

Subject Index

Numbers in front of the page numbers refer to Volumes I and II, respectively: e.g., II/254 refers to page 254 in Volume II.

a

- 1233A II/93
 AA reaction II/302
 acetal deprotection I/387
 acetaldehyde I/336
 acetalization I/61
 acetals, chiral I/556
 acetonitrile I/184, I/186
 acetoxylation, allylic II/245, II/246
 acetylene I/17, I/171, I/182, I/184, I/186,
 I/187, I/190, I/511, I/533, I/534
 acetylides, terminal I/386
 acid
 – anhydride I/358
 – chloride I/280, I/478
 – γ , δ -unsaturated I/122
 acoragermacrone I/463
 acoustic radiation II/583
 acrolein I/181, I/336
 – acetals I/471
 acrylates I/325, I/327
 acrylic fibers I/189
 activation volume II/616
 acycloxylation II/258
 – asymmetric II/259–II/263
 – propargylic II/261
 acyl chloride I/432
 acyl complexes, unsaturated I/576
 3-acyl-1,3-oxazolidin-2-ones I/349, I/350
 1-acyl-2,3-dihydro-4-pyridones I/546
 acylation I/379, I/464
 – *Friedel-Crafts* I/356–I/358, I/382, I/591
 acylferrates I/575
 acyloxylation reaction, asymmetric II/256
 acylperoxomanganese complexes II/350,
 II/489
 acylsilanes I/433, I/453
 1-adamantyl-di-*tert*-butylphosphine I/217
 adamantylphosphines I/241
 adenosine II/327
 AD-mix II/285
 ADN (adiponitrile) I/149
 adriamycin II/70
 africanol II/86
 agrochemicals I/23, I/41, I/42, I/149
 AlCl₃ I/356, I/577
 alcohol
 – α -allenic I/121
 – acylation I/358
 – allylic I/62, I/63, I/203, I/204, I/307, I/309,
 I/337, I/470, I/476, I/477, I/511, I/542, II/63
 – cyclocarbonylation I/127
 – aminoalcohol I/76, II/158, II/326
 – ligand I/530
 – β -amino I/347, I/364, I/478
 – cyclic allylic II/65
 – fluorinated II/98, II/365
 – halogenated II/46
 – homoallylic I/62, I/384, I/440, I/493
 – homopropargyl I/472
 – oxidation I/379
 – aerobic, metal-catalyzed II/437–II/473
 – polyfunctional I/529
 – propargylic I/64, I/405, I/416, I/476
 – chiral I/535
 – unsaturated I/258
 aldehyde I/57, I/96, I/103, I/155, I/430,
 I/435, I/470, I/478, I/491, I/543
 – α , β -unsaturated I/339, I/455, I/472, II/37
 – aliphatic I/342
 – alkyl nucleophiles, addition I/503–508
 – allyl nucleophiles, addition I/493–I/498
 – β -hydroxy I/494
 – carbonyl hydrogenation II/29–II/95
 – mixed couplings I/461, I/462
 – water-soluble I/336
 Alder ene reaction I/6

- aldol I/93, I/379
 - anti-aldol I/500
 - syn-aldol I/500
- aldol products I/369
- aldol reaction I/336, I/337, I/398, I/432, I/539, I/540
 - addition, enolates to aldehydes I/499–I/503
 - asymmetric I/370
 - enantioselective I/369–I/371
 - hydroformylation/aldol reaction 96, I/97
 - intramolecular version I/94
 - *Mukaiyama* type I/94, I/381, I/382, I/502, I/503
 - stereoselective I/591
- aldonolactones I/431, I/434
- Alexakis* I/536, I/557, I/558
- Aliquat-336* I/122
- alkali metals I/452
- alkaloids I/37, I/349, I/590
 - alkaloid 251F II/77
 - macrocyclic I/330
 - pseudoenantiomeric II/276
- alkane, oxidation II/221
- alkene-arene π -stacking I/400
- alkenes I/449, I/483
 - carbometallation I/478
 - cyclic I/443
 - enantioselective alkylation, by chiral metallocenes I/257–I/268
 - heterogeneous hydrogenation II/135
 - hydrocarboxylation I/113–I/117
 - hydrocyanation I/149–I/151
 - hydroesterification I/117–I/120
 - hydrovinylation I/308
 - internal I/75
 - oxidation II/382, II/383
 - metathesis I/321–I/328
 - macrocyclic I/330
 - strained I/570
 - terminal I/58, I/258
- alkenol, cyclization II/384
- alkenyl boranes I/559
- alkenyl copper reagent I/554
- alkenyl halides I/472, I/474–476
- alkenylbismuthonium salts I/387
- alkenylborane I/532
- alkenylpyridine I/185–I/188
- alkenylzinc reagents I/522, I/532
- alkoxide ligands I/491
- alkoxycarbene complexes I/397
 - β -amino- α,β -unsaturated I/416
- 3-alkoxycarbonyl- Δ^2 -pyrazolines I/415
- 3-alkoxycyclopentadienones I/589
- alkyl halides I/211–I/225, I/476
- alkyl hydroperoxide I/20
- alkyl peroxides II/231
- alkyl tosylates I/224
- alkylation I/260
 - allylic I/4, I/6, I/8, I/9, I/311, I/314
 - enantioselective, by chiral metallocenes I/257–I/268
 - O-alkylation I/309
- alkylidenecyclopentenones I/416
- alkylpyridine I/185–I/188
 - α -alkylpyridine I/186
- alkylrhenium oxide II/432
- alkylsulfones, lithiated I/158
- 2-alkylthiopyridine I/188, I/189
- alkylzinc nucleophiles I/530, 531
- alkyne I/113, I/416, I/417, I/440, I/474, I/485
 - cyclomerization I/171–I/193
 - hydrocarboxylation I/124
 - hydrocyanation I/151–I/153
 - hydrosilylation II/171–II/173
 - internal I/174
 - metathesis I/330, I/331
 - oxygenation II/215
 - terminal I/125, I/174
- alkyne reaction I/440
- alkyne-CO₂(CO)₆-complex I/620
- alkynols, cycloisomerization I/398
- alkynyl acyl complexes I/576
- alkynyl halides I/476
- alkynylboranes I/405
- alkynylboronates I/405
- alkynylzinc nucleophiles I/530, I/533–I/535
- allene I/153, I/473
 - hydrocarboxylation/hydroesterification I/120–I/122
- allenyl sulfide I/510
- alcolchicinoids I/407
- allyl acetate I/559
- π -allyl complex II/243
- allyl ethers I/205, I/206, I/311
 - by cyclization of alkenols II/384
 - synthesis from olefins II/385
- allyl halides I/307, I/470–I/472
- allyl organometallics I/337
- allyl resins I/307
- allyl stannanes I/494
- π -allyl transition metal complexes I/307
- allyl urethanes I/311
- allyl zinc bromide I/523
- allylamines I/199–I/203
 - optically active I/208

