

Index

a

- aldehydes arylation
 - air-stable Pd complexes 398
 - aliphatic linear aldehydes 400
 - aryl bromides 399, 401, 402
 - aryl halides 400
 - asymmetric organocatalytic 402
 - intramolecular cyclization reaction 398
 - linear and α -branched 398
- amide arylation
 - 3-aryloxindoles 406
 - asymmetric intramolecular 407
 - asymmetric Pd-catalyzed allylic alkylation 405
 - azaoxindoles 410
 - Buchwald-type pre-catalysts 410
 - 2-bromoanilide cyclization 405
 - chiral NHCs 406, 407
 - cyclopentyl methyl ether (CPME) 412
 - *N,N*-dimethylacetamide (DMA) 399, 403
 - free (NH)-oxindoles 409
 - intramolecular cyclization process 402
 - *N*-benzyl-2-piperidinones 410
 - OP4 receptor 402
 - oxindoles 403, 404, 407, 409, 412, 414
 - Pd-catalyzed intramolecular coupling 402, 404
 - Pd-NHC catalyst 408
 - quaternary 3-aminooxindoles 408
 - Reformatsky reagents 410
 - amine arylations
 - Co-catalyzed 139

- 1-(3,5-dimethylphenyl)-1-pyrazole
 - using a copper iodide and *trans*-1,2-cyclohexanediamine 142
 - 1-*p*-tolyl-1*H*-benzimidazole
 - using cupric acetate and *p*-tolylboronic acid 143
 - 1-phenyl-1*H*-pyrazole 143
 - 3,5-dimethyl-*N*-hexylaniline
 - using a copper iodide and diethylsaliclamide 142
 - 4-(4-methoxyphenyl)morpholine
 - using a palladium-NHC 141
 - Mn-catalyzed 140
 - *N*-(3-hydroxymethylphenyl)-2-pyrrolidinone using copper iodide and diethylsaliclamide 142
 - *N*-(4-methoxyphenyl)-*p*-toluidine
 - using PTS in water at room temperature 142
 - *N*-(4-phenethylalcohol)
 - 4-methylaniline using cupric acetate and *p*-tolylboronic acid 143
- Antilla–Buchwald modification 143
- Ar/Alkyl couplings
 - alkanes 231
 - arylation types 229
 - copper 235, 238
 - heteroatom-directed C-H activation 231
 - iron 239
 - nickel 238
 - oxidize C^{alkyl}–H groups 231
 - palladium 231, 233, 234
 - rhodium 233
 - ruthenium 235, 236, 238
- Ar/Ar couplings C(sp²)–H activations
 - biaryl motif 176, 177
- copper 192, 194
- gold 192
- iridium 229
- iron 194
- nickel 229
- organocatalysts 194
- palladium 176, 178, 180, 192, 217, 223, 229, 230
- rhodium 178, 183, 186, 223, 228
- ruthenium 185, 188, 190, 228
- silver 194, 196
- Ar/C=X (X=C, O, N) couplings
 - cobalt 216, 220
 - organocatalysts 216, 221
 - palladium 194, 199, 201, 202
 - rhodium 201, 205–207, 210, 215
 - ruthenium 212, 216, 219
- artificial metalloenzymes (ArMs) 470
- aryl amination 136
- α -arylation 377, 397, 399, 412, 428
 - (S)-2-phenyl-1-octanol 431
 - 1-benzyl-6-chloro-5-fluoro-3-(1-hydroxyethylidene)indolin-2-one 431
 - 2-methyl-2-(4-(trifluoromethyl)phenyl)-2,3-dihydro-1*H*-inden-1-one 431
- biologically active molecules 376, 377
- carbonyl compounds 376
- non-steroidal anti-inflammatory drugs 376
- processes 377
- N*-aryl amines
 - aripiprazole 95
 - chromaphoric arylamine polymer 95

- N*-aryl amines (*contd.*)
 – Comprehensive Medicinal Chemistry database 95
 – Gefitinib 95
N-aryl motif 96
 arylamines 118
 arylation
 – C=N bonds 292
 – Pd catalysts 305
 – Petasis–Akritopoulou reaction 326
 – Rh catalysts 292, 313
 – Petasis reactions 315
 – transition-metal catalysts 324
 arylether synthesis 113
 arylethers 136 *See also*
 Cu-catalyzed synthesis of arylethers 129
 arylsulfides 96
 arylthioethers 136 *See also*
 Cu-catalyzed synthesis of arylthioethers 128
- b**
- 2-benzoyl-*N,N*-diethylbenzamide 242
Bi(III) and indium oxide catalyzed thiol arylation 141
 biaryl synthesis
 – aromatic carboxylates and aryltriflates 165
 – aryllithium reagents 89
 – catalytic 164
 – cobalt 84
 – iron 84
 – nickel 84
 – palladium 83
 – Pd-catalyzed decarboxylative 155, 157, 160
 – stoichiometric 163
 Buchwald–Hartwig amine arylation 141
 Buchwald–Hartwig arylations
 – (*R*)-MOP-Pd₂ (dba)₃ catalyst 104
 – [(CyPF-*t* Bu)PdCl₂] 101
 – [Pd(IPr*)₂(3-Cl-pyridinyl)Cl₂] complex 101
 – 3,7-diaminophenothiazines 106
 – 3,7-dianilino substituted N-hexyl phenothiazines 106, 107
 – 3-chloropyridine and 6-chloroquinoline 103
 – 5,10-diaza[5]helicenes 106, 108
- 5-HT_{1B} receptor antagonist 104, 106
 – Amberlite® formate immobilized Pd 108
 – aminodi(hetero)arylamines 105
 – ammonia with arylchlorides 103
 – analgesic compound A-366833 106
 – antipsychotic medication Zyprexa 109
 – aryl chlorides with hydrazine 109
 – aryl triflates 102
 – asymmetric 104
 – atropisomeric 2-aryl-4-quinoline synthesis 104
 – biaryl amines 105
 – bicyclic triaminophosphane ligand-*P(i*-BuNCH₃)₃ CMe 102
 – black swan 98
 – C-N bond formation 98
 – cBridP 102
 – characteristics 98
 – chiral quinolinone 104
 – cyclohexyl version 100
 – desymmetrization reaction 104
 – electronic materials 108
 – heteroaryl amines 104
 – hydrazines with aryl halides 102
 – industrial application 101
 – ligands and catalysts 100
 – mechanism 99
 – mesylates 103
 – mono-to-diarylation ratio 102
 – N-aryl benzimidazo[2,1-b]quinazolin-12(6H)-ones 106
 – NH heterocycles 102
 – NHCs 101
 – olanzapine synthesis 109
 – P₂O-ligands family 101
 – P(o-Tol)₃ 99
 – Pd catalyzed reactions 98
 – Pd₂dba₃ 101
 – Pd(OAc)₂ 101
 – Pd-MorDalPhos catalyst 103
 – pentaphenylferrocenyl di-*tert*-butylphosphane (Ph₅Fc(t Bu)₂) 101
 – PEPPSI based catalyst 101
 – PhB(OH)₂ 105
 – pioneering arylation procedures 99
- pre-catalyst 101
 – primary alkyl amines and primary anilines 100
 – SAPd 108
 – torcertapib 105, 108
 – trineopentylphosphane (TNpP) 102
 – Ullmann-type coupling reaction 99
 – unsymmetrical di- and triarylamines 102
 1-*tert*-butoxy-4-*tert*-butylbenzene 144
- c**
- C(sp²)-H activations 176, 194, 217, 229
 – Ar/heteroatom couplings 240
 – Ar/N couplings 239
 – catalytic C-H activation process 176
 C-3 arylation
 – indoles with benzoic acids 161
 C-H bond activation 176
 – application 173
 – arylation of heteroarenes with aryl halides 174
 – aspirational reactions 173
 – C-H alkenylation of benzene with styrene 174
 – C^{Ar}-H activation 175
 – CMD 174, 175
 – functionalization 173, 174
 C-H bond arylation
 – thiophenes 161
 C^{Ar}-S bond formation 136
 C^{Ar}-H alkyne cross-couplings
 – 3,4-diphenylisoquinolin-1(2H)-one 243
 C^{Ar}-H arylation
 – (*S*)-5,7,10-trimethyl-7-(*p*-tolyl)-5-*H*-dibenzo[b,d]azepin-6(7*H*)-one 241
 – 1-[5-(2-isobutylthiazol-5-yl)-pyridin-3-yl]-ethanone 240
 – 5-(4-diphenylamino)phenyl thiophene-2-carbaldehyde 240, 241
 – *N*-[(*o,o'*-diphenyl)benzylidene]-*p*-toluidine 242
 – methyl *N*-Boc-3-*tert*-butyl-5-(4-acetylphenyl)tyrosinate 241
 C^{Ar}-H C=X (X=C, O, N) cross-coupling
 – 2-benzoyl-*N,N*-diethylbenzamide 242

