Chemistry, Third Edition*, B. E. Douglas, D. H. McDaniel and J. J. Alexander; John Wiley & Sons, Inc. (1994).

d. *Inorganic Chemistry: Principles of Structure and Reactivity, Fourth Edition*, J. E. Huheey, E. A. Keiter and R. L. Keiter; HarperCollins College Publishers (1993).

e. *Inorganic Chemistry: A Unified Approach, Second Edition*, W. W. Porterfield; Academic Press (1993).

B. Descriptive chemistry

1. *Descriptive Inorganic Chemistry, Third Edition*, G. Rayner-Canham and Tina Overton, W. H. Freeman and Company, New York, 2002.

2. *Introduction to Coordination, Solid State and Descriptive Inorganic Chemistry*, G. E. Rodgers, McGraw-Hill, Inc. (1994).

3. *Principles of Descriptive Inorganic Chemistry*, G. Wulfsberg, University Science Books (1992).

4. *The Elements, 3rd edition*, J. Emsley, Oxford University Press (1998)

C. Transition Metals

1. *Electronic Structure and Properties of Transition Metal Compounds: Introduction to the Theory*, I. B. Bersuker; John Wiley & Sons (1996) .

2. *The Heavier d-Block Metals: Aspects of Inorganic and Coordination Chemistry* (Oxford Chemistry Primers 73), C. E. Housecroft; Oxford University Press (1999).

3. *d-Block Chemistry* (Oxford Chemistry Primers 27), M. J. Winter; Oxford University Press (1994).

4. *The f Elements* (Oxford Chemistry Primers 76), N. Kaltsoyannis and P. Scott; Oxford University Press (1999).

D. Main group elements, non-metals

1. *Main Group Chemistry, Second Edition*, Massey, A. G.; John Wiley & Sons (2000). Paperback and hardbound editions.

2. *Inorganic Chemistry of Main Group Elements*, R. B. King; VCH Publishers (1994)

3. *Advances in Inorganic Chemistry* (Advances in Inorganic Chemistry, Vol. 50), A. G. Sykes, A. H. Cowley (Editors); Academic Press (2000).

4. *Chemistry of the Non-Metals*, R. Steudel; Walter de Gruyter (1977).

5. *The Chemistry of the Non-Metals*, P. Powell, P. L. Timms; Chapman and Hall (1974).

6. *Non-metal Rings, Cages and Clusters*, J. D. Woolins; John Wiley & Sons (1988).

7. *Rings, Clusters and Polymers of the Main Group and Transition Elements*, H. W. Roesky, Ed.; Elsevier (1989).

8. *The Chemistry of the Non-Metals*, W. L. Jolly; Prentice-Hall (1966).

E. Bioinorganic Chemistry

1. *Bioinorganic Chemistry*, I. Bertini, H. B. Gray, S. J. Lippard and J. Valentine; University Science Books (1994).

2. *Principles of Bioinorganic Chemistry*, S. Lippard and J. M. Berg; University Science Books (1994). A short overview.

3. *The biological chemistry of the elements: the inorganic chemistry of life*, J. J. R. Fausto da Silva and R. J. P. Williams.; Clarendon Press (1991).

4. *Metals in biological systems*, M. J. Kendrick et al.; E. Horwood (1992).

5. *Inorganic Biochemistry: An Introduction, Second Edition*, J. A. Cowan; VCH Publishers (1996).

6. *General Principles of Biochemistry of the Elements*, E.-I. Ochiai; Plenum Press (1987).

F. Physical methods

1. *Physical Methods for Chemists, Second Edition*, R. S. Drago; Surfside Scientific Publishers (1992).

2. *Structural Methods in Inorganic Chemistry, Second Edition*, E. A. V. Ebsworth, D. W. H. Rankin, S. Cradock; CRC Press (1991).

3. *Infrared and Raman Spectra of Inorganic and Coordination Compounds: Theory and Applications in Inorganic Chemistry*, 5th edition, K. Nakamoto; John Wiley & Sons (1997).

4. *Symmetry and Structure: Readable Group Theory for Chemists*, S. F. Kettle, John Wiley & Sons (1995).

5. *Inorganic Spectroscopic Methods* (Oxford Chemistry Primers 62), A. K. Brisdon; Oxford University Press (1998).

6. *Physical Inorganic Chemistry: A Coordination Chemistry Approach*, S. F. Kettle; Oxford University Press (1998).

7. *Handbook of Infrared and Raman Spectra of Inorganic Compounds and Organic Salts* (4 volumes), R. A. Nyquist, R. O. Kagel, C. L. Putzig (Editors), M. A. Leugers (Contributor); Academic Press (1996).

G. Synthesis and characterization

1. *The Synthesis and Characterization of Inorganic Compounds*, W. L. Jolly; Waveland Press (1991).

2. *Synthesis and Technique in Inorganic Chemistry: A Laboratory Manual, 3rd edition*, G. S. Girolami, T. B. Rauchfuss and R. J. Angelici; University Science Books (1999).