- 2-allylanilines I/129
- allylation reaction I/337, I/338, I/379, I/472, I/522
- Barbier-type I/380, II/590
 - benzaldehyde I/471
 - double I/527
 - Hiyama-Nozaki I/470
 - Pd-catalyzed II/566
- allylboranes I/88–I/92
- allylboration, intramolecular I/91
- allylboronates I/92
- allylchromium I/471, I/477
- allyl-cobalt I/183
- allyl-Grignard I/493
- allylic acetates I/485
- allylic acetoacetates I/484
- allylic acetoxylation II/245, II/246
- allylic alkylation I/4, I/6, I/8, I/311
- asymmetric I/9, I/314
 - enantioselective I/527
- allylic amines, asymmetric synthesis I/532
- allylic bromides I/478
- allylic carbonates I/309, I/311
- allylic chloride I/307
- allylic esters I/309, I/311
- allylic ethers, cyclic I/266, 267
- allylic imidates I/312
- allylic nitriles I/150
- allylic oxidation I/308, II/243–263
- copper-catalyzed II/256–II/263
 - Karasch-Sosnovsky type II/256–II/263
 - palladium-catalyzed II/243–II/253
 - regioselectivity II/259
- allylic radical II/259
- allylic silylation I/313
- allylic substitution, palladium-catalyzed I/307–I/315
- mechanism I/310, I/311
- allylic sulfonylation I/313
- 1,3-allylic transposition II/248
- π -allylpalladium chloride complex I/307
- π -allylpalladium complex I/307, II/244
- 2-aza- π -allyl palladium complex I/310
- 2-allylphenol I/129
- allylsilanes I/88–I/92, I/291, I/382, I/496
- allyltitanium I/493, I/494
- allyltributyl reagent I/577
- aloesaponol III I/488
- aluminumhydride I/311
- 5-amino-pyrroles I/152
- amides I/244, I/431, I/433, I/435, I/465
- amidocarbonylation I/67, I/100–I/103
- aldehydes I/133–I/146
 - cobalt-catalyzed I/134–I/140
 - domino hydroformylation-amidocarbonylation I/136
 - palladium-catalyzed I/141–I/146
- amination I/231–I/246, I/315, II/403–II/412
- oxidative II/405, II/406
 - reductive I/19, I/97
- amine oxidase II/497
- amine oxidation II/497–II/505
- dehydrogenative II/497
 - metal hydroperoxy species II/499
 - metal oxo species II/502
 - primary amines II/498, II/501, II/502, II/504, II/505
 - secondary amines II/498, II/500, II/501, II/504, II/505
 - tertiary amines II/498, II/499, II/502–II/504
- amines I/155, I/309
- chiral II/113
 - optically active II/189
 - primary, arylation I/244
 - secondary I/309
 - unsaturated I/258
- amino acid I/245, I/310, I/349, I/545, I/565
- α - II/14
 - asymmetric synthesis I/532
 - azolactones I/513
 - derivatives I/398
 - non-proteogenic I/544
 - synthesis I/544
- amino ketones II/59
- 4-amino-1,3,5-hexatrienes I/416
- 4-amino-1-metalla-1,3-butadienes I/419
- amino-carbene
- cluster II/499
 - aminocarbene complex I/398
- aminocyclitols I/413
- aminohydroxylation, asymmetric II/275, II/309–II/334
- amide variant II/323–325
 - carbamate variant II/320–II/323
 - enantioselectivity II/315
 - intramolecular II/330, II/331
 - nitrogen source II/313, II/314, II/327, II/328
 - recent developments II/326–II/334
 - regioselectivity II/328–330
 - scope II/314, II/315
 - secondary-cycle II/331–II/333
 - solvent II/314
 - sulfonamide variant II/315–320
 - three variants, comparison II/312–II/325
 - vicinal diamines II/333