- 3-(ethoxycarbonyl)methyl
-7-methylphthalide 242
- C^{Ar} -N bond formation 137, 139, 140 *See also Cu-catalyzed and promoted arylations* 118
- C^{Ar} -NR bond formation 98
- C^{Ar} -O bond formation *See also Cu-catalyzed arylethers* 129, 136
- C^{Ar} -OR bond formation 113
- C^{Ar} -P bond formation 139 *See also Pd-catalyzed phosphorous arylations* 117, *See also Cu-catalyzed phosphorous arylations* 133, 138
- C^{Ar} -S bond formation 138 *See also Cu-catalyzed arylthioethers* 128, 138–140
- C^{Ar} -SR bond formation 109
- carbonyl group arylation
 - chiral 1,1'-diaryl unit drug structure 330
 - copper catalysis 361, 362
 - iron catalysis 363–365
 - nickel catalysis 359, 360
 - Pd catalysts application 349
 - platinum catalysis 362
 - Rh catalysts application 329
 - ruthenium catalysis 355, 359
 - titanium catalysis 367–370
 - zinc catalysis 365, 366
- carboxylic acids
 - catalytic transformations 152
 - heteroaromatic 153
- catalytic cyloaddition
 - aromatization processes 436, 455, 469, 472
 - Diels–Alder reaction 474
- Co-catalyzed arylations
 - amine arylations 139
 - aryl amination 140
 - sulfide arylation 139
- cobalt (Co)
 - DMG Ar/C=X (X=C O, N) couplings $C(sp^2)-H$ activations 216, 220
- conjugate addition 270
 - α,β -unsaturated compounds 247
 - Cu catalysts 280, 281, 283–285
 - enantioselective $C^{Ar}-C$ bond construction 247
 - Grignard cross-coupling reactions 247, 248
 - Ni catalysts 285, 286
 - nucleophiles 247
- Ru catalysts 279, 280
- transition metal catalysts 286
- copper (Cu)
 - DMG assisted $C(sp^2)-H$ activations direct arylation 192, 194
 - non-DMG Involving Ar/Alkyl couplings $C(sp^2)-H$ activations 235, 238
- copper catalysis
 - (S)-(4-chlorophenyl)(phenyl) methanol 372
 - aldehydes with arylboronates 361
 - arylboronic acids to aromatic aldehydes 362
- copper catalyzed 144
- copper catalyzed amine arylations 142
- copper-catalysts, arylation
 - aryl iodides 419, 420
 - *o*-bromoanilides 423
 - diaryliodonium salts 421, 425
 - diethyl malonate 420
 - ethyl acetoacetate 421, 423
 - (2,4*R*)-hydroxyproline 421, 423
 - 2,3-disubstituted indoles 421, 423
 - isoquinolines 424
 - β -keto-2-iodoanilides 421, 422
 - ligands 420
 - *N*-acyloxazolidinones 425
 - *o*-bromoanilides 426
- Cu-catalyzed and promoted arylations 118, 128, 133, 134
- Cu-catalyzed arylamines
 - $[Cu(OH).TMEDA]_2 Cl_2$ 124
 - aryl triolborate reagents 127
 - arylboronic acids 123
 - arylboronic acids with amines 124
 - benzimidazoles 126
 - catalytic Chan–Lam–Evans arylation 125, 126
 - Chan–Lam–Evans arylation reaction 124
 - Cu(II)amide 124
 - Cu(III) intermediate 124
 - Cu(OAc)₂ and sodium pivalate 126
 - CuOTf-TMEDA 125
 - dual N-arylation 125
 - mechanism 118
 - $NiCl_2 \cdot 6H_2O$ 127
- one-pot Chan–Lam amidine arylation-cyclization 127
- oxidative cross-coupling process 123
- potassium aryltrifluoroborate salts 127
- preclinical pharmaceutical research 124
- Ullmann-condensation type arylations 118–121, 123
- Cu-catalyzed arylethers
 - Chan–Lam–Evans reaction 131–134
 - Ullmann coupling reaction 130
- Cu-catalyzed arylthioethers
 - arylboronic acids 129
 - arylhalides 128
 - Chan–Lam–Evans variant 129
- Cu-catalyzed conjugate addition
 - (R)-(+)-3-ethyl-3-methyl-cyclohexanone 288
- Cu-catalyzed thiol arylation
 - 3,5-dimethylphenyl phenyl sulfide 144
 - [2+2+2] cycloadditions 436
- cyclotrimerization
 - alkynes 441
 - alkynes and nitriles 438
 - aromatic hexa-ester 483
 - 2-*n*-butyl-4,5-(2,2-dicarboxymethyl)cyclopenteno-3,6-dimethylpyridine 483
- neutral Rh complexes 439
 - cobalt catalysts 443–445
- copper 454
- description 436
- herbindole synthesis 443
- intramolecular catalytic 442
- intramolecular Rh catalyzed 443
 - iridium 454
 - iron-catalyzed 452–454
 - lavendamycin 439, 442
 - mechanism 437
 - 2-(2-methoxy-1-naphthyl)-6-phenyl-7,8-dihydro-5H-cyclopenta-[c]pyridine 482
- nickel 452
- Pd-catalysis 448, 450, 451
- regioselectivity 437–439
- Ru-catalyzed 439, 445–447, 449
- terminal alkynes 439

