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Book review

The Chemistry of Gold; by R.J. Puddephatt, Elsevier, Amsterdam and New York, 1978, x + 274 pages, US$ 49.75; Dfl 119.00

The recent developments in complex and organometallic chemistry started in the area of platinum in the Periodic Table and then marched steadily upwards and leftwards to lighter transition metals. Gold, which is both heavier and cheaper than platinum, has suffered a relative neglect, though this is changing now, and this monograph, number 16 in a series on topics in inorganic and general chemistry, is likely to increase the interest in gold chemistry.

This book, which in terms of presentation and paper has a curiously old-fashioned look even though S.I. units are consistently used, attempts a comprehensive coverage of all aspects of gold chemistry. In this it is perhaps also old-fashioned, and the division of material resembles that used in Sidgwick's classic compendium on inorganic chemistry. The literature coverage seems as thorough as Sidgwick's and contains references dating from 1977. The book is valuable as a reference source for the practising and the potential gold researcher. It is not a text-book.

The first chapter gives a general survey of the properties of metallic gold and of its compounds in terms of nobility, coordination number, hardness and softness, ionisation energies etc. There follow separate chapters devoted to inorganic binary compounds, gold(I) complexes, gold(II) complexes, gold(III) complexes, and gold(V) complexes. Organogold chemistry produces the largest chapter in the book with 150 references. This tends to be a very factual survey. The final chapter of descriptive chemistry concerns gold—metal bonds.

The last three chapters assemble material not usually easily available, and thus perform a notable service. There is a relatively detailed discussion of what is still an under-researched area, reaction mechanisms in gold chemistry; a useful review of spectroscopic studies on gold compounds; and an account of the analysis and applications of gold compounds. An appendix contains a table of gold—element bond lengths.

This is a competent production which will be very useful to a rather limited public. The expense of gold (currently ca. $ 200 (U.S.) per ounce) inhibits chemists from working with it. The price of knowledge may be traditionally above that of gold, but at roughly $ 3 per ounce it may still prove equally inhibiting.

A.R.C. Unit of Nitrogen Fixation,
School of Molecular Sciences,
University of Sussex,
Brighton BN1 9QJ (Great Britain)

G.J. LEIGH