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Contents

Organolithium compounds in the nucleophilic substitution of hydrogen atom in arenes and hetarenes 1191

I.S.Kovalev,^a D.S.Kopchuk,^{a,b} G.V.Zyryanov,^{a,b} V.L.Rusinov,^{a,b} O.N.Chupakhin,^{a,b}
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The review considers the most characteristic examples of direct non-activated non-catalyzed C–C bond formation in arenes and arene metal complexes activated by electron-withdrawing substituents in the aromatic ring and in hetarenes (azines, their N-oxides, porphyrins, *etc.*) upon the reactions with aliphatic and hetero(aromatic) organolithium nucleophiles. Particular attention is given to direct introduction of nitroxide radicals and (hetero)organic molecules into mono-, di- and triazines and their N-oxides. The effect of the structures of the (hetero)aromatic substrate and the (hetero)organolithium nucleophile on the reaction direction and rate and on the product structure is analyzed.

Bibliography — 237 references.

Hydrazones as substrates for cycloaddition reactions 1226

N.P.Belskaya, A.I.Eliseeva, V.A.Bakulev

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The [2+2]-, [4+2]- and [3+2]-cycloaddition reactions of hydrazones and 1,2-diazabuta-1,3-dines, azomethine imines, nitrile imines and azomethine ylides formed upon hydrazone transformations with dienophiles, dipolarophiles and dienes are considered. The principal issues of structure and reactivity of active substrates and the influence of the reaction conditions and catalysts on the reaction regioselectivity and efficiency are discussed.

Bibliography — 288 references.

Alkenylphenols: preparation, transformations and applications 1258

A.M.Maharramov, M.R.Bayramov, M.A.Agayeva, G.M.Mehdiyeva, I.G.Mammadov

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Published data on the synthesis and chemical reactivity of alkenylphenols, mainly vinyl, propenyl and allyl derivatives are considered. The transformations of these compounds involving various functional groups are discussed. Particular attention is given to cyclization reactions, reactions with dihaloalkanes, as well as reactions based on diallyl-containing bisphenols. The results of studies of the hydrogen bonding in alkenylphenols and their derivatives are presented. Data on the key applications of compounds of this class are given.

Bibliography — 173 references.

Sorbents based on crown ethers: preparation and application for sorption of strontium

1279

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Key approaches to the synthesis of sorbents based on crown ethers, including immobilization both with and without covalent bonding, are reviewed. Examples of sorbent preparation using anodic oxidation, chemical modification of polymers, polycondensation reactions, chemical modification of inorganic supports and radiochemical synthesis for covalent bonding of crown ether moieties are considered. Immobilization methods without covalent bonding including support synthesis in the presence of crown ethers, impregnation of supports with a crown ether solution and the use of ground crown ether as a sorbent are presented. The applications of sorbents for selective sorption of strontium from solutions of radioactive waste and spent nuclear fuel, for radiochemical analysis (determination of strontium in water, soil and biological materials) and for the separation of strontium and yttrium isotopes are discussed. Bibliography — 114 references.

Metal and silicon oxides as efficient catalysts for the preparative organic chemistry

1294

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Data on the use of metal and silicon oxides as catalysts of reactions which are most in demand in laboratory organic syntheses are summarized. The potential of oxide catalysts for optimization of organic reactions is demonstrated, and some mechanistic aspects of oxide action are considered. Published data on the synthetic use of single, mixed, bulk and nanosized metal and silicon oxides are presented. Bibliography — 189 references.