- cyclotrimerization (*contd.*)
 - 2, 4, 5, 7-tetraphenyl-*o*-isoindoline 482
 - tetrasubstituted isoindolines 440
 - titanium 452
- d**
- decarboxylative coupling techniques
 - bond formation position and polarity 151
 - catalytic transformations 151
 - decarboxylative carbometalation 151
 - metal-catalysts 163
 - organometal species 151
 - Pd-based systems 152
 - Pd/Cu-based systems 159
- 3,7-dianilino substituted *N*-hexyl phenothiazines 107
- diaryl ethers 95
- 5,10-diaza[5]helicenes 108
- 7-(diethylamino)-3-(4-methoxyphenyl)-2*H*-chromen-2-one 169
- 2,6-dimethoxybiphenyl 169
- N,N*-dimethylformamide (DMF) 155, 169
- 3-5-dimethyl-*N*-hexylaniline using a Copper Iodide and diethylsaliclamide 142
- 3,4'-dimethyl-4-nitrobiphenyl 170
- 3,5-dimethylphenyl phenyl sulfide 144
- 1-(3,5-dimethylphenyl)-1-pyrazole using a Copper Iodide and *trans*-1,2-cyclohexanediamine 142
- 3,4-dioxypyrrrole substrate 155
- diphenyl ether 145
- diphenyl sulfide 144
- 5-(4-(diphenylamino)phenyl) thiophene-2-carbaldehyde 240
- N*-[(o,o'-diphenyl)benzylidene]-*p*-toluidine 242
- 3,4-diphenylisoquinolin-1(2*H*)-one 243
- e**
- enolates arylation
 - α -(*o*-tolyl)acetophenone 430
 - (*R*)-1,3-dimethyl-3-phenylindolin-2-one 430
- f**
- Fe arylations 143
- Fe catalysis 144
- Fe-catalyzed arylations
 - aryl amination 136
 - arylethers 136
 - arylthioethers 136
 - C-heteroatom bond formation 136
- Fe-catalyzed thiol arylation
 - diphenyl sulfide 144
- g**
- gold (Au)
 - DMG assisted $C(sp^2)-H$ activations direct arylation 192
- Goldberg reaction 118
- h**
- Heck–Hiyama reaction 87
- Heck–Matsuda reaction
- arenediazonium tetrafluoroborate salts 45
- chiral RTILs 43, 44
- copper catalyzed alkene arylation 45, 46
- Cu-catalyzed coupling reaction 45
- (*E*)-ethyl 3-(4-methoxyphenyl) acrylate 86
- FTY720 derivative 43
- in neat water 44
- (*E*)-3-(4-methoxyphenyl)acrylic acid 85
- oxime-derived palladacycle catalyst 43
- palladium acetate 43
- 2-phenyl-1*H*-indene 86
- segmented flow process 46
- synthetic targets 43
- Heck–Mizoroki reaction
 - Aliquat-336 29
 - allyl diphenylglycinate imines 21
 - aryl chlorides 15, 16
 - benzotriazole ligand 20
 - *N*-Boc protected allylamines 22, 23
 - (*E*)-butyl cinnamate 85
 - C-8 of adenine nucleosides 17
 - carbonylative 30
 - cetyltrimethylammonium (CTAB) bromide 33
 - colloidal palladium systems 36
 - continuous flow 38, 39
 - copper(I) catalyzed reaction 31
 - dendron supported di-phosphane ligands 36
 - diazepinylbenzoic acid 14
 - DMU-212 29
 - flow-chemistry systems 40, 42
 - fluorenones 34
 - furans and thiophenes 40
 - Heck–Aldol–Heck reaction 28
 - Heck–Decarboxylation–Heck (HDH) 24, 26, 27
 - HetPHOX ligands 20, 21
 - high-speed ball milling (HSBM) 29
 - hydroquinone (HQ) 21
 - ionic liquids (ILs) 17, 20
 - magnetic nanoparticle (MNP)-supported Pd catalysts 36
 - monoarylated product 39

