

Preface

The papers in this issue represent a selection of those associated with the symposium “Main Group and f-Element Metalloorganic Chemistry,” held as part of the Southeastern Regional Meeting of the American Chemical Society (SERMACS 2008) in Nashville, Tennessee on 13–14 November 2008. Cleverly nicknamed the “SPF” symposium by Prof. Bruce Bursten, one of the participants, the program was designed to highlight the vitality that exists in contemporary research with the synthesis, structure, bonding, and reactions of compounds of the s-, p-, and f-block elements.

There are good reasons for recognizing the synergy between the “SPF” blocks of the periodic table. At the most basic level, of course, virtually all compounds of the s- or f-block elements contain one or more of the p-block elements (e.g., C, N, O, or the halogens) in their ligands. In addition, one does not have to look far to find parallels connecting the largely ionic bonding of the s-block and f-block elements, or to discover thought-provoking coincidences between the structures of their organometallic compounds, despite differences in metal-ligand bonding (the bent decamethylmetallocenes $(C_5Me_5)_2M$ of calcium, lead, and samarium come directly to mind, but there are many others).

A second inspiration for the development of the symposium was to celebrate the advances in our understanding of structure, bonding and reactivity in inorganic chemistry provided by the “SPF” elements—contributions that are sometimes overshadowed by the emphasis placed on the compounds of the d-block transition metals. The indulgent reader will permit me a brief recitation of some of the chemical “firsts” provided by organometallic compounds of these metal families. Among early examples were the first synthetic compounds with metal(loid)–carbon bonds, $(Me_2As)_2O$ and $(Me_2As)_2$, prepared by Cadet in the late 1750’s; the first compound discovered after Mendeleev’s prediction of it in 1871, $Ge(C_2H_5)_4$; the first metal cyclopentadienyl compound, $K[C_5H_5]$ (Thiele, 1901) – and not, it might be necessary to stress, the iron derivative ferrocene, which was not reported for another half century; and the first generation of alkyl radicals by Paneth in 1929 from the pyrolysis of PbR_4 . Although W. J. Pope used the then-new Grignard reagents to prepare the first Pt–C sigma bonds in the form of Me_3PtI in 1907, Sand and Singer had the same idea in 1903, in their experiments with $MeMgI$ and the f-block oxychloride UO_2Cl_2 (the understanding of chemical bonding at that time was too primitive for them to conclude anything other than that U–C bonds were hydrolytically unstable). In presentation after presentation, the papers delivered at the symposium demonstrated that the main-group and f-block elements still have much to teach us about the formation, energetics and reactions of metal–nonmetal bonds.

I am grateful to all the participants in the symposium, to Prof. David Atwood for his encouragement and efforts in arranging for this special issue, and to Taylor and Francis for their financial support of the proceedings. I know the interested reader will find much that is stimulating here.

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