- aminoketone I/465
 aminometallahexatrienes I/419
a-aminophosphonates I/368
a-aminophosphonic acid I/367
 2-aminothiopyridines I/188, I/189
 amino-zinc-enolate I/565
 ammonia I/73
 ammonium formate I/311
Amphidinolide A I/326
 amphiphilic resin II/444
Amphotericin B I/594
 amplification
 – asymmetric II/260
 – chiral I/496
 AM-Ti3 II/338
Andersen method II/479
 andrastane-1,4-dione II/6
 angiotensin II receptor antagonist I/525
 anhydride I/281, I/433
 – homogeneous hydrogenation II/98
 anilines, primary I/243
 anisole I/357
 annualtion, (2+2+2) I/478
ansa metallocenes I/257, I/268
 anthraquinones I/178
 – ligands II/293, II/294
anti-1,2-diols I/370
 antibiotics I/408, II/11
 antibodies, catalytic II/349
 anti-cancer agent I/457, I/537
 anti-fungal agent I/258
 anti-histaminic agent I/30
 anti-inflammatory agents I/31
anti-Markovnikov addition I/3, I/149
 apomorphine II/346
 Ar₄BiX I/385
 arabitol II/97
 araguspongine II/77
 araliopsine I/489
Aratani I/158, I/159
 ArB(OH)₂ I/559
 ARCO/HALCON process II/372
 arenes I/385
 η⁶-arene-Cr(CO)₆ complexes I/601
 aristoteline I/465
 aromatic nitro groups, heterogeneous
 hydrogenation II/132–II/134
 aromatic ring, heterogeneous
 hydrogenation II/136, II/137
 aromatic substitution, electrophilic I/8, I/92
 arsacyclobutenes I/440
 arthrobacillin A II/77
 aryl acetylenes I/406
 aryl chlorides I/211, I/239
 aryl ethers I/231, I/246
 aryl fluorides I/225
 aryl halides I/211–I/225, I/231, I/474–I/476
 – palladium-catalyzed
 olefination I/271–I/300
 aryl iodides I/244
 aryl lithium I/609
 aryl pincer ligand II/154
 aryl propargyl amine I/80
 aryl stannanes I/309
 arylation I/231–I/253, I/379
 – Heck arylation I/5
 – N-arylation I/391
 – O-arylation I/390
 arylboronic acids I/211, I/245, I/251
 arylchloride I/526
 aryldiazonium salts I/279
 aryldiazonium tetrafluoroborates I/221
 3-aryl-enones I/609
 arylglycins II/323
 arylpyridine I/185–I/188
 arylzinc
 – iodides I/474
 – nucleophiles I/531–I/533
 aspartame I/134, I/139
 aspillin I/532
 asymmetric
 – activation II/66–II/68, II/349
 – catalysis I/153, I/404
 – deactivation II/66–II/68
 – isomerization catalysis I/199
 – synthesis I/18, I/23, I/57, I/88, I/187
 – transformation, second-order II/162
 ate-complex I/491
 atom economy I/3, I/11, I/12
 attractive interaction II/293
 autoxidation II/201, II/206, II/208, II/210,
 II/219, II/349, II/416
 – free-radical II/202–II/204
 avermectin B₁₂ II/5
 3-aza-1-chroma-butadiene I/413
 1-azabuta-1,3-diene I/585
 aza-Cope I/312
 azadiene I/346
 aza-semicorrins I/313
Azinothricins I/38
 aziridinations, asymmetric II/389–II/400,
 II/602, II/603
 – copper-catalyzed II/389–II/393
 – heterogeneous II/390
 – imines as starting
 materials II/396–II/400