- *N*-heterocyclic carbenes (NHCs) 16, 19
 - *N*-pyrazyl imines 33
 - non-dendritic diphosphane ligands 36
 - one-pot sequential reaction sequences 21
 - one-pot tandem decarboxylative allylation 25
 - oxidants 39
 - oxidative-Heck reaction 40
 - oxime ethers cyclization 33
 - palladium nanoparticles 36
 - Pd catalyst 35
 - pyranoid glycals 18
 - retinoid x receptor antagonist 14
 - Rh(I) catalyzed reaction 32, 33
 - styrene 29
 - *syn-anti* conformational equilibrium 15
 - 5-(*p*-trifluoromethylphenyl)-2,3-dihydrofuran 38, 85, 86
 - Hiyama–Hatanaka cross coupling reaction
 - arenediazonium salts 47
 - fluoride-free cross coupling 47
 - palladium/imidazolium chloride system 46
 - Pd/NHC system 47
 - Huigsen's reaction
 - accelerating ligands 455
 - artificial metalloenzymes (ArMs) 470
 - benzyne click-chemistry approach 458
 - 1-benzyl-5-phenyl-1*H*-1,2,3-triazole 485
 - biotinylated cyclooctene analogue 467
 - cellular glycans metabolic labeling 468
 - Cu(I)/(II) salts 455
 - CuAAC reaction 455, 456
 - CuAAC-Staudinger phosphonite reaction 464
 - CuI/NBS procedure 463
 - CuI/NBS system 461
 - dimethyl 3-cyclopropyl-1*H*-pyrrole-2,4-dicarboxylate 486
 - 1,5-diphenyl-1*H*-1,2,3-triazole 484
 - femtomolar dissociation constants 463
 - glycans in vivo imaging 469
 - Halohydrin dehalogenase (HheC) 458
 - *in situ* CuAAC reaction 466
 - intramolecular 462
 - intramolecular version 461
 - Ir-catalyzed variant 465
 - iron oxide nanoparticles 463
 - metal-free Staudinger phosphonite reaction 461
 - 1-(2-methylbenzyl)-5-benzoyl tetrazole 485
 - N-[5''-(Phenylthio)phosphoryl-ethoxyethyl]-2',3'-O-isopropylidene-5'-phosphoryl-5-I-1,2,3-triazole-4-amide-1-D-ribofuranoside 485
 - reaction/catalytic cycle 455
 - Ru(II)-azido complexes 469, 471
 - Ru-catalyzed variant 465
 - Ru-catalyzed variant (RuAAC) 461
 - strain-induced [3+2] cycloaddition method 467
 - strain-promoted [3+2] cycloaddition (SPAAC) 467
 - target-guided synthesis (TGS) 463
 - triazole-Cinchona hybrids 461
 - 1,2,3-triazole unit 457
 - 1,2,3-triazoles functionalization 462
 - 17-[3-(1-(1,2,3-triazolyl))]estradiol 484
 - tris(benzyltriazolylmethyl)amine (TBTA) 458
 - N*-(3-hydroxymethylphenyl)-2-pyrrolidinone using a copper iodide and diethylsaliclamide 142
- i**
- iridium (Ir)
 - DMG Ar/alkyne couplings C(sp²)–H activations 229
 - iron (Fe)
 - DMG assisted C(sp²)–H activations direct arylation 194
 - non-DMG Involving Ar/alkyl couplings C(sp²)–H activations 239
 - iron catalysis
 - arylboronic acids 365
 - diarylmethanols 363
 - ferrocene chiral ligand 363
 - planar-chiral η⁵-cyclopentadienylrhodium(I)tricarbonyl complex 364
 - 1-[5-(2-isobutylthiazol-5-yl)-pyridin-3-yl]-ethanone 240
- k**
- ketone arylation
 - alkyl aryl ketones 389
 - aminopalladacycle 391, 393
 - antitumor compounds 379
 - α-arylated ketones 377
 - aryl benzenesulfonates 391
 - aryl bromides 380
 - aryl chlorides 380
 - aryl halides 394
 - benzomorphan derivatives 395
 - benzyl phenyl ketones 388
 - BINAP and Xantphos 382
 - *o*-bromobenzaldehydes 388
 - Buchwald-Hartwig reaction conditions 383
 - CATPHOS diphosphane 382, 384
 - *o*-chloroacetophenone 386
 - chloroarenes 380
 - cyclohexanone 387
 - deprotonation 378
 - diphenylated compound 380
 - 1st and 2nd generation processes 397
 - 2-haloanilino ketone substrates 393, 395
 - homogeneous/heterogeneous catalytic system 386
 - inter- and intramolecular versions 378
 - (IPr)Pd(acac)Cl-catalyzed α-arylation 390, 392
 - isochromenes and noncyclic intermediate 393, 395
 - MeDCHB ligand 382, 383
 - monophosphanes 380
 - *N*-heterocyclic carbenes (NHCs) 389
 - NHC-Pd complexes 390
 - (NHC)Pd(OAc)₂ system 389, 391
 - nickel(II)-halide complex 398
 - ocarbazepine 383
 - [(SIPr)Pd(allyl)Cl]-catalyzed α-arylation 389, 390
 - palladium-catalyzed α-arylation 381
 - PCP Palladium complexes 394
 - Pd(PPh₃)₄ 378
 - naphthol reagents 380

- ketone arylation (*contd.*)
- pinacolone 380
 - propiophenone 391
 - regioselective mono- and diarylation reactions 380
 - on solid support 385
 - substituted isoquinolines 396
 - Tamoxifen 386
 - *N*-tosyl-2'-aminoacetophenone 384
 - 1,2,2-triarylethanones 387, 388
 - transition metal-catalyzed 378
- ketone arylation 377
- m**
- metal catalyzed cross-couplings
- alkenes hydroformylation 2
 - arenediazonium salts 3
 - asymmetric Heck reaction 4, 5
 - carbon-carbon bonds 1
 - Cu(I) catalyzed
 - cyclopropanation 2
 - dragmacidin F synthesis 9
 - Frondosin B synthesis 7
 - Heck–Matsuda reaction 3
 - herbicide prosulfuron 4
 - Himastatin synthesis 6
 - Hiyama–Hatanaka cross-coupling reaction 10
 - HMG-CoA reductase inhibitor 11
 - Mizoroki–Heck reaction 2, 3
 - Monsanto process 2
 - Negishi–Baba reaction 11, 12
 - organometallic catalysis 2
 - oxo process 2
 - prosulfuron synthesis 5
 - prototype asymmetric Heck reaction 4
 - reactions 3
 - sodium acetate 4
 - Songashira–Hagihara cross-coupling reaction 7
 - Stille cross-coupling reaction 6
 - Suzuki–Miyaura cross-coupling reaction 8
 - Tamao–Kumada–Corriu cross-coupling 9
 - TASF 10
 - Ullmann type coupling reaction 12
 - metal-catalysts
 - 2-arylpyrrolidines and piperidines 165
 - amidine/iminocarbamate groups 166
 - Cu-based systems 163, 164
 - Muscoride family 166
 - nickel-catalyzed decarboxylative C-H biaryl coupling 166, 168
 - Ru catalyzed decarboxylative arylation at sp³ carbon centers 168
 - sustainable organic processes 166
 - metals-catalyzed α -arylations 419, 425
 - 4-methoxyphenyl octyl sulfide 143
 - N*-(4-methoxyphenyl)-*p*-toluidine using PTS in water at room temperature 142
 - 4-methoxyphenyl phenyl sulfide 144
 - 4-(4-methoxyphenyl)morpholine using a palladium-NHC 141
 - 4-methylbenzophenone 170
 - 1-methyl-2,3-bis(4-(trifluoromethyl)phenyl)-1*H*-indole 169
 - methyl *N*-Boc-3-tert-butyl-5-(4-acetylphenyl)tyrosinate 241
 - Migita Thioether synthesis 109
 - aliphatic and aromatic thiols 110
 - alkylation and arylation 109
 - application 111
 - aryl bromides with thioacetates 111
 - (*S*)-BINAP 111
 - C-S coupling 112
 - domino/cyclization reaction 113
 - ligand free conditions 112
 - Pd(OAc)₂ or Pd(dba)₂ 110
 - Pd-PEPPSI catalysts 110
 - putative catalytic cycle 111
 - *S*-phenyl thioacetate 111
 - thiols with Pd-Josiphos catalyst 110
 - transformation 109
 - unsymmetrical and symmetrical diaryl sulfides with potassium thioacetate 112
 - unsymmetrical diaryl sulfides 112
 - Mn-catalyzed arylations
 - amine arylations 140
 - sulfide arylation 140
 - Negishi–Baba Cross coupling
 - aryl/alkenyl pivalates 81
 - diastereoselective 79
 - immobilized systems 83
 - macrocyclic tertiary carbinamine BACE-1 inhibitors 82
 - 1-mesitylnaphthalene 89
 - naphthylacetic acid CRTH2 receptor antagonist 82
 - NHC catalysts 80
 - Pd-catalyzed 78, 80
 - PDE472 synthesis 83
 - Rieke technology 80
 - secondary alkylzinc halides 81
 - substituted piperidines 78
 - sulfonamides 80
 - Ni-catalyzed arylations
 - amine arylation 137
 - phosphorous arylations 138, 139
 - sulfide arylation 138
 - nickel
 - DMG Ar/alkyne couplings C(sp²)–H activations 229
 - non-DMG involving Ar/alkyl couplings C(sp²)–H activations 238
 - nickel catalysis
 - arylboroxines to aromatic aldehydes 1,2-addition 359
 - boron reagent 357
 - ketones and aldehydes 360
 - organoboronates to aldehydes 360
 - nickel-catalysts, arylation
 - α -substituted γ -butyrolactones 427
 - heteroarylation 429
 - acyclic ketones 428
 - cephalotaxinone 426
 - ketone enolates 427
 - lithium diisopropylamide (LDA) 425
 - P-Phos 426, 427
 - 4-(2-nitrophenyl)benzophenone 170
 - N*-methylpyrrolidone (NMP) 170
 - N*-[(1-naphthyl)(phenyl)methylene] cyclohexanamine 170
- n**
- N*-methylpyrrolidone (NMP) 155
- o**
- O- and S-aryl motif 97
- organocatalysts

