

Introduction to the themed issue on Main Group Chemistry

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In recent years, whenever main group chemistry as a sub-discipline is presented, described and discussed, the word 'renaissance' will inevitably emerge in titles, abstracts, and in conversations. Is it reasonable to even suggest that the two should sit so closely together on a page or in the mind? As one of the pinnacles in the history and development of science, the Renaissance requires no modern fellow travellers. However, if considered in a literal sense as simply a renewal then it is an apt descriptor for what is happening in those areas of chemistry concerned with elements in the s- and p-blocks of the periodic table. Certainly, it will be for others in years to come to judge the impact of the current developments in main group chemistry, but that should not detract from the energy and enthusiasm of those currently engaged in contributing to its regeneration, and its impact on growth areas across the physical and biological sciences.

These advances are recognisable in the isolation and characterisation of complexes with elements in unusual bonding modes, particularly multiple bonding, and in previously unknown oxidation states. These complement and sit synergistically with the development of new reactive species, advances in applied synthetic chemistry and advances in theoretical chemistry to both explain and to predict. In sustainable technologies, main group element complexes are being

developed to trap and store gases, such as hydrogen and CO₂, and provide cleaner and safer catalysts. Progress in new nanomaterials, chemical sensors, solid phase catalysts, electro-active polymers and thin films, and compounds with tuneable luminescent properties all emanate from within research on new materials, and despite some antipathy towards metals in medicine by the large pharmaceutical companies, research into diagnostics and therapeutics continues apace. The bio-inorganic, coordination and medicinal chemistry of main group elements continue to be studied in positron emission, optical, magnetic and radiographic imaging, while new and important developments are occurring in metallotherapeutics, antimicrobial agents, and enzyme inhibitors and mimics.

This themed issue attempts to capture and reflect the current frontlines in the field of main group chemistry. Thirty-six articles, including two reviews, provide broad coverage of systems incorporating elements ranging from alkali and alkaline earth metals to both metallic and non-metallic elements of the p block.

Most of the contributions are from speakers in three symposia (at the up-coming Pacifichem 2010 conference) focused on main group chemistry. These are "Organoboron, Organosilicon and Organophosphorus as Optoelectronic and Energy-Related Materials", organised by Prof. Suning Wang with three other

researchers in the field, "Early Main Group Chemistry", organised by Prof. Phil Andrews with two colleagues, and "Functional Molecules of the Heavier Main Group and Transition Metal Elements", organised by Prof. Fumiyuki Ozawa with two other specialists in the area.

Other contributions were solicited by Prof. Pascal Le Floch, then *NJC* co-Editor-in-Chief (see the following Editorial), who was well-known for his work on phosphorus chemistry.

The editors of *NJC* wish to thank the organisers of the three symposia for their collaboration on this project. Without their participation, this issue could not have been prepared. We also thank the authors who replied to the invitations of the guest editors and contributed to this themed issue. The reviewers, who evaluated the submitted manuscripts, sometimes on a very tight deadline, are also warmly thanked for their help. Finally, we express our gratitude to *NJC* Associate Editor Prof. Peter Junk for his unfailing assistance.

This themed issue will be available at Pacifichem 2010 in the three symposia.

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