- Lewis acids II/398, II/399
 - olefins as starting materials II/389–II/396
 - porphyrin complex II/395, II/396
 - rhodium-catalyzed II/393, II/394
 - salen complexes II/394, II/395
 - ylide reaction II/399, II/400
 - aziridines I/208, II/161, II/389
 - azirines II/161
- b**
- Bäckvall* I/23
- Baclofen* I/399
- Baeyer-Villiger* oxidation II/210, II/267–II/272, II/448, II/555
- asymmetric II/269, II/271
- balanol II/93
- Barbier*-type allylation I/380, II/590
- BARF anion, fluorinated II/547
- BASF I/17, I/19, I/23, I/171
- basic chemicals I/15
- bcpm II/115
- BDPP II/8, II/515
- benazepril II/82
- benchrotenes I/402
- benzaldehyde I/342, I/506, I/530, I/571
- allylation I/471
- benzannulation
- (3+2+1) benzannulation I/402–I/408
 - *Dötz* I/408, II/588, II/605
 - intramolecular I/406
- benzene I/171, I/174–I/177, I/357, I/417
- η^6 -benzene-Cr(CO)₃ I/601
- benzo(*b*)furans I/463
- benzo(*b*)naphthol(2,3-*d*)furan I/407, I/408
- benzofused azoles II/606
- benzoic anhydride I/357
- benzoil chloride I/357
- benzoxonitrile I/187
- benzophenone II/33
- benzoquinone I/509
- benzyl chromium species I/476
- benzyl propionate I/341
- benzylic carbocation I/607
- benzylic lithiation I/606
- benzylic radicals I/608
- BF₃ I/356
- BF₃ · OEt₂ I/345, I/559
- Bi(OTf)₃ I/383, I/388
- Bi(V) I/379
- biaryl synthesis I/406
- biaryls I/211
- BICHEP II/8
- BiCl₃ I/383, I/390
- bicp II/115
- bicyclo(3.2.1)octane I/402
- bicyclo(3.3.1)nonane I/402
- Biginelli*-multicomponent condensation II/604
- bimetallic
- catalyst II/98
 - complex I/136
 - derivatives, geminal I/429, I/430
 - Rh-Pd catalyst I/315
- BINAP I/23, I/199, I/200, I/235, I/282, I/285, I/313, II/115, II/549
- PEG-bound II/515
 - poly(BINAP) II/51
 - polystyrene-bound II/51
 - (R)-(+)- I/201, II/8
 - (S)-(–) I/201, I/205
 - two-phase catalysis II/521
- BINAPHOS I/31, I/40, I/69, I/72, I/154
- binaphthyl diphosphines I/59
- binaphthylbisoxazoline palladium complexes I/308
- binaphthol I/268, II/535
- ligand I/531
- BINAPO I/313
- BINOL I/353–I/355, I/374, I/494, I/496, I/533, II/271, II/272, II/369
- BINOL-titanium I/498, I/530
 - ligands I/505, II/482, II/483
 - polymers II/375
- biologically active compounds/
substances II/29, II/92
- biomimetic
- reaction II/299
 - systems II/205
- biotechnology I/17
- biphasic aqueous-organic medium II/513
- biphasic conditions II/349
- biphasic system, inverted II/550
- Biphenomycin* A II/93
- BIPHEPHOS I/38, I/39, I/59, I/78, I/94
- bipyridines, chiral II/262, II/263
- bipyridyls I/189, I/190
- bis(azapenam) I/412
- bis(aziridines) II/393
- bis(di-*iso*-propylphosphino)ethane I/471
- bis(oxazoliny)carbazole ligand I/472
- bis(oxazoliny)pyridines II/261
- bis(pentamethylcyclopentadienyl)
titanium I/439
- bis(sulfonamide) I/167
- bis-(trimethylsilyl)acetylene I/178
- bishydrooxazoles I/313

- bismethylenation I/435
bismuth I/379–I/392
– bismuth(0) I/380, I/381
– bismuth(III) I/381–I/384
bismuthonium salt I/386
bisoxazolines I/313, II/260, II/261, II/397,
II/533
– ligand I/162, II/389–II/391
bisphosphine-ferrocene II/184, II/185
bisphosphinites I/313
bispyrrolidines I/313
3,5-bis-trifluoromethylbenzaldehyde I/506
bite angle I/153, I/314, II/516, II/521
Blaser-Heck reaction I/280
blood substitutes II/536
BMS 181100 II/70
BNPPA I/114
Bogdanovic I/450
Bolm I/538, I/559
– *Bolm's* complex II/269
Bönnemann I/172, I/182
BoPhoz II/19
borohydrides I/311
boron I/560
boron-zinc exchange I/521
boronic esters I/472
BOX II/390, II/397
BPE I/23
BPPFA I/313
brefeldin A II/77
Breit I/44
2-bromofurans I/475
Bronsted base I/363
Bu₃CrLi₂ I/470
Buchwald's ligand I/215, I/239, I/249
Buchwald-Hartwig reaction I/21, I/232, II/602
– mechanism I/236
buckminsterfullerene I/590
bulky phosphite I/51
butadiene I/597
– 1,3-butadiene I/121, I/149
– dimers I/121
– monoepoxide I/9
3-buten-1-ols I/128
butenolides I/575
 α,β -butenolides I/581
2-butyne-1,4-diol I/184
2-butyne-1-ol I/184
butyrolactones I/62, I/608
– α -methylene- γ -butyrolactones I/128
– γ -butyrolactones I/63, I/127, II/271
- c**
C(sp³)-C(sp³) coupling I/528
C₈K I/450
C₉ telomers I/121
calix(4)arene I/459
calphostin I/408
camalexin I/465
CAMP II/21
camphor I/530, I/577, I/587
camphothecin I/525
cannabisativine I/546
cannithrene II I/462
capnellene I/463
captopril I/134
carazostatin I/595
carbacyclins II/93
carbametallation I/7
carbanion I/88
carbapalladation I/5
carbapenem I/579, II/94
carba-sugar I/37
carbazole alkaloids I/595, I/596
carbazomycin A I/596
carbazomycin B I/596
carbazomycin G I/595
carbene complex II/565
– α,β -unsaturated I/400–I/402, I/411
– difluoroboroxo I/418
– *Fischer*-type I/397–I/420
– photoinduced I/412–I/414
carbene ligands I/220–I/222, I/405, I/409,
II/154
– electrophilic I/163
carbene precursors I/158
carbene transfer I/409, I/418
carbenoids I/427
carbocyclation, (3+2) I/416
carbocycle
– 5-membered I/414–I/418
– 6-membered I/173–I/179
carbocyclic nucleosides I/36, I/413
carbocyclization I/564
carbodiimide I/180
carbohydrate I/155, I/437, I/489
carbomagnesation reactions I/257–I/263
– asymmetric I/258, I/263
carbometalation I/529
– intramolecular I/563–I/569
carbon dioxide (CO₂) I/179
– compressed II/269, II/545–II/556
– dense II/169
– homogeneous hydrogenation II/98–II/102
– hydrogenation II/548