- DMG assisted C(sp²)–H activations direct arylation 194
- non-DMG Ar/C=X (X=C O, N) couplings C(sp²)–H activations 216, 221

- p**
- palladium (Pd)
- DMG Ar/alkyne couplings C(sp²)–H activations 217, 223
- DMG Ar/C=X (X=C O, N) couplings C(sp²)–H activations 194, 200, 201
- DMG assisted C(sp²)–H activations direct arylation 176, 178, 192
- DMG involving Ar/alkyl couplings C(sp²)–H activations 231, 233
- non-DMG Ar/Alkyne couplings C(sp²)–H activations 229, 230
- Pd catalysts 98, 109, 113, 270
- aldehydes arylation with arylboronic acids 351
- aldimine with 2-naphthylboronic acid 311
- α -imino esters with bulky arylboronic acids 311
- arylaldehydes asymmetric arylation 354
- arylboronic acids to aldehydes 349, 350
- arylboronic acids to aldimines 308
- arylboronic acids to aromatic aldehydes 351
- arylboronic acids to *N*-benzylisatins 355
- arylboronic acids to electron-rich and deficient *N*-tosylarylimines 309
- arylboronic acids to ketones 356
- arylboronic acids to *N*-*tert*-butanesulfanyl iminoacetates 309
- arylboronic acids to *N*-tosylarylimines 309
- arylglycine derivatives 309
- C=acylimine with 1-naphthylboronic acid 312
- chloroform solvent 349
- C=N bond 307

- diarylketones one-pot synthesis 352, 353
- 7-(diethylamino)-3-(4-methoxyphenyl)-2*H*-chromen-2-one 169
- 2,6-dimethoxybiphenyl 169
- 3,4'-dimethyl-4-nitrobiphenyl 170
- DioxPhos ligand 312
- enantioselective arylation *N*-tosylimines 309
- [(4-fluorophenyl)phenylmethyl] carbamic acid tert-butyl ester 325
- hydroxyl-Pd specie 308
- indole to *N*-tosylarylimines 309, 311
- 4-methylbenzophenone 170
- 1-methyl-2,3-bis(4-(trifluoromethyl)phenyl)-1*H*-indole 169
- *N*-[(1-naphthyl)(phenyl)methylene]cyclohexanamine 170
- 4-(2-nitrophenyl)benzophenone 170
- organoboron reagents to arylaldehydes 353
- palladium(II)-catalyzed enantioselective arylation 311
- 2,3,4,5,6-pentafluoro-2'-methylbiphenyl 171
- phenylboroxine 312
- 3-phenyl-3-hydroxy-2,3-dihydrobenzofuran 371
- phosphinite- and phosphite-based type I palladacycles 349, 350
- phosphorous arylations 117
- putative catalytic cycle 308, 357
- 2-(3-pyridyl)-1-methylpyrrole 169
- thiol arylations 141, 143, 144
- *N*-tosylimines and N-Boc substituted imines 310
- Pd-based systems
- Ag₂CO₃ and propionic acid 157
- amine-containing substrates 157
- arene-carboxylic acids with aryl bromides 156
- aryl chlorides 156
- aryl-carboxylic acids 156
- biaryl compounds 152

- biaryls synthesis 157
- C-3 arylation of indoles with benzoic acids 161
- C-H bond arylation of thiophenes 161
- coumarin-3-carboxylic acids with aryl iodides 159
- decarboxylative biaryl synthesis 155, 160
- decarboxylative cross-couplings 153
- decarboxylative homo and heterocoupling 159, 162
- diarylindoles synthesis 154
- direct and decarboxylative arylations carboxyindoles 154
- 3,4-dioxopyrrole substrate 155
- DMF 155
- 3-(4-fluorophenyl)-5-methyl-isoxazole-4-carboxylic acid with aryl halides 158
- heteroarenes with carboxylate groups 153
- imidazo[1,2-a]pyridine-3-carboxylic acid with aryl halides 158
- indole-3-carboxylic acids 154
- meta and para substituents 156
- NMP 155
- ortho substituted benzoic acids 157
- Pd(OAc)₂ and Pd(TFA)₂/PCy₃ systems 157
- Pd(II)-carboxylate intermediate I 156
- polyfluorobiars 154
- reaction mechanism 153
- regioselective synthesis 156
- Suzuki–Miyaura coupling 152
- TBAB 155
- Pd-catalyzed arylether synthesis
- aryl bromides and chlorides 116
- aryl halides with primary and secondary alcohols 115
- 4-(2-bromophenyl)-2-methyl-2-butanol to 2,2-dimethylchroman 114
- bulky arydialkylphosphine ligands 113
- butan-2-ol -chloroanisole 115
- C-OAr bond formation 113
- DFT studies 116
- fenol arylation study 116

