Preface

Arynes are highly reactive intermediate that have attracted considerable attention of chemists since their discovery over a century ago. In 1953, Roberts confirmed the formation of aryne through a ^{14}C-labeling experiment of chlorobenzene. Arynes are not generally amenable to isolation and storage, accordingly, a diverse array of aryne generation methods, including dehydrohalogenation of halobenzenes, elimination reactions of diaryliodonium salts, triaryloxonium ions, aryl sulfonium salts, fluoride-induced elimination of ortho-silylaryl triflates, the hexadehydro-Diels-Alder reaction of an alkyne and a 1,3-diyne (HDDA) and so on, have been developed. Among these methods, 2-(trimethylsilyl)aryl trifluoromethanesulfonates are useful reagents, which can generate arynes through fluoride-induced reaction under very mild conditions. Since the discovery of Kobayashi's reagent, the past two decades have witnessed remarkable progress of arynes chemistry. As one of the most reactive organic species, arynes have been used widely in synthetic chemistry, medicinal chemistry and advanced functional materials. Owing to their distinct electronic properties, arynes can serve as dienophiles in a series of pericyclic reactions, insertion- cyclization, dearomatization, and multicomponent coupling reactions. In particular, the tandem reactions of arynes provide a powerful tool for the rapid construction of various carbocycles and heterocycles.

This book can be used as a reference for college teachers, graduate students, and researchers in the field of organic chemistry, fine chemistry and drug synthesis.