- supercritical (scCO₂) I/78, I/323, II/116, II/197, II/198, II/383, II/438, II/539, II/545, II/551, II/567
- carbon disulfide I/357
- carbon monoxide I/57, I/106, I/113, I/114, I/117, I/308, I/397, I/619
 - ¹³C-labeled I/115
 - copolymerization I/108
- carbon nucleophiles I/603
- carbon tetrachloride I/473
- carbonates I/433
- carbonyl compounds
 - α,β -unsaturated I/371
 - α -halo carbonyl compound I/543
 - α -hydroxy carbonyl compounds I/364
- carbonyl coupling reactions I/454
 - reductive I/455
- carbonyl ene reactions I/104, I/105
- carbonyl
 - ligand I/397
 - methylenations I/428
 - selectivity II/34–II/38
- carbonylation I/21, I/113, I/135, I/307, II/29–II/95
 - allylic I/309
- carboxylate I/309
 - chiral I/165
- carboxylic acid I/155, II/95–II/102
 - α,β -unsaturated I/508
 - two-step synthesis II/428, II/429
- carquinostatin I/596
- Carreira* I/501, I/503, I/534, I/535
- carvone II/65
- cascade reactions I/294
- catalyst
 - activity II/129
 - deactivation II/361
 - homogeneous II/29
 - recyclable I/322
 - selectivity II/130
 - suppliers II/128
- catechol dioxygenase II/224
- cavitation bubble II/587
- C-C bond forming I/268, I/307, I/335, I/379–I/392, I/512, I/519, I/533, I/553, II/551
 - catalytic I/257
 - fluorine catalysts II/532, II/533
 - via metal carbene anions I/398, I/399
- C-C cleavage products II/278
- C-C coupling I/18, I/20–I/22
 - chromium(II)-catalyzed reactions I/469–478
- Ce(IV) I/483
- cembranoids I/435
- cembrene I/463
- ceramics I/379
- cerium(IV) ammonium nitrate I/591
- CF₃CO₃H I/496
- CF₃SO₃H I/496
- C-H bond, activation I/9, I/11, I/523
 - allylic II/243
- C-H compounds, oxidation II/215–II/236
- C-H insertion I/163
 - intramolecular I/165
- CH- π attraction II/148, II/154
- CH₂I₂ I/541
- CH₂I₂-Zn-Ti(O-*i*Pr)₄ I/437
- CH₃Ti(O-*i*Pr)₃ I/506
- chalcone I/373
- Chan* I/558
- charcoal II/128
- Chauvin* I/321
- chemical hermaphroditism I/605
- chemists enzymes I/4
- chemoselectivity I/4, I/5, I/18, II/133
- chiral
 - auxiliary I/3, I/411, I/556, II/83
 - ligand I/146, I/187, 313
 - poisoning I/498
 - promotor I/167, I/624
- CHIRAPHOS I/23
- chloroacetaldehyde I/336
- chloroarenes I/212, I/239, I/276
- 4-chlorochalcone I/538
- chlorophosphites I/44
- chlorosilanes I/455
- CHP II/484
- chromaoxetane intermediate II/278
- chromium II/372, II/373
 - catalyst I/175
 - chromium(0) I/404
 - chromium(II)-catalyzed C-C coupling I/469–478
 - chromium(III) I/469
 - modification II/34
- chromium complex I/410
 - planar chiral arene I/404
- chromium tricarbonyl complex I/406
- chromium-arene complexes I/601–I/612
 - as catalysts I/612
 - nucleophilic addition, arene ring I/602–I/604
 - preparation I/602
 - ring lithiation I/604, I/605
 - side chain activation
 - – general aspects I/605