- Pd-catalyzed arylether synthesis (*contd.*)
 - ferrocenyl di-tri- and tetraphosphanes 116
 - (hetero)aryl bromides and chlorides 116, 114
 - O-substitution 113
 - Pd(OAc)₂ and P(t-Bu)₃ functions 116
 - pentaphenylferrocenyl di-tert -butylphosphine (Ph₅Fc(t-Bu)₂) 115
 - putative catalytic cycle 114
 - selective arylation primary alcohols 116
 - *tert*-butoxide 114
 - tertiary alcohols 113
 - triazol-1-yloxy and triazol-1-yl heterocycles with aryl boronic acids 117
 - tributylamine 115
- Pd-catalyzed conjugate addition
 - 1,4-addition catalyzed by Pd(II) 271
 - ArSiF₃ to enones 276
 - aryl boron compounds to α,β-unsaturated carbonyl compounds 271
 - arylboronic acid and Pd/bpy catalyst yields 274
 - arylboronic acids to α,β-unsaturated compounds 274
 - arylboronic acids to α,β-unsaturated enones 272
 - arylboronic acids and arylsiloxanes 274
 - arylboronic acids to 2,3-dihydro-4-pyrid-4-ones 279
 - arylboronic acids to unsaturated enones 273
 - arylsiloxanes 278
 - arylsiloxanes to cyclic enones 277
 - aryltrifluoroborates. [Pd(S, S -Dipamp)(PhCN)₂](SbF₆)₂ 272
 - axially chiral *cis* -chelated bidentate bis (*N* -heterocyclic carbene)-palladium (II) complexes 279
 - (-)-2-(biphenyl-4-yl)-4-oxo-piperidine-1-carboxylic acid *tert*-butyl ester 287
 - catalytic palladacyclic complex 275
 - cationic [Pd(dppe)(PhCN)₂] (SbF₆)₂ complex 270
 - cationic-bisphosphane catalysts 277
 - (S, S)-Chiraphos and (S, S)-Dipamp 278
 - CsF and Bu₄NF 277
 - Dipamp-based catalyst 272
 - dppe ligand by (S, S)-ChiraPhos 272
 - NaOAc and SbCl₃ 270
 - non-asymmetric 276
 - palladium (II) catalysts 270
 - [Pd(S, S -Dipamp)(PhCN)₂](SbF₆)₂ and [Pd(S, S -Chiraphos)(PhCN)₂](SbF₆)₂ complexes 276
 - [Pd(dppe)(PhCN)₂](BF₄)₂ and PhB(OH)₂ 270
 - Pd(CH₃CN)₄(BF₄)₂ 277
 - Pd(II)-Bpy 275
 - Pd(II)-NHC complexes 276
 - Pd(OAc)₂/2,2'-bipyridine (bpy) 272
 - Pd-O enolate and α-C-palladated species 270
 - PhBF₃K to cyclohexen-2-one 274
 - phosphane-based palladacycles 275
 - phosphinous acid catalyst 278
 - triarylbismuth reagents to cyclic and acyclic enones 278
 - X-ray crystallography studies 270
- Pd-catalyzed phosphorous arylations
 - chemical industry 117
 - transformation 117
- Pd-catalyzed thiol arylation
 - 4-methoxyphenyl octyl sulfide 143
 - 4-methoxyphenyl phenyl sulfide 144
- Pd/Cu-based systems
 - α-oxocarboxylic acids with aryl halides/pseudohalides to afford aryl ketones 162
 - aromatic carboxylates and aryltriflates 165
 - aryl chlorides with potassium carboxylates 164
 - aryl ketones 165
 - aryl tosylates with aromatic carboxylate salts 165
 - arylcopper species 159
- azomethine products 162
- 3-benzoylacrylic acids with arylboronic acids 162
- benzoylacrylic acids chalcones 167
- biaryl synthesis 163, 164
- copper(I) salt 159
- electron-rich bis(*t*-butyl) biphenylphosphane 160
- *ortho*-substituted and heterocyclic carboxylic acids 160
- second-generation catalytic system 159
- 2,3,4,5,6-pentafluoro-2'-methyl-biphenyl 171
- Petasis reactions
 - alkylboronic acids 316
 - allenylation/amination 318
 - α-aryl and α-heteroaryl glycines 317
 - arylboronic acids 316
 - bifunctional thiourea organocatalyst 321
 - carbonylation/amination 318
 - catalytic enantioselective Petasis-Akritopoulou reaction 321
 - chiral methylbenzylamine 319
 - copper-catalyzed multicomponent coupling 322
 - copper-catalyzed process 323
 - cyclic amino acid derivatives 318
 - DFT studies 318
 - diastereocontrolled addition to chiral iminium species 320
 - electrophilic iminium species 316
 - enantioselective organocatalytic Petasis reaction 321
 - HFIP 318
 - 2-hydroxy aryl aldehydes 319
 - indolyl *N*-substituted glycines 320
 - Petasis borono Mannich reaction 315, 316
 - Petasis-Akritopoulou reaction 317–319
 - pyrimidinyl arylglycines 317
 - pyrrolidine-derived arylglycines synthesis 319
 - vinyl boronic acids 316