3. *The Manipulation of Air-Sensitive Compounds, Second Edition*, D. F. Shriver and M. A. Drezdson; John Wiley & Sons, Inc. (1986).

4. *Experimental Methods in Inorganic Chemistry*, J. Tanaka and S. L. Suib; Prentice Hall (1998).

H. Organometallics

1. *Organometallics: A Concise Introduction, Second Edition*, Ch. Elschenbroich and A. Salzer; VCH Publishers (1992). Includes main group and transition metals.

2. *Principles and Applications of Organotransition Metal Chemistry, Second Edition*, J. P. Collman, L. S. Hegedus, J. R. Norton and R. G. Finke; University Science Books (1987). A thorough revision of the first edition (1980).

3. *The Organometallic Chemistry of the Transition Metals, Second Edition*, R. H. Crabtree; Wiley-Interscience (1994). Very good overview of the basics, including metal carbonyls and selected physical methods.

4. *Fundamental Transition Metal Organometallic Chemistry*, C. M. Lukehart; Brooks/Cole (1985). A good overview, similar to Crabtree.

5. *Organotransition Metal Chemistry: Fundamental Concepts and Applications*, A. Yamamoto; John Wiley & Sons, Inc. (1986). Another good overview.

6. *Organometallics 1: Complexes With Transition Metal-Carbon σ -Bonds* (Oxford Chemistry Primers 12), M. Bochmann; Oxford University Press (1994).

7. *Organometallics 2: Complexes With Transition Metal-Carbon π -Bonds* (Oxford Chemistry Primers 13), M. Bochmann; Oxford University Press (1994).

I. Inorganic materials

1. *The Inorganic Chemistry of Materials: How to Make Things Out of Elements*, P. J. Van Der Put; Plenum Publishing Corp. (1998). A short, readable overview.

2. *Inorganic Materials Chemistry: Desk Reference*, D. Sangeeta; CRC Press (1997).

J. Reactivity and mechanism

1. *Inorganic and Organometallic Reaction Mechanisms*, Second edition, J. D. Atwood; Brooks/Cole (1997).

2. *Mechanisms of Inorganic Reactions*, F. Basolo and R. G. Pearson; John Wiley & Sons, Inc. (1967). An old classic.

3. *Kinetics and Mechanism of Reactions of Transition Metal Complexes*, R. G. Wilkins; VCH Publishers (1991).

4. *Reaction Mechanisms of Inorganic and Organometallic Systems (Topics in Inorganic Chemistry)*, Second edition, R. B. Jordan; Oxford University Press (1998).

K. Solid-State Chemistry

1. *Basic Solid State Chemistry*, A. R. West; John Wiley & Sons, Inc. (1988).

2. *Solid State Chemistry and Its Applications*, A. R. West; John Wiley & Sons, Inc. (1987). An excellent but staggeringly expensive paperback.

3. *Solid State Chemistry*, L. Smart, E. Moore; Chapman and Hall (1992)

L. Applied and Industrial

1. *Inorganic Chemistry: An Industrial and Environmental Perspective*, T. W. Swaddle; Academic Press (1997)

2. *Insights into Specialty Inorganic Chemicals*, D. Thompson, Editor, Royal Society of Chemistry (1995).

3. *Industrial Inorganic Chemistry*, W. Büchner, R. Schliebs, G. Winter, K. H. Büchel; VCH Publishers (1989).

II. Monographs

A. General inorganic chemistry

1. *Encyclopedia of Inorganic Chemistry*, R. B. King, Editor-in-Chief; John Wiley & Sons, Inc. (1994).

2. *Comprehensive Inorganic Chemistry*, A. F. Trotman-Dickinson, Editor; Pergamon Press (1973). Five volumes. Coverage is by elements (or groups of elements) with additional chapters on topics such as organometallics.

3. *Synthetic Methods of Organometallic and Inorganic Chemistry*, W. A. Herrmann (Editor); Georg Thieme (1996). This very useful, ten-volume compendium of preparations is the successor to *Handbuch der Preparativen Anorganische Chemie* by Georg Brauer. It is at last available in English!

4. *Handbook of Inorganic Compounds*, D. L. Perry and S. L. Phillips (Editors); CRC Press (1995).

B. Organometallics

1. *Comprehensive Organometallic Chemistry*, G. Wilkinson, F. G. A. Stone and E. W. Abel, Editors; Pergamon Press (1982). Nine volumes. This set and the next entry are the most useful sources of information on organometallic chemistry.

2. *Comprehensive Organometallic Chemistry II: a review of the literature 1982-1994*, Abel, E. W., Stone, F. G. A. and G. Wilkinson (Editors); Pergamon Press (1982). Fourteen volumes.

3. *Dictionary of Organometallic Compounds*, J. Buckingham, Executive Editor; Chapman and Hall (1984). Three volumes, plus annual supplements.

C. Coordination compounds

1. *Comprehensive Coordination Chemistry: The Synthesis, Reactions, Properties and Applications of Coordination Compounds*, G. Wilkinson, R. D. Gillard, J. A. McCleverty, Editors; Pergamon Press (1987). Seven volumes. Vol. 1 is Theory and Background; Vol. 2 is Ligands; Vols. 3-5 are surveys by metal; Vol. 6 is applications; Vol. 7 is indices.

