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Preface

Main Group Chemistry is coming of age; it is being reborn and renewed. Researchers around the world now focus on this subject as a separate and unique area of chemistry. Where the decades of the 1960s to 1980s saw the development of coordination and organometallic transition metal chemistry, a strong emphasis has grown for the main group elements in the 1990s. Unusual structural features are being discovered, new bonding characteristics are being devised, and new industrial applications are being created for these elements. In recognition of the newly emerging importance of Main Group Chemistry, and in order for the subject to be viewed in its entirety, Elsevier will now dedicate issues of the Journal of Organometallic Chemistry to the area. We have the honor and good fortune to be able to introduce you to the first issue of this series, focused on the group 16 elements.

The chalcogens, sulfur, selenium, and tellurium play a central role in modern inorganic chemistry. Sulfur, in particular, has a significant impact on the present day chemical industries. It is the eighth most abundant element in the earth's crust and occurs in nature as a free element. The annual production of elemental sulfur is second only to that of iron. Almost 90% of sulfur is used for the production of sulfuric acid, it is arguably the most important chemical in the world. Its use is so pervasive in almost every area of process industry that its production and use is generally regarded as a measure of the affluence of a society.

Sulfur is inexpensive and easy to obtain through the Frasch process. There are great opportunities for the use of this element in other industrial and materials science processes. As a consequence, an extensive amount of fundamental research work is being carried out on the preparation, structural characterization, bonding characteristics, and chemical properties of molecular forms of elemental sulfur and sulfur compounds, and by extension, the other chalcogens.

The last decades have seen a rapid growth of interest in the coordination chemistry of metal complexes with organoselenide and telluride ligands because of their potential utility as precursors for binary metal selenides and tellurides, such as PdTe, NiTe, SnS, SnSe, and PbSe that could have applications in the fabrication of new electronic materials. Many transition metal complexes with chalcogen-containing ligands have also shown propensity to catalytic applications. The use of this type of compounds in the hydrodesulfurization of petroleum is one example of enormous commercial and environmental significance.

Commercially applicable binary metal chalcogenides should generally be microcrystalline or amorphous and their conventional methods of preparation generally involve high-temperature syntheses directly from the elements under an inert atmosphere in order to prevent the facile oxidation of the chalcogen elements. The metal complexes with chalcogen-containing ligands may provide an alternative, low-temperature route for these materials and open the possibility of obtaining new metastable phases of the materials with unique and unforeseen properties.

It is for the significance of Group 16 elements to inorganic chemistry that the first issue of *Journal of Organometallic Chemistry*, devoted to the main group elements, will have sulfur, selenium, and tellurium as a major focus. This first issue is entitled:

Group 16 Chemistry.

It contains 25 papers that explore different aspects of chalcogen chemistry: Traditional synthetic and structural organometallic chemistry involving compounds with metal–carbon bonds, complexes with organic chalcogen-containing ligands that contain chalcogen–metal bonds, and even main group species involving chalcogen–carbon bonds. The issue also includes a theoretical treatise on the topology of chalcogen compounds as well more applied approaches involving chalcogen-containing materials. We thank everybody who contributed time and effort in the production of this issue. The present collection of papers clearly demonstrates that chalcogen chemistry is a fascinating field of study and well merits its rapidly growing interest.

Oulu and Lexington, November 15th, 2000.

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