- Petasis–Akritopoulou reaction
 – (*R*)-2-((4-(benzyloxy)phenyl)
 (pyrrolidin-1-yl)methyl)phenol
 326
- *N*-(diphenylmethyl)- α -
 phenylglycine 326
- ethyl 2-phenyl-2-(pyrrolidin-
 1-yl) acetate 326
- N*-(4-phenethylalcohol)-4-
 methylaniline using cupric
 acetate and p-tolylboronic acid
 143
- 1-phenyl-1*H*-pyrazole 143
- platinum catalysis 362
- 2-(3-pyridyl)-1-methylpyrrole
 169
- pyrrole
 – oligosubstituted 474
 – phosphane-catalyzed reaction
 474
 – unit 472
- pyrrole synthesis 472
- r**
- 2-(2-Iodophenyl)ethanamine
 substrates 119
- radical based cycloaromatization
 processes
- Bergman cyclization 474–476,
 478, 480
 - Myers–Saito cyclization 481
- reversible addition-fragmentation
 chain transfer (RAFT)
 procedure 472
- Rh catalysts
- aldehydes arylation 339
 - aldehydes selective arylation
 336
 - aliphatic *N*-tosylimines 299
 - anionic rhodium η^4 -quinonoid
 catalyst 338
 - *p*-anisaldehyde upgraded
 catalytic conditions 341
 - aryl groups 292
 - arylation of imines and
 aldimines 295
 - arylboronic acid derivative 303
 - arylboronic acids reaction 335
 - arylboronic acids Rh(I)/chiral
 diene-catalyzed addition
 reactions 344
 - arylboronic acids to aldehydes
 331
 - arylboronic acids to isatins
 1,2-addition 348
 - arylboronic acids to isatin
 derivatives asymmetric
 addition 347
 - arylboronic acids to
 trifluoromethyl aryl ketones
 346
 - arylboroxine derivatives 296
 - arylboroxine reagents 300
 - arylboroxines 296
 - aryltitanium nucleophilic
 reagents 295
 - azomethine imines 305, 307
 - (*R*)-benzo[d][1,3]dioxol-5-yl
 (phenyl)methanol 371
 - *N*-benzylnicotinate salts 305
 - BINAP 293
 - binaphthyl chiral diene 305
 - bis-sulfamoyl aldimines 305
 - 2,6-bis(trifluoromethyl)-4-pyridyl
 (BFPy) phosphane ligand
 343
 - *N*-Boc imines 301, 302
 - boronic acids 303
 - chiral 2-aryl pyrrolidine and
 piperidine derivatives 299
 - chiral η^2 -bonded olefin 296
 - chiral diene catalysts 297
 - chiral di-phosphane ligands
 301
 - chiral imidazolium salts 334
 - chiral phosphane ligand 334
 - chiral phthalimides 299
 - chiral 3-substituted
N-tosylphthalimidine
 products 299
 - (*S*)-5-chloro-3-(3,5-dimethyl-
 phenyl)-3-hydroxy-1-(4-methoxybenzyl)indolin-
 2-one 371
 - *N*-(1-(4-chlorophenyl)-1-phenyl-
 propyl)-tosylamide
 324
 - (*S*)-(2-chlorophenyl)(mesityl)
 methanol 370
 - cyclic *N*-sulfonyl ketimines
 303, 307
 - diaryl ketones formation 339,
 340
 - diarylmethylamines 303
 - diarylmethyltosylamines 298
 - diene-catalyzed asymmetric
 arylation 298
 - *N,N*-dimethylsulfamoyl
 protecting group 303
 - diphenylphosphinoyl group
 (POPh₂) 300
 - (*S*)-*N*-(2-furyl)phenylmethyl-
 4-methylbenzenesulfonamide
 324
 - imines with tin reagents 294
 - labeling studies and postulated
 reaction mechanism 339,
 340
 - *N*-(4-methoxy-2-methylphenyl)
 (phenyl)methyl-4-nitro-
 benzenesulfonamide
 324
 - MOP 295
 - (*R*)-(1-naphthyl)phenylmethanol
 370
 - organoboron reagents 300
 - organometallic reagents 330
 - organotrifluoroborate salts
 338
 - *ortho*-substituted amines 295
 - *N*-protected ketimines 307
 - *N*-tosylimines with arylboronic
 acids 302
 - phenylboronic acid to
 4-anisaldehyde reaction
 profile 341
 - phenylboronic acid to
p-chlorobenzaldehyde 337
 - phenylboronic acid to isatins
 asymmetric and
 non-asymmetric version
 348
 - phenylboronic acid to
 naphthaldehyde asymmetric
 addition 331
 - phenylboronic acid to
p-trifluoromethylbenzaldehyde
 333
 - phenyl-substituted chiral diene
 298
 - phenyltitanium reagent 295
 - phosphane chiral ligands 300
 - phosphoramidite 332
 - phosphoramidite-catalyzed
 addition 304
 - polymer-supported
 NHC-rhodium complex 336
 - Rh(CF₃COO)(1,3-dimesitylte-
 trahydropyrimidin-2-ylidene)
 (COD) complex 338
 - Rh(I)/dpbb 296
 - Rh/*N*-Me-BIPAM catalysts
 303, 306
 - rhodium complex 333
 - rhodium(I)/(1)-catalyzed
 asymmetric arylation 297
 - Rh/(*R,R*)-DeguPHOS addition
 301

- Rh catalysts (*contd.*)
- samarium(II) iodide 302
 - (*S*)-ship 302
 - sodium tetraphenylboronate addition to ketones anisaldehyde 342
 - spiro monodentate phosphite ligands 332
 - *N*-sulfonyl and *N*-benzoyl groups 295
 - sulphonated S-Phos ligand 344, 345
 - C_2 -symmetric diene ligands 297
 - trifluoromethyl ketones enantioselective rhodium/phosphoramidite-catalyzed asymmetric arylation 344, 345
 - 1-*p*-tolyl-1,2,3,4-tetrahydronaphthalen-1-ol 371
 - working-model proposed by Hayashi group 298
- Rh-catalyzed conjugate addition
- acetylacetone ligand (acac) retards 250
 - 1,4-addition/protonation with organotin reagents 267
 - α -amino acid derivatives 268
 - $ArSiCl_3$ and Ar_2SiCl_2 270
 - aryl boronic acids 258
 - arylboronic acids to α,β -unsaturated ketones 254
 - arylboronic acids to enones 248
 - arylsilicon compounds 268
 - aryltitanium reagents 267, 268
 - aryltrialkoxysilanes 268
 - aryl transfer reagents 265
 - asymmetric 1,4-addition of aryltrialkoxysilanes to α,β -unsaturated esters and amides 269
 - axially chiral bis-sulfoxide ligands 261
 - axially chiral non- C_2 -symmetric bidentate phosphorous ligands 254
 - bicyclo[2.2.2]octadiene ligands 260
 - BINAP 252
 - BINOL-based diphosphonite ligands 252
 - bis(phosphane) ligands 248
 - boronic acids to enones catalyzed by (*S*)-BINAP-Rhodium(I) 249
 - *tert*-butanesulfinylphosphane ligands 262
 - (*R,R*)-1,2-bis(*tert*-butylsulfinyl)benzene 261, 262
 - chiral bis-sulfoxide ligands 261
 - chiral diene ligands 259, 260
 - chiral diene-transition metal complex 257
 - chiral hybrid sulfoxide–olefin ligands 265
 - chiral phosphane–olefin ligands 262, 263
 - P-chirogenic biphasphane ligands 255
 - C_2 -symmetric bidentate phosphorus ligands 252
 - C_2 -symmetric bisphosphane ligands 253
 - 1,5-diene chiral ligands 261
 - 1,5-diene ligands 261
 - diene- and sulfoxide based ligands 251
 - *N,N*-dimethyl (*R,R*)-O-linked-phosphoramidite 287
 - diphenylsubstituted cyclopropane-based ligands 253
 - electron-deficient α,α' -disubstituted alkenes 267
 - electron-poor chiral diphosphane ligands 255
 - enantiopure flavanones 261
 - enantioselective 258
 - enantioselectivity 250
 - Hayashi–Miyaura reaction 251, 261, 264
 - hybrid phosphane–olefin chiral ligands 263
 - $MeO-F_{12}$ -BIPHEP-ligated Rh catalyst 254
 - monodentate phosphorous ligands 257
 - mono-phosphoramidite type analogues 252
 - (*R*)-3-(2-naphthyl)cyclohexanone 287
 - non- C_2 -symmetric diphosphane ligands 256
 - olefin-oxazoline ligands (OlefOx) 263
 - organosilane reagents 267
 - organosiloxanes to α,β -unsaturated carbonyl compounds 269
 - organotin compounds to α,β -unsaturated carbonyl compounds 266
 - organotin reagents 267
 - oxazoline-indole-olefin ligands 263
 - $Ph_m MX_n$ 266
 - phenylated products 251
 - phenylboron reagents to cyclic enones 264
 - phenylboronic acid to chromenone 261
 - phenylboronic acid to cyclic enones 259
 - phenylboronic acid to enones 253
 - (*S*)-3-phenylcyclohexanone 287
 - phenylrhodium complex with 2-cyclohexanone gave oxa- π -allylrhodium 250
 - planar-chiral non-metallocene ligand 255
 - P-Phos 254
 - reaction mechanism 266
 - [Rh(acac)((*S*)-BINAP)] 249
 - Rh(I)-diene complexes 258
 - rhodium (I) complexes 248
 - rhodium(I)/(R)-3,5-diCF₃-SYNPHOS-catalyzed addition 255
 - Rh-OH complex 250
 - [Rh]=Rh(I)/L 251
 - sodium tetraarylborates to chromenes 262
 - synergistic interactions 257
 - terpene-derivative diene ligand 257
 - transition metal catalysts 248
 - tropos phosphite ligand 257
 - rhodium (Rh)
 - DMG Ar/C=X (X=C, O, N) couplings C(sp²)–H activations 201, 204, 205, 207, 208, 210, 213, 215
 - DMG Ar/alkyne couplings C(sp²)–H activations 223, 228
 - DMG assisted C(sp²)–H activations direct arylation 178, 183, 186
 - DMG involving Ar/alkyl couplings C(sp²)–H activations 233

