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Preface

The general reader may be unaware of the recent exciting and important advances being made in organosulfur, selenium and tellurium chemistry. It is for this reason that this Symposium-in-Print has been published. A Symposium-in-Print on organoselenium chemistry appeared previously but over a decade ago (*Tetrahedron* **1985**, *41*, 4727-4890). The recent advances find important applications in diverse fields including organic synthesis, bonding theory, artificial receptors, preorganized ligands, bioorganic chemistry and materials science. This Symposium-in-Print endeavors to enlighten the general reader about many of these advances and applications in an organized way. Twenty leaders in these areas have contributed original articles which present current research as well as insightful overviews.

The papers included in this Symposium-in-Print illustrate the key role played by sulfur compounds in the generation of "disciplined" radicals used in carbon-carbon bond formation and the preparation of versatile organolithium reagents, the activating and directing effect of sulfur functional groups on radical additions to alkenes, chiral synthesis of allylic alcohols via chiral allylic selenoxides, and "nucleophilic reduction" effected by telluride. Syntheses and the novel chemistry of diselenides, isoselenoureas, selenoaldehydes, hexacoordinate tellurium compounds with four to six C-Te bonds, strained small ring sulfur compounds, diatomic sulfur, and sulfur monooxide are presented which also extend the concepts of bonding theory. The Se-Claisen rearrangement is advantageously exploited for the synthesis of allylic selenothioic acid S-alkyl esters. Preorganized molecules are essential for synthetic molecular receptors and the consequences of preorganization are explored. The unusual properties of S, Se, and Te compounds render them important in materials science. One such property is photochromism illustrated for thiophene oligomers. Another is their propensity for electron-transfer exemplified by the effect of α-stannyl groups on vinyl sulfide oxidation. Oxidation of sulfur is an important biological process whose mechanism has sparked controversy. Either electron-transfer or oxygen atom transfer may occur. A mechanistic organic approach to resolve this controversy is shown. Not only sulfur but selenium, as well, is important biologically. Selenocysteine has been recognized as the 21st amino acid incorporated co-translationally into proteins. Selenium is an essential mineral implicated in reducing the incidence of certain cancers as related in this Symposium. The biological role of selenium is elucidated in chemical detail in the study reported herein on the artificial selenoenzyme selenosubtilisin which mimics the function of the natural selenoenzyme glutathione peroxidase. Clearly chemists have an essential role to play in materials science and biology in addition to traditional roles.

It is hoped that the above menu will entice readers to partake in the delights of the full plate of offerings. Such indulgence may not only satisfy the reader's appetite for intellectual food-for-thought but also provide practical information relevant to the reader's own interests and, perhaps, also convince others that research in S, Se and Te chemistry is exciting, rewarding and relevant.

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