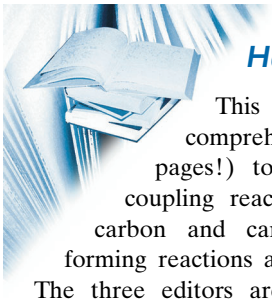

Cross Coupling and Heck-Type Reactions

This three-volume set is a comprehensive guide (over 2600 pages!) to metal-catalyzed cross-coupling reactions, covering carbon–carbon and carbon–heteroatom bond-forming reactions and Heck-type reactions. The three editors are experts in this field, and almost all chapters have been written by established experts. The objective of this book was to summarize the most reliable procedures published in the literature for cross-couplings and Heck-type reactions. Since many of the published methods employ either useless ligands or additives, and in several cases exotic reaction conditions, this book provides a unique resource for many researchers who are not experts on such couplings to find information about reliable conditions. Most chapters present up-to-date descriptions of the corresponding reactions.

At the beginning of each volume there is a detailed abstract with a short description of the content of each chapter, illustrated with schemes, which allows easy navigation through the numerous chapters. At the end of each volume, an exhaustive keyword index and—more importantly—an author index of the cited publications is provided.

The first volume deals with C–C cross-couplings using boron, silicon, zinc, and magnesium derivatives. As expected, the most important part of this volume describes the cross-couplings of all types of boron derivatives: arylborons, heteroarylborons, alkenylborons, alkylborons, alkynylborons, and also allylborons. However, cross-couplings using silicon, zinc, and magnesium derivatives are also covered in detail. Most of the selected reactions employ palladium catalysts, but some examples using other metals such as nickel, copper, rhodium, manganese, cobalt, or iron catalysts are also described.

The second volume reports on cross-couplings for forming carbon–heteroatom bonds, and also C–C cross-couplings of acidic C–H nucleophiles. Half of this volume deals with C–N bond formation, and covers all aspects of such couplings. That is followed by chapters on the formation of C–P, C–O, C–S, C–B, C–Si, and C–CN bonds. A chapter on the formation of C–F bonds describes the recent developments on this important reaction. Finally, two chapters report on couplings with acidic C–H nucleophiles such as ketones, enones, alkane nitriles, alkyl sulfones, malonates, and cyanoacetates.

The third volume is concerned with Heck-type reactions and C–C cross-couplings through the activation of C–H bonds (sp^2 and sp^3). The first chapter of this volume summarizes the classical Heck reaction with terminal alkenes. Other reactions such as decarbonylative, decarboxylative, or desulfinylative Heck couplings, and reactions of arylboronic acids with alkenes are then described. Intramolecular reactions and reactions with various alkenes such as electron-rich ones are also described. This volume also includes several chapters on C–H bond activation: formation of C–C bonds by inter- or intramolecular $C(sp^2)$–H activations, couplings by $C(sp^3)$–H activations, and also the formation of C–C bonds by oxidative coupling.

As in all books of the *Science of Synthesis* series, every chapter includes detailed descriptions of representative experimental procedures, which the reader can easily reproduce. As most chapters have been written by experts in the field, they contain a good representative selection of the reliable procedures. However, it should be noted that in the chapters on C–H bond activation, some recent important results are not included.

In summary, I would encourage both synthetic and organometallic chemists to explore this book. I was pleased to see that the authors have given details of most of the structures that are accessible by metal-catalyzed cross-coupling reactions. This broad coverage constitutes one of the strengths of this book. I am confident that all experimental chemists working on metal-catalyzed couplings or Heck-type reactions, from beginners to experts in the field, will find useful information. This book is a "must-have" for all chemists who wish to have a good overview of the potential of metal-catalyzed cross-couplings and Heck-type reactions for organic synthesis.

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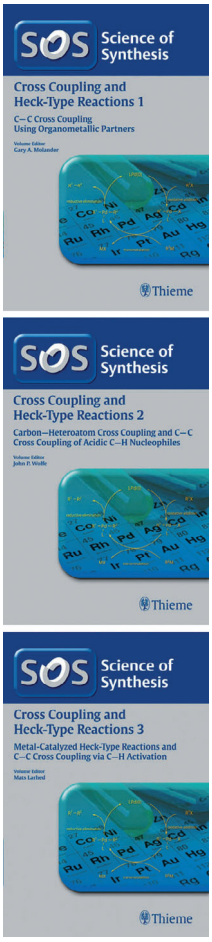

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