- Ru catalysts
 – *N*-[(2-chlorophenyl)
 (phenyl)methyl]-4-methyl-
 benzenesulfonamide
 325
- copper 314, 315
- ethyl 2-(4-(dimethylamino)
 phenyl)-2 ((methoxycarbonyl)amino)acetate
 325
- ruthenium 313, 314
- zinc 314
- ruthenium (Ru)
- DMG Ar/alkyne couplings
 $C(sp^2)-H$ activations 228,
 229
- DMG Ar/C=X (X=C O, N)
 couplings $C(sp^2)-H$
 activations 212, 216
- DMG assisted $C(sp^2)-H$
 activations direct arylation
 185, 188, 191, 192
- DMG involving Ar/alkyl
 couplings $C(sp^2)-H$
 activations 235, 237, 238
- non-DMG involving Ar/alkyl
 couplings $C(sp^2)-H$
 activations 235
- ruthenium catalysis
 – (*S*)-(4-chlorophenyl)
 phenylmethanol 372
- arylboronic acids to aldehydes
 and isatins 358
- arylboronic acids with aryl
 aldehydes 359
- chiral *O*-linked C_2 -symmetric
 bidentate phosphoramidite
 (Me-Bipam) ligand 355
- chiral ruthenium complex
 359
- s**
- silver (Ag)
 – DMG assisted $C(sp^2)-H$
 activations direct arylation
 194, 196
- Sonogashira–Hagihara reaction
 – amphiphile 55
- arenediazonium salts 52, 53
- Au nanoparticles 50, 52
- Cu-catalyzed alkene arylation
 50
- homocoupling sequence 52
- ligands and TON values 52
- oligo(1,4-phenylenethynylene)
 50, 51
- palladacycle catalysts 50
- Pd-catalyzed decarboxylative
 coupling 52, 54
- XPhos 48
- Sonogashira–Hagihara cross
 coupling
- arenediazonium salts 87
- diphenylethyne 87
- Stille reaction
 – copper catalyzed multi-
 component method 48, 49
- *N*-ethyl-*N*-(phenyl-*p*-tolylmethyl)
 benzamide 87
- tetracyclic thienopyridones 48
- *N*-ethyl-*N*-(phenyl-*p*-tolylmethyl)
 benzamide 87
- Suzuki–Miyaura reaction
 – α 2/3-selective GABA_A agonist
 candidate p38 66
- 6-(hetero)arylthieno[3,2-b]
 pyridines 71
- aryl and alkyltrihydroxyborates
 65
- asymmetric Pd-catalyzed 63
- biarylarylmethylamine unit
 74
- biphenyl-*o*-phosphanes 59
- Boc-protected aminomethyl-
 trifluoroborate 65
- borate complex 62
- ClickPhos 62, 64
- 4-(2,6-dimethylphenyl)-3,5-
 dimethylisoxazole 88
- ferrocene based ligands 61
- GPR40 receptor agonist
 67, 68
- heterocyclic compounds 61
- isonitrile ligands 57, 58
- MAP kinase inhibitor 66
- monoligated Pd-NHCs 55
- nucleotides fluorescent
 analogues 68
- oligonucleotide substrates
 69
- oxime-derived palladacycle
 59
- palladium removal 67
- Pd₂(dba)₃/S-Phos 64
- Pd-catalyzed
 Suzuki–Miyaura/direct
 arylation reaction 74
- Pd-NHC(allyl) catalysts 57
- Pd-PEPPSI catalysts 55, 56
- Pd-triarylphosphane-ferrocene
 catalysts 61
- PEPPSI-type Pd complexes
 59
- phenylalanine and tyrosine units
 68
- *p*-phenylanisole 88
- phospha-adamantane ligands
 61, 62
- phosphacycle ligands 61, 62
- phosphane ligands 59
- t**
- Tamao–Kumada–Corriu cross
 coupling
- [CoCl₂(IMes)₂] X-ray structure
 77
- 2-(4-methoxyphenyl)pyridine
 88
- heterochloro compounds 75,
 76
- multichannel microreactor
 78
- reaction 75
- self-assembled palladium
 complex 77
- TASF 10
- tetrabutylammonium bromide
 (TBAB) 155
- tetrazole synthesis 469
- tetrazole
 – [3+2] cycloaddition 471
- RAFT procedure 472
- losartan 469
- nano ZnO/Co₃O₄ catalyst
 471
- photo-induced tetrazole-ene
 coupling process 472
- thiol arylation 143, 144
- Bi(III) oxide catalyzed 141
- indium oxide catalyzed 141
- titanium catalysis
 – *trans*-1,2-bis(hydroxycamphor-
 sulfonylamo) cyclohexane
 367
- chiral phosphoramido-Zn(II)
 complex 369
- ketones 369, 370
- ketones phenylation 367
- phenylboronic acid
 transmetalation 368
- 1-*p*-tolyl-1H-benzimidazole using
 cupric acetate and
p-tolylboronic acid 143
- (*S*)-5,7,10-trimethyl-7-(*p*-tolyl)-
 5H-dibenzo[b,d]azepin-6(7H)-
 one 241
- tris(diethylamino)sulfonium
 difluoro(trimethyl)silicate
 (TASF) 10

Z

- zinc catalysis
- aminoalcohol ligand 366
- (*R*)-(cyclohexyl)phenyl-methanol 372

- (*R*)-2,2-dimethyl-1-phenyl-propanol 372
- 1-(4'-methylphenyl)-1-phenyl-ethanol 373
- triarylborane ammonia complexes 366
- triphenylborane (BPh_3) 366
- $ZnPh_2$ to ketones enantioselective addition 367

