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PREFACE

Within certain circles the belief exists that synthetic organic chemistry has achieved such a high level of sophistication that no target is unattainable. While in the extreme this belief may be true, the realities of synthetic chemistry in its current state make the total synthesis of many target molecules quite impractical and often-times effectively unachievable. Problems dealing with the construction of complex molecular skeletons, the manipulation of multiple functional groups and the control of both the relative and absolute stereochemistry at chiral centers pose a constant challenge to the ingenuity and creativity of the synthetic organic chemist. The search for new and efficient ways of circumventing these problems has increasingly led synthetic chemists well outside the traditional realm of organic chemistry. Such has been the case with the development of the field of modern organoselenium chemistry.

The name selenium comes from the Greek word, selene, meaning moon. Although the chemistry of selenium and its derivatives had been well studied since its discovery in the nineteenth century, prior to the 1970s many organic chemists would have considered the use of selenium-derived reagents with a form of lunacy. These reagents were thought to be both toxic and malodorous and apparently offered no advantages over other, more common reagents. However, in 1970 Jones *et al.* observed that certain steroidal selenoxides rapidly decomposed at room temperature to produce the corresponding olefin. While this observation in and of itself did not dramatically alter the organic chemists' perception of organoselenium chemistry, it did pique the interest of a few organic chemists who recognized the potential implications of this observation. In 1973, Sharpless and Lauer reported a general interconversion between epoxides and allylic alcohols which made use of a selenium nucleophile, phenylselenide anion. Shortly thereafter, Sharpless, Reich and Clive reported a number of useful chemical transformations which instead utilized electrophilic selenium reagents. The stage was set. The renaissance of organoselenium chemistry had begun!

During the last ten years, many investigators have described important chemical transformations which were efficiently achieved using organoselenium reagents. In fact, by the mid 1970s, many organoselenium reagents were regarded as commonplace, rather than esoteric. In large part this is because they provided chemists with the ability to consistently perform important transformations simply and in high overall yields.

As the above examples suggest, selenium groups can be introduced into a variety of substrates in either a nucleophilic or electrophilic sense. Once incorporated, they can either be used immediately for the desired functional group conversion or retained and then manipulated at a later stage. Although there are a large number of chemical reactions which organoselenium groups can be made to undergo, without question the most important of these is the selenoxide *syn*-elimination reaction observed by Jones *et al.* As has been subsequently demonstrated, *β-eliminations of selenoxides represent the mildest, general olefin-forming reaction known.* Since the carbon–carbon double bond is an extremely important functional group in organic chemistry, this reaction alone would make organoselenium chemistry useful to anyone interested in synthesis. However, as it will be shown in this *Symposium*, this elimination reaction represents just a small fraction of what has turned out to be a very interesting and useful area.

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