for a browser and the vital role of metal ions in biological systems is rapidly perceived.

Radicals are thought to be responsible for many biological processes causing ageing and degenerative disease. There are two chapters of particular interest in this regard. One, by Atwood and colleagues, discusses the pathogenesis of Alzheimer's disease and another, by Multhaup and Masters, is concerned with radical generation and metal binding in neurological diseases and ageing.

The single topic given greatest coverage in this book is nitric oxide in biology. Thirteen years ago this topic did not exist. The award of a Nobel Prize to Furchgott, Murad and Ignarro in 1998 gave public recognition to one of the most remarkable discoveries of the last few decades. Nitric oxide is everywhere in living systems; we missed it because it is so small and has rather distinctive chemistry. The basic principles are described by Fukuto and Wink and nitric oxide modulation by Fung and colleagues. One of the more controversial aspects of nitric oxide activity, formation of the peroxynitrite ion by reaction with superoxide, is described by Koppenol, but readers should be aware that there are other views. The section on nitric oxide in the saliva of blood-sucking insects illustrates the widespread incidence of nitric oxide-related processes, and of particular value is a chapter by Fricker on nitric oxide scavengers as drugs.

This book will be of great interest to all interested in the role of metal ions in biology.

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The Chemistry of Organic Derivatives of Gold and Silver. The Chemistry of Functional Groups, Vol. 100

Saul Patai and Zvi Rappoport (eds)

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What a surprise! After browsing quickly through the book, I wondered whether I had picked up the wrong one. I checked the title—and, sure enough, it did say 'organic derivatives of gold and silver', and there was no doubt from the two bold structures on the front cover—two four-valent carbon atoms each with a single bond to Au or Ag—that this was indeed a book about *organometallic chemistry*, compounds containing *metal–carbon bonds*. But is it?

Chapter 1 is said to be concerned with 'General and theoretical aspects of organic gold compounds', but, by my definition, it is not! Most of the compounds discussed do not have any Au–C or Ag–C bonds at all, and indeed many have no C in them (the structures in Figs 3–12, for example). But it is a useful chapter, focusing on *ab initio* calculations (density functional theory) for two-, three- and four-coordinate gold(I) complexes with neutral and charged ligands.

The Mössbauer section (Chapter 2) by Parish concentrates on σ and π-bonded organogold complexes. Mössbauer probes gold itself and can allow determination of the oxidation state of gold and good estimates of the nature and number of bound groups, the limitations being the large sample size, low temperature and expense of the platinum-196 source. Chapter 3 by Liebman *et al.* is also faithful to the 'organo' theme, surveying enthalpies, Gibbs energies and equilibrium constants. Similarly two informative chapters by Schmidbaur and colleagues discuss compounds in which the organic group is a one-electron carbon-bound ligand for silver (Chapter 7) and synthesis and uses of σ-bonded organogold(I) and gold(III) complexes, homo- and hetero-metallic gold clusters, and alkene, alkyne and carbene complexes (Chapter 8). In contrast to most of the other chapters, cyanide and isocyanide complexes are excluded.

In Chapter 13, Wang and Fackler conclude that dynamic processes and rearrangements displayed by organogold and organosilver complexes are versatile and that mechanistic studies are needed. Horspool in Chapter 10 concludes that there is a scarcity of photochemical transformations of the organic moiety bound to gold and silver and of photochemical fission processes, and widens the scope to include catalytic activity. In Chapter 11, Aitken concentrates on pyrolysis of alkyl and aryl silver and gold compounds, an area of current interest in relation to chemical vapour deposition for electronic applications.

So I did find real organosilver and organogold chemistry in the book, but there were also six or so chapters for which 'organo' means a wide variety of ligands. For me, this was a welcome surprise, since my main interest is non-organometallic.

Fricker describes the historical use of gold in medicine, along with currently used injectable and oral gold(I) thiolate complexes (for treatment of rheumatoid arthritis), in Chapter 16. He discusses the possible mechanism of action: enzyme inhibition and inhibition of transcription of the genes for crucial mediators of inflammatory processes. It is also possible to design gold antitumour, anti-infective and antiviral agents. The need for improved understanding of the molecular and biochemical mechanisms of action of gold compounds is clear. NMR studies are potentially powerful and these are described by Shaw in Chapter 4. For silver, these are two NMR-detectable isotopes, ^{107}Ag and ^{109}Ag but for gold we must rely on ligand nuclei such as ^{1}H, ^{13}C, ^{15}N and ^{31}P since ^{197}Au, the only isotope of gold in Nature, has a high quadrupole moment and a low magnetogyric ratio, and is highly insensitive to detection.

Chapter 14, on syntheses and uses of isotopically labelled compounds of silver and gold, is very wide-ranging, from ^{2}H and ^{18}O isotope effects to NMR nuclei

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and radionuclides. There are further interesting chapters on gold thiol self-assembled monolayers (with a comprehensive set of references), acidity, basicity and H-bonds by Klapötke, analytical aspects (including a survey of X-ray structures, and brief sections on other techniques), as well as a chapter on the electrochemistry of gold and silver complexes by Bruce *et al.*, a good source of redox potentials and cyclic voltammetry data.

If you are a gold or silver chemist, or simply wanting to keep your library up-to-date, then this is a very useful volume to acquire. The audience might be bigger if the words 'organic derivatives of' were simply removed from the title! It is easy to see why they are there: the book is part of a series for organic chemists, *The Chemistry of Functional Groups*. It is pleasing to find that there is a high inorganic content in organic texts these days!

Finally, a word of tribute to the editors. Sadly Saul Patai died (at the age of 80) in August 1998 so he did not live to see this volume published. It is the 100th volume of *The Chemistry of Functional Groups* series, which was his lifetime achievement. We must thank the co-editor, Zvi Rappoport, for continuing to maintain its high standards.

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