- via stabilization of negative charge I/606, I/607
- via stabilization of positive charge I/607, I/608
- chrysanthemates I/159
- cinca-*Claisen*-type rearrangement I/525
- cinchonoide-modified catalyst II/79
- cinchona alkaloids II/131, II/299, II/492
 - derivatives II/276
 - ligands II/293–II/295, II/300
- cinchonine I/544
- cinnamaldehyde II/38
- cis*-3-hexene-1,6-diols I/532
- citronellal 7 I/199, I/383
- citronellol I/203, II/10, II/11
- cladiellin diterpenes I/475
- Claisen* rearrangement I/432, I/546
 - (3,3) sigmatropic I/577
 - diastereoselective I/544
- Clavularin* A I/537
- Clemmensen* reduction I/487
- C-O coupling reaction I/246–I/253
- Co(Salophen) II/245
 - dicarbonyl I/191
 - diene complex I/183
- CO₂(CO)₈ I/102, I/103, I/119
- cobalt I/106, I/113, I/134–I/140, I/173, I/175
 - homogeneous catalyst I/176
- cobalt black II/34
- cobalt chloride I/122
- cobalt metallacycles I/180
- cobalt porphyrin II/537
- cobalt vapor I/183
- cobalt(II) complex I/162
- cobaltacycle I/184
- cocyclization I/171, I/174, I/175
 - cobalt catalyzed I/187
- (COD)RhCl₂ 419
- codaphniphylline II/93
- Coleophomones* B/C I/325, I/326
- collidines I/187
- Collman's* reagent I/575
- compactin I/452
- computational studies II/151
- computer-aided analysis II/92
- condensation
 - aldol I/398
 - *Biginelli*-multicomponent II/604
 - *Knoevenagel* condensation I/93
- conjugate addition I/368, I/400, I/553–I/560
 - asymmetric I/536–I/539
 - enantioselectivity I/556–I/560
 - reactivity, general aspects I/553–555
- continuous flow
 - reactor II/513
 - system II/550
- cooperation, metals I/363
- Cope*-type (3,3) sigmatropic rearrangement I/411
- copper catalyst I/158–I/162, I/244–I/246, I/250, I/536, I/537, II/34, II/186, II/187
- copper enolates I/577
- copper(I)
 - carbene complex I/420
 - hydrazide II/472
 - salts I/149, I/386, I/419
- copper(II)chloride I/114
- copper(III) species II/258
- copper-carbene I/160
- copper-catalyzed coupling reactions I/522
- copper-containing proteins II/470
- copper-nitrene species II/392
- corannulene I/590
- Corey* I/162, I/386
 - model II/291
- cosmetics I/149, I/379
- co-solvent, chiral I/603
- Cossy* I/494
- CpTiCl₃ I/499
- Cr(CO)₃ I/416
 - fragment I/402
- Cr(CO)₅ I/399
- Cr(CO)₆ I/602
- Cr(salen) I/472
- Cram* selectivity II/39
- CrCl₂ I/469, I/473, I/474
- CrCl₃ I/469, I/470, I/474
- cross-coupling I/21, I/24, I/309, I/419, I/519, II/565, II/566
 - asymmetric I/527
 - alkyl-alkyl I/529
 - chromium arene complex I/610, I/611
 - intramolecular I/450, I/463
 - saturated coupling partners I/528, I/529
 - titanium-induced I/461–I/466
 - unsaturated coupling partners I/525–I/528
- crown ethers I/399
- crownophane I/388, I/459
- C-S bond-forming process I/390
- CTAB (cetyltrimethylammonium bromide) I/121, I/122
- Cu catalyst I/160, I/164
- Cu chromite II/95
- Cu complex I/158, I/162
- Cu(I) complex, cationic I/159

- Cu(II) I/483
 (Cu(MeCN)₄)(PF₆) I/420
 Cu(OAc)₂ I/483, I/485, I/488
 Cu(OTf)₂ I/536
 cumulenes I/180
 (\pm)- α -cuparenone I/106
 cuprate I/554
 cyanation I/392
 cyanhydrins I/384
 cyanide addition I/375
 2-cyanopyridine I/190
 cyanosilylation I/375, I/376
 – aldehydes I/375–I/377
 cyclization I/442
 – carbonylative I/108
 – 5-*exo* I/488
 – keto-ester cyclization I/462, I/463
 – manganese(III) based radical I/483–I/489
 – – substrates I/487–I/489
 – oxidative I/487
 – *Pauson-Khand* cyclization I/263, I/619–I/631, II/601
 – reductive I/463
 cycloaddition I/11, I/163, I/491, I/509
 – 1,3-dipolar I/347, I/348, I/414, I/511
 – – asymmetric I/355, 356
 – (2+1) I/409
 – (2+2) I/321, I/348, I/412, I/413, I/510, I/511, I/609
 – – asymmetric I/353, I/354
 – – photochemical I/412
 – (2+2+1) I/588, I/589, I/619
 – (2+2+2) I/174, I/176, I/180, I/182
 – (3+2) I/415, I/579, II/615
 – – asymmetric I/416
 – (3+2+1) I/402
 – (4+2) I/346, I/508, I/510, I/609
 – (4+3) I/312
 – cobaltocene-catalyzed I/192
 – electrocatalytic II/570
 – intramolecular I/176
 – miscellaneous reactions I/508–I/513
 – palladium-catalyzed II/614–II/620
 – trimethylenemethane (TMM) I/312
 cycloalkanones I/484
 cycloalkene I/449, I/459
 cyclobutanones I/413
 cyclobutenones I/406, I/413
 cyclocarbonylation I/108
 – intramolecular I/126–I/130
 cyclodextrins II/521
 cycloheptadiene I/411
 cycloheptanone I/537
 cycloheptatriene I/586
 cycloheptatrienones I/409
 cyclohexa-1,3-dienes I/175
 cyclohexadienes I/174–I/177
 cyclohexadienone I/404
 cyclohexadienyl radicals I/485
 cyclohexane-1,2-diamine I/167
 cyclohexene oxide I/207
 cyclohexenones I/604
 cyclohydrocarbonylation, dipeptide I/66
 cycloisomerization, alkynols I/398
 1,5-cyclooctadiene I/11
 cyclooctatetraene I/171, I/172
 cyclooligomerization I/180
 cyclopentadiene I/150, I/338, I/344, I/346, I/349, I/351, I/354, I/416
 cyclopentadienones, iron-mediated synthesis I/588–I/590
 cyclopentadienyldicarbonyl I/575
 cyclopentadienyltitanium I/499
 – fluoride I/506
 – reagents I/493
 – trichloride I/491
 cyclopentanes I/512
 (3+2) cyclopentannulation I/413
 cyclopentanones I/106, I/433, I/619
 cyclopentene I/95, I/536
 cyclopentene oxide I/207
 cyclopentenones I/416
 cyclophanes I/330, I/406, I/459
 cyclopropanation I/21, I/157–I/168, I/308, I/409–I/412, I/473, I/511, I/519, I/522, II/391
 – asymmetric I/542
 – copper-catalyzed I/162
 – diastereoselective I/411
 – enantioselective I/158–I/162, I/166, I/542
 – intramolecular I/160, I/165
 – ylide-mediated II/399, II/400
 – zinc-mediated reaction I/541–543
 cyclopropane I/157, I/409, I/525, I/593
 cyclopropanol I/477
 cyclopropenes I/440
 cyclopropylglycins I/592
 cyclopropylidenes I/387
 cyclotrimerization I/171, I/173, I/174, II/553, II/579
 cycphos II/115
 cylindrocyclophane F I/325
 cytochrome P450 II/226, II/234, II/256, II/497
 C-Zr bond I/266

