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Nota di contenuto	Metal-catalyzed Cross-coupling Reactions; Contents; 1 Palladium- or Nickel-catalyzed Cross-coupling with Organometals Containing Zinc, Magnesium, Aluminum, and Zirconium; 1.1 Introduction; 1.2 Systematic survey of palladium- or nickel-catalyzed cross-coupling; 1.2.1 Scope with respect to metal counterions and inhibition of catalysis by organolithiums; 1.2.2 Cross-coupling between two unsaturated carbon groups; 1.2.2.1 Palladium-catalyzed cross-coupling involving alkynylmetals and related alkynyl nucleophiles: alkynyl-aryl, alkynyl-alkenyl, and alkynyl-alkynyl coupling

1.2.2.2 Hydrometallation cross-coupling and carbometallation - cross-coupling tandem protocols and other alkenyl-aryl, alkenyl-alkenyl, and alkenyl- alkynyl coupling reactions: double metal catalysis1.2.2.3 Aryl-aryl coupling; 1.2.3 Palladium-catalyzed cross-coupling involving alkyl groups without proximal unsaturation.; 1.2.4 Cross-coupling involving allyl, benzyl, and propargyl groups; 1.2.4.1 Coupling reactions of alkenyl- and arylmetals with allyl, benzyl, and propargyl electrophiles; 1.2.4.2 Cross-coupling with allyl- and benzylmetals; 1.2.5 Cross-coupling involving carbonyl compounds
1.2.5.1 Palladium-catalyzed acylation of organometals with acyl halides1.2.5.2 Palladium-catalyzed allylation and related reactions of enolates; 1.2.5.3 a-Substitution of carbonyl compounds with unsaturated carbon groups; 1.2.6 Leaving groups; 1.2.7 Ligands; 1.3 Assymetric cross-coupling; 1.4 Palladium-catalyzed tandem processes involving cross-coupling reactions; 1.5 Mechanism of cross-coupling; 1.6 Conclusions; 1.7 Representative experimental procedures; 1.7.1 p. Methoxyphenylethyne (1) [42]; 1.7.1.1 Preparation of ethynylzinc chloride; 1.7.1.2 Preparation of p-methoxyphenylethyne
1.7.2 (7E,9E, 13E)-Retinol (vitamin A)1.7.3 a-Farnesene; 1.7.4 (Z)-1 -[1'-methyl-(E)-2'-heptenylidene]indan; Abbreviations .; References; 2 Cross-coupling Reactions of Organoboron Compounds with Organic Halides; 2.1 Introduction; 2.2 Preparation of organoboron compounds; 2.2.1 Hydroboration of alkenes and alkynes; 2.2.2 Haloboration of terminal alkynes; 2.2.3 Preparation from organolithium and magnesium reagents; 2.2.4 Miscellaneous methods; 2.3 Palladium-catalyzed reactions of organoboron compounds and their mechanism; 2.3.1 Cross-coupling reactions
2.3.2 Other reactions catalyzed by transition-metal complexes2.4 Cross-coupling reactions of organoboron compounds; 2.4.1 Coupling of 1 -alkenylboron derivatives: Synthesis of conjugated dienes; 2.4.2 Coupling of arylboron compounds: Synthesis of biaryls; 2.4.3 Coupling of alkyboron derivatives; 2.4.4 Reactions with triflates; 2.4.5 Carbonylative coupling; 2.5 Conclusions; 2.6 Experimental procedures; 2.6.1 Reaction of 1-alkenylboronates with vinylic halides: Synthesis of (lZ,3E) -1-phenyl- 1, 3-octadiene; 2.6.1.1 (E)- 1 -Hexenyl- 1.3, 2-benzodioxaborole
2.6.1.2 (1Z,3E - 1-Phenyl-1, 3-octadiene

Sommario/riassunto

Carbon-carbon bond forming reactions are arguably the most important processes in chemistry, as they represent key steps in the building of complex molecules from simple precursors. Among these reactions, metal-catalyzed cross-coupling reactions are extensively employed in a wide range of areas of preparative organic chemistry, ranging from the synthesis of complex natural products, to supramolecular chemistry, and materials science.In this work, a dozen internationally renowned experts and leaders in the field bring the reader up to date by documenting and critically analyzing current de