III. Review series

A. General inorganic chemistry

1. The *Oxford Chemistry Primers* series provides concise introductions to a variety of topics at bargain prices. Several are listed above. There are now 99 in the series. Most of these paperback editions cost \$10 to \$15. See: http://www.oup-usa.org/catalogs/general/series/Oxford_Chemistry_Primers.html

2. *Gmelins Handbuch der Anorganische Chemie*; Springer-Verlag, Berlin. Comprehensive, critical review of the primary literature, by element. Recent volumes are in English. Available as an on-line tool affiliated with Beilstein.

3. *Progress in Inorganic Chemistry*; Wiley-Interscience (1959–).

4. *Advances in Inorganic Chemistry* (formerly *Advances in Inorganic and Radiochemistry*); Academic Press (1959–).
 5. *Reviews in Inorganic Chemistry*; Freund Publishing House, London, England.
 6. *Topics in Current Chemistry*; Springer-Verlag, Berlin and New York.
 7. *Structure and Bonding*; Springer-Verlag, Berlin and New York.
 8. Journals or series that include inorganic chemistry reviews: *Chemical Reviews*, *Chemical Society Reviews*, *Angewandte Chemie (International Edition in English)*, *Accounts of Chemical Research*, *ACS Symposium Series*, *ACS Advances in Chemistry Series*, etc.
- B. Metals and complexes
1. *Coordination Chemistry Reviews*; Elsevier (1966–).
 2. *Transition Metal Chemistry*
- C. Synthesis and characterization
1. *Inorganic Syntheses* (1939–); McGraw-Hill. Annual volumes of checked syntheses.
 2. *Organometallic Syntheses: Volume 1, Transition-Metal Compounds*, R. B. King (1965); *Volume 2, Nontransition-Metal Compounds*, J. J. Eisch (1981); Academic Press. Volume 3 (1986), Volume 4 (1988), R. B. King and J. J. Eisch, Editors; Elsevier, New York. This has become a series like *Inorganic Syntheses*.
- D. Reactivity and mechanism
1. *Mechanisms of Inorganic and Organometallic Reactions*, M. V. Twigg (Editor); Kluwer Academic/Plenum Publishers (1987–1994). Five volumes have been published.
 2. *Inorganic Reactions and Methods*, J. J. Zuckerman and A. P. Hagen; VCH Publishers and Wiley-VCH (1986–1998). A useful 18-volume series.
 3. *Reactions of Coordinated Ligands*, P. S. Braterman (editor); Kluwer Academic/Plenum Publishers. Volume 1 (1987) covers carbon-bonded organic ligands. Volume 2 (1989) covers heteroatom-bonded ligands.
- E. Organometallics
1. *Advances in Organometallic Chemistry*; Academic Press (1964–).
- F. Solid-state chemistry
1. *M. T. P. International Reviews of Science, Solid State Chemistry*, L. E. J. Roberts, Editor; John Wiley & Sons, Inc. (1982).
 2. *Treatise on Solid-State Chemistry*, N. B. Hannay, Editor; Plenum Press (1973–1976). Six volumes.
 3. *Structural Inorganic Chemistry, Fifth Edition*, A. F. Wells; Oxford University Press, London (1982). (Chemistry-Physics Library has earlier editions.)
- IV. Primary sources (Selected journals and serials)
- A. Inorganic
1. *Inorganic Chemistry*
 2. *Polyhedron*
 3. *Journal of the Chemical Society, Dalton Transactions*
 4. *European Journal of Inorganic Chemistry*
 5. *Inorganica Chimica Acta* and its sections
 6. *Synthesis and Reactivity in Inorganic and Metal-Organic Chemistry*
 7. *Russian Journal of Inorganic Chemistry*
- B. Organometallics
1. *Organometallics* (ACS)

- 2. *Journal of Organometallic Chemistry*
- C. Bioinorganic Chemistry
 - 1. *Bioinorganic Chemistry*
 - 2. *Inorganica Chimica Acta, Bioinorganic Chemistry*
- D. Main Group
 - 1. *Main Group Metal Chemistry*
 - 2. *Phosphorus, sulfur, and silicon and the related elements*
- E. Metals and complexes
 - 1. *Journal of Coordination Chemistry*
- F. Solid-state chemistry
 - 1. *Journal of Alloys and Compounds*
 - 2. *Journal of Solid State Chemistry*
 - 3. *Journal of physics and chemistry of solids.*
 - 4. *European Journal of Solid State and Inorganic Chemistry*
 - 5. *Solid State Communications*
 - 6. *Progress in Solid State Chemistry*
 - 7. *Chemistry of Materials*
- G. General chemistry journals (selected)
 - 1. *Journal of the American Chemical Society*
 - 2. *Angewandte Chemie, International Edition in English*
 - 3. *Science*
 - 4. *Nature*