ELSEVIER

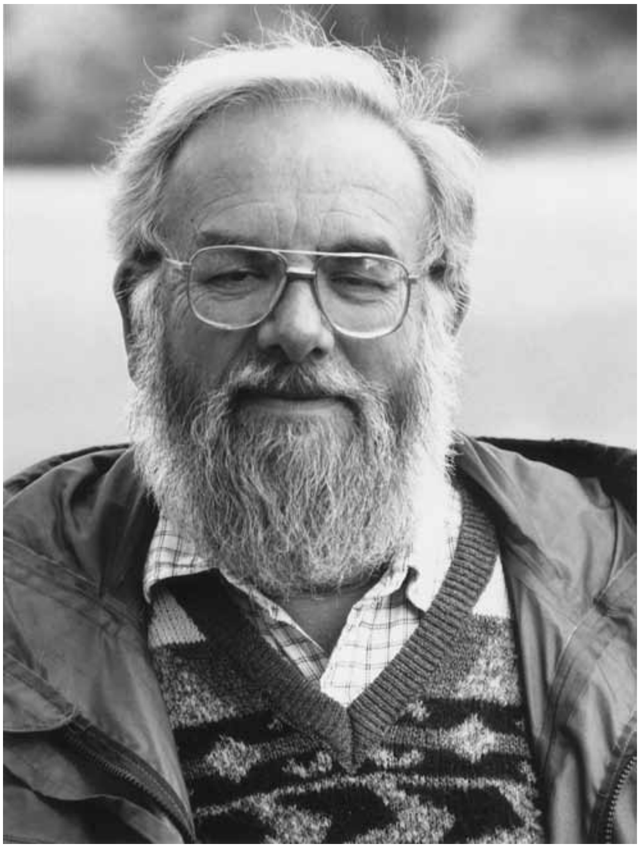
Journal of Organometallic Chemistry 565 (1998) 1–2

Journal of Organometallic Chemistry

Preface

This issue is dedicated to Professor Michael I. Bruce on the occasion of his sixtieth birthday, and provides a welcome opportunity for his co-workers and colleagues to celebrate his many achievements in organometallic chemistry. Michael has made significant contributions to several areas of our discipline, many of which have been published in this journal (more than 150 of his 470 papers and reviews have appeared in the Journal of Organometallic Chemistry).

Michael Bruce was born in London, England, on 17 November 1938. He graduated from Oxford in 1961, where he was first exposed to the wonders of the (then) emerging field of organometallic chemistry. He did not immediately take up research in this area, though; his first employment was with the Division of Plant Industry at CSIRO in Canberra, Australia, where he discovered a new class of plant cell-division initiators. The attraction of the organic chemistry of transition metals, which was sparked off by a lecture from Gordon Stone at Oxford (he still has some of the samples of the early organometallics that were passed around during that lecture!), persuaded him to work for a Ph.D. at Bristol, England, where Stone had recently taken up a Chair of Inorganic Chemistry. This he completed in 1967, whereupon he continued at Bristol as a Lecturer. In 1973, Michael took up the Chair of Inorganic Chemistry at the University of Adelaide, South Australia, succeeding the late Don Stranks. In 1982, he was appointed to the Angas Chair of Chemistry where he remains to this day, with a brief interregnum as Dean of the Faculty of Science.



During nine productive years at Bristol, Michael worked on polyfluoroaromatic complexes of transition metals, cyclometalation reactions and some of the first heterometallic carbonyl complexes, while developing electron impact mass spectrometry as a tool to study organometallics. His interests in mass spectrometry have continued to the present; he was one of the first to apply the soft ionisation technique of fast atom bombardment mass spectrometry to organometallics and he is currently exploring the potential of electrospray techniques.

At Adelaide, the Bruce group has made major contributions to both mononuclear and cluster transition metal chemistry. The chemistry of $Ru(PR_3)_2(\eta\text{-}C_5H_5)$ complexes, which has many differences from that of the corresponding carbonyl complexes, has been a long-standing interest. The electron-rich d^6 metal centre proved to be very efficient at isomerising terminal alkynes to vinylidenes, and much of the basic chemistry of these unsaturated carbenes was established. This work was extended to the chemistry of metal alkynyl complexes, their nucleophilic properties being employed to generate novel vinylidenes and unusual cycloaddition reactions with electron-deficient olefins and related molecules. Forays into poly(pyrazolyl)borate chemistry of the Group 11 elements resulted in the discovery of one of the first stable copper carbonyl derivatives.

PII S0022-328X(98)00437-9

Studies with the pentakis(carbomethoxy)cyclopentadienyl ligand afforded a large number of novel complexes in which the ligand is either C- or O-bound, chemistry which has since been extended to related C_5 ligands.

At Bristol, Michael had made the seminal discovery of a facile synthesis of $Ru_3(CO)_{12}$, a prototypical cluster carbonyl whose stability and reactivity is still generating much novel chemistry. At the time, further development of its chemistry was hampered by the harsh reaction conditions required to substitute the CO groups. This problem was overcome in Adelaide by using a radical anion initiator which, in turn, enabled further studies of complexes containing functional phosphines. From these studies novel cluster complexes containing the simplest all-carbon molecule, the C_2 ligand, were discovered. This area has now expanded to embrace the chemistry of mononuclear, binuclear and cluster-bound C_x fragments: useful synthetic routes to complexes containing C_2, C_3, C_4, C_6 and C_8 ligands have now been developed. In another key development of his cluster research area, the Bruce group developed the trigold–oxonium cation $[(R_3PAu)_3O]^+$ as a reagent permitting access to many novel polygold heterometallic clusters, further extending his interests in Group 11 chemistry. In a further on-going area of research, his high-yielding routes into pentanuclear ruthenium and osmium clusters have permitted the extensive development of pentametallic cluster chemistry over the last few years, revealing facile core rearrangements and high reactivity of molecules attached to five metal atoms.

In addition to the above, Michael Bruce has found time to contribute extensively to both editions of Comprehensive Organometallic Chemistry. He has made many contributions to Annual Surveys of Organometallic Chemistry, the Chemical Society's Specialist Periodical Reports on Organometallic Chemistry and Mass Spectrometry, and Advances in Organometallic Chemistry, and he has been on the Editorial Advisory Boards for Applied Organometallic Chemistry, Journal of the Chemical Society, Dalton Transactions, Journal of Cluster Science and Organometallics. He has been a Visiting Professor at the USSR Academy of Sciences (Moscow), Université Louis Pasteur (Strasbourg), University of British Columbia (Vancouver) and Université de Neuchâtel. His achievements have been recognised by awards of the H.G. Smith Medal (1986) and the Burrows Lecture (1987) of the Royal Australian Chemical Institute and by election to Fellowship of the Australian Academy of Sciences (1989).

Michael Bruce's enthusiasm for organometallic chemistry has inspired the former students and post-doctoral researchers, co-workers, and colleagues whose contributions make up this Special Issue. From all of us: Best wishes on your 60th, Michael, and may you have many more fruitful years in organometallic research.

Mark G. Humphrey
Department of Chemistry
Australian National University
Canberra, ACT 0200
Australia