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Book Review

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Palladium in heterocyclic chemistry—a guide for the synthetic chemist

Tetrahedron Organic Chemistry Series, Volume 20

Pergamon
413 pp; price £45.00
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This book is an excellent review of methods for the palladium-catalysed derivatization of heteroaromatic compounds. The introduction describes the different types of palladium-catalysed coupling reaction and summarizes some methods for the synthesis of the indole nucleus. Palladium coupling reactions include those of Negishi, Suzuki, Stille, Stille–Kelly, Kumada, Hiyama, Sonogashira, Buchwald–Hartwig, Tsuji–Trost and Heck. Methods for the synthesis of the indole nucleus include those of Mori–Ban, Hegedus and Larock. Each chapter begins with some examples of naturally occurring or synthetic heterocycles of importance. Chapter 2 deals with pyrroles, Chapter 3 with indoles, Chapter 4 with pyridines, Chapter 5 with thiophenes and benzo[*b*]thiophenes, Chapter 6 with furans and benzo[*b*]furans, Chapter 7 with thiazoles and benzothiazoles, Chapter 8 with oxazoles and benzoxazoles, Chapter 9 with imidazoles, Chapter 10 with pyrazines and quinoxalines and Chapter 11 covers pyrimidines. Each reaction is illustrated with a scheme. Each chapter is carefully referenced in detail, making the book an excellent reference source to the original literature. The information in each chapter is presented in a chronological and ordered manner, beginning with the synthesis of the haloheterocycle, oxidative couplings, coupling reactions with organometallic reagents, Sonogashira and Heck reactions, carbonylation and C—N bond formation reactions. This grouping makes it easy to find a particular type of reaction on a certain heteroaromatic compound. A small number of reactions performed on solid phase are described. In summary, this is a detailed and carefully presented book on the use of palladium-catalysed reactions for the ring syntheses of some heterocycles and for their derivatization. It would be useful for any chemist in industry or academia interested in methods for the functionalization of heteroaromatic compounds. Palladium-catalysed reactions can now be widely exploited for the synthesis of libraries of heterocyclic compounds relevant to the pharmaceutical and agrochemical industries.

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