d

- DAIB I/530, I/531
a-damascone II/70
Danishefsky I/348, I/475, I/500
Danishefsky's diene I/344, I/509, I/578
Daunorubicin II/70
Davies I/576, I/577
 DEAD-H₂ II/458
 debenylation, catalytic II/137–II/140
 – *N*-benzyl groups, selective removal II/139, II/140
 – *O*-benzyl groups, selective removal II/138, II/139
 decarbonylation I/382
 decursin II/370
 DEGUPHOS I/23
 dehydrogenation I/18, I/20
 dehydrohomoancepsenolide I/331
 demethoxycarbonyldihydro-
 gambirtannine I/590
 dendrimer I/323
 dendritic crystals II/587
 denopamine II/59
 – hydrochloride II/70
 density functional calculations II/362
 deoxyfrenolicin I/408
 17-deoxyroflamycoin II/86
 deracemization, palladium-catalyzed II/247
Desoxyepothilone F I/500
 desulfurization, ultrasound-assisted II/593
 deuteriobenzaldehydes II/68, II/69
 deuterioformylation I/32
 deuterium labeling experiment I/205, II/175
 deuterohydrogenation II/158
 DFT methods I/605
 (DHQ)₂AQN II/323
 (DHQ)₂PHAL II/323, II/327, II/330
 (DHQ)₂PYR ligand II/323
 (DHQD)₂-PYR II/491
 di(1-adamantyl)-*n*-butyl-phosphine I/241
 di-1-adamantyl-di-*tert*-butylphosphine I/217, I/277
 di-2-norbornylphosphine I/218
 diacetone-glucose I/499
 diacetoxylation II/250
 dialdehyde I/463
 dialkoxylation II/252, II/253
 dialkyles I/180
 dialkylidenecyclopentenones I/416
 dialkylphosphines I/277
 dialkylzinc I/536, I/538
 – compound I/503, I/506
 diamination, asymmetric II/333, II/334
 diaryl
 – ethers I/406
 – ketone I/461, II/51
 – methanes II/51
 – methanols II/51
 diastereoselectivity I/8, I/9, II/38–II/42
 – *exo/endo* I/412
 diastomer isomeric ballast II/7
 1,4-diazabutadienes I/223
 1,3-diazatitanacyclohexadienes I/428, I/440
 diazo compounds I/157, I/163
 – decomposition I/157, I/158
 – reaction II/529–II/531
 diazoacetates I/158
 – allyl/homoallyl I/164
α-diazocarbonyl complex I/158
 diazomethane 159
 1,3-dicarbonyl I/385
 dicarbonylation, oxidative I/121
 dichloralkyl radical I/474
 dicobaltoctacarbonyl I/149, I/621
 dicyclohexylborane II/196
Diels-Alder reaction I/6–I/8, I/338, I/344–I/347, I/379, I/576, I/577, I/588, I/589, II/611
 – asymmetric I/348–I/355
 – hetero I/348, I/383, I/509, II/610
 – imino I/345, I/347
 – intermolecular I/417
 – intramolecular I/417
 – transannular I/329
 diene I/308
 – conjugated I/121, I/150
 – hydrocarboxylation/hydroesterification I/120–I/122
 1,3-diene I/6, I/7, I/309, I/411, I/440, I/477
 – chiral I/311
 – complexation I/586
 – cyclohexa I/587
 – *Danishefsky's diene* I/344, I/509, I/578
 – macrocyclic I/328
 1,4-diene I/6
 1,5-diene I/312, I/328
 diethyl-alkylboranes I/506
 diethylzinc I/309, I/530
 difluoroboroxycarbene I/398
 1,1'-diformyl-ferrocene I/398
 1,1-dihalides I/472–I/474
 1,1-dihaloalkanes I/438
 dihydride-based mechanism II/151
 4,5-dihydro-1,3-dioxepins I/206
 4,7-dihydro-1,3-dioxepins I/206

- dihydrofurans I/264
 – 2,3-dihydrofuran I/282
 2,3-dihydroisoxazoles I/534
 dihydropeptides II/515
 dihydropyrroles I/68
 dihydroquinolines II/160
 dihydroxylation, asymmetric II/275–II/305,
 II/309, II/311
 – directed II/301, II/302
 – face selectivity II/287–II/290
 – homogeneous II/299, II/300
 – kinetic resolutions II/300, q301
 – ligand optimization II/285, II/286
 – osmylation, mechanism II/278–II/282
 – polyenes II/299
 – process optimization II/283–II/285
 – recent developments II/298–II/305
 – secondary-cycle catalysis II/302–II/304
 1 α ,25-dihydroxyvitamin D3 II/79
 diiron enoyl acyl complexes I/578, I/579
Diisopromine I/33, I/34
 di-*iso*-propoxytitanium I/497, I/513
 di-*iso*-propylzinc I/520
 diketene I/502
 diketones II/84–II/86
 – β -diketones, unsaturated I/487
 dimedone I/386
 dimerization
 – methyl acrylate II/567
 – olefins I/308
 – Pd-catalyzed I/418
 dimetalated reagents, geminally I/523
 dimetallic species I/427
 dimethoxybenzene I/357
 dimethyl aminoacetone II/58
 2,3-dimethylbutadiene I/351
 2,2-dimethylcyclopropanecarboxylic
 acid I/158
 dimethyl malonate I/545
 dimethylpyridines I/187
 dimethylpyrrolidine acetoacetamides I/489
 dimethyl succinate I/118
 dimethyl sulfide I/386
 dimethyltitanocene II/603
 dinitrogen I/157
a, ω -diolefine I/80
 DIOP I/23, II/21
 diorganocuprate I/553
 diorganozinc reagent I/504
 dioxirane II/210
 dioxygen II/201, II/205
 dioxygenase II/224
 DIPAMP I/23, II/19, II/25
 dipentylzinc I/592
 diphenyl phthalazine ligands II/294
 diphenyl pyrazinopyridazine
 ligands II/294
 1,3-diphenylallyl esters I/313
 1,1-diphenylethylene I/72
 2,3-diphenylindole I/452
 diphosphines I/559, II/184
 – chelating II/159, II/516
 – chiral I/312, II/42, II/93
 – ferrocene-based II/19
 – ligand II/20
 – *p*-chiral II/19, II/20
 diphosphite I/559
 diphospholane derivatives II/15
 dirhenium heptoxide II/357
 dirhodium catalyst I/165, I/166
 disiamylborane II/196
 di-*tert*-butylphosphine oxide I/218
 dithioacetals I/438
 dithioketals I/438
 diyynes I/478
 DMAP I/441
 DMSO I/323
 domino
 – procedure I/629
 – reaction (*see* hydroformylation reaction)
 – sequences I/294
 π -donation I/397
Dötz benzannulation I/408, II/588, II/605
 double bond migration II/135
Doyle I/161, I/164
 DPEphos I/238
 DPP (2,6-diphenylpyridine) I/355
 dppb (1,4-bis(diphenylphosphino)
 butane) I/114, I/117, I/129
 DSM I/185
 DTBMP I/354
 DuPHOS I/23, I/69, II/8, II/10, II/19, II/20,
 II/184
 – Me-DUPHOS II/25
DuPont I/149
 dyes I/189

e
 Eastmann-Kodak I/45
 (EBTHI)Zr-binol I/257
 (EBTHI)ZrCl₂ I/257, I/263
 EDTA I/476
Efavirenz I/534
 efficiency, synthesis I/3
 electrochemistry II/570
 electrophilic substitution I/596

- electroreduction II/591
 - coupling II/570
 - eleutherobin I/475
 - eleuthesides I/476
 - β -elimination I/106, I/416, I/528
 - β -hydride elimination I/32, I/108, I/150, I/223, I/272, I/281, I/294, I/429, II/150
 - enals II/37
 - iron-substituted I/580, I/581
 - enamine I/65, I/67–I/70, I/99, I/380, I/438, II/113
 - asymmetric hydrogenation II/15–II/19
 - β,β -disubstituted II/22
 - enantioselective reduction II/117, II/118
 - enantioselective deactivation II/68
 - enantioselectivity I/9, I/312–I/315, II/42–II/69
 - Enders* I/538
 - endo,endo*-2,5-diamino-norbornane I/472
 - enediynes I/476
 - ene-reaction, allyl nucleophiles
 - addition I/493
 - enol ethers I/434
 - enolates I/88, I/96, I/560, I/563
 - enols, aliphatic I/203
 - enones I/538
 - β,γ -enones I/470
 - iron-substituted I/580, I/581
 - environmental
 - benefit II/511
 - hazard I/18
 - enynes I/442, I/478, I/525
 - 1,6-enynes I/176
 - metathesis I/328, I/329
 - precursor I/619
 - enzyme-metal-coupled catalysis II/145
 - ephedrine I/536, I/544
 - *N*-methyl ephedrine I/535
 - epinephrine hydrochloride II/56
 - Epothilone B* II/77
 - Epothilone C* I/330, I/331
 - epoxidation I/371–I/374
 - aerobic II/349–II/351
 - asymmetric II/210, II/341–II/344
 - group III elements II/369, II/370
 - group IV elements II/370
 - group V elements II/371, II/372
 - group VI elements II/372, II/373
 - group VII elements II/373
 - group VIII elements II/373–II/375
 - heterogeneous II/337
 - *Jacobsen-Katsuki* I/22, II/211, II/346, II/350
 - lanthanoids II/369, II/370
 - manganese-catalyzed II/344–II/353
 - POMs-catalyzed II/419
 - rhenium-catalyzed II/357–II/365
 - *Sharpless* II/211
 - titanium-catalyzed II/337–343
 - ylide-mediated II/399
 - epoxides I/207
 - epoxyketone I/539
 - eprozