Introduction

Michael Lappert was born in Czechoslovakia in 1928. After coming to England, he graduated from the Northern Polytechnic with first class honours in 1949, and received his Ph.D. also from London only two years later. His initial academic appointments were in organic chemistry, at the then Northern Polytechnic, rising rapidly from Assistant Lecturer in 1952, to Senior Lecturer in 1957. He then spent three years in the Manchester College of Science and Technology, where his interests would conventionally be described as inorganic, moving to the then new University of Sussex, as Reader, in 1964. His present position of Professor he has held since 1969, with a period of five years (1980–1985) as an S.E.R.C. Senior Fellow.

Lappert's research has been primarily concerned with the synthesis and characterisation of novel types of organometallic and inorganic compounds, and has focused on reactions in non-polar solvents. His reputation was initially based on his work on the chemistry of boron, and included the preparation of triborylamines, extensive studies of the haloboration reaction, and the uses of boron halides in synthesis, a reaction much used today in the preparation of transition metal halides. His seminal work on metal and metalloid amides was initiated with tin, but was soon extended to other elements, notably those of Groups 4, 14, and 15.

In the latter half of the 60s, stable binary alkyls of the early transition metals were unknown, and several publications suggested that they were inaccessible. Lappert realised that they might be kinetically stabilised, and achieved this goal with the series of ligands $-CH_n(SiMe_3)_{3-n}$ (first reported in a patent) so obtaining a wide range of novel, kinetically stable alkyls. With characteristic logic, Lappert refused to use the term "binary", (which is not strictly correct in the context) coining the term *homoleptic*, now widely used in this and other appropriate contexts. A glance at any issue of this journal, or other organometallic publications will reveal the extent to which these and closely related ligands continue to influence work in the area.

Another current major research area springing from his work, is that of the heavier Group 14 carbene analogues MX_2, and related multiply bonded species M_2X_4, or radicals MX_3, *e.g.*, SnR_2, Sn_2R_4, and $\cdot SnR_3$ [$R = CH(SiMe_3)_2$] together with analogous Group 15 species. These areas were themselves developments from his original synthesis of transition metal carbene complexes from the carbenoid species, electron-rich olefins. These developments have stimulated related work from several groups, in Europe, the United States, and Japan.

More recently, his research has turned to the synthetic potential of the bulky-, β-hydrogen free ligands (originally designed to stabilise homoleptic transition metal alkyls) in a range of other contexts. The scope of these is such that it is easier to specify those elements to which he has not turned his attention (of the non-radioactive elements only rare gases, Rb, Cs, and Be have so far escaped his attention) than to list those for which there have been significant contributions.

The above paragraphs briefly outline the areas for which Michael Lappert is best known; but it still does not constitute a comprehensive list even of the *areas* to which he has contributed. Mention must be made of the valuable work in the fields of catalysis (the first demonstration that carbene-metal complexes are catalysts in olefin dismutation; the characterisation of the initiator in the Speier hydrosilylation reaction), in bioinorganic chemistry (the spin-trapping of the 5'-deoxyadenosyl radical and the first detailed kinetic analysis on elementary processes for reactions for which coenzyme-B_{12} is required), in thermochemistry providing data for M–X bonds (X = C, but also N, O, and Cl; the demonstration of the differing trends in D(M–C) for transition and Main Group metals), in organometallic free radical chemistry (first demonstration of the S_H2 process at a transition metal centre, and of the role of free radicals in certain $Pt^0 \rightarrow Pt^{II}$ oxidative additions), and of course in metal-amide chemistry, for illustration of which, the reader is referred to the book edited by Power, Sanger, and Srivastava (published by Horwood–Wiley, 1980).

From this wealth of chemistry, it is difficult in the space available to select highlights, and any list will inevitably be highly idiosyncratic. Nevertheless, the following (coupled with the specific cases mentioned above) seem to the writer to be of special interest and significance: characterisation of BN cyclobutadiene analogues and triborylamines (1964); preparation of alkyl-bridged transition metal (Cu^I) and lanthanide compounds (1973, 1976); synthesis of the unique η^2-N_2-Zr compound (1978); characterisation of stable metal-centred radicals of Ge, Sn, P, and As (1974, 1976); demonstration of the novel 3-fragment oxidative addition process leading to the first secondary carbene complexes [$L_nM{=}C(H)X$] (1974); preparation of the first simple noble-metal amides and of 2-coordinate transition metal amides (1979, 1988).

More difficult to illustrate because of its extent, is the steady flow of novel bulky ligands ligating through N-, O-, S-, P-, which have provided numerous new types of compound of s-, p-, d-, and f-block elements. Highlights here include: the first compounds with As=N bonds ([ArNAs(NHAr)]) (1986); first examples of M=P bonded species ([$Mo({=}PAr)Cp_2$]) (1987); the first compounds of lanthanides (or Sc and Y) with an MO_3 coordination environment (1983–1987); low coordinate alkaline-earth derivatives such as [$Ca(OAr)_2(thf)_3$] (1990).

The extent of the contribution can perhaps be suggested by the almost 600 original publications, two books, three edited books, and forty or so reviews which have so far appeared.

These and many other achievements have been recognised by a variety of honours, lectureships, and offices which he has held. Among these have been election to the Royal Society (1978), the Presidency of the Dalton Division of the Royal Society of Chemistry (1989–1991), RSC awards for Main Group metal chemistry (1970), and organometallic chemistry (1978), the ACS Kipping award for organosilicon chemistry (1978), and numerous endowed lectureships, visiting professorships, editorships, and consultancies.

To those of us who are fortunate enough to know Michael Lappert personally, either as students, collaborators in joint projects, or colleagues, (enjoying from time to time his famous hospitality!) it seems incredible that this issue is to celebrate his 65th birthday. It seems even more incredible in view of his continuing visits around the world, frequently coupled (as at home) with visits to concerts, operas, and art galleries, to think of him retiring. In this connection it might be worth reflecting that Guiseppe Verdi, a composer over whose works he has been known to enthuse, did what is generally considered his best work in his eighties. If he does contemplate such a transition, we wish him and his wife Lorna, a long and happy time; but as seems infinitely more probable, if he continues to fascinate us with more chemistry, perhaps the best we could wish for him in addition to lasting good health, would be an inexhaustible supply of high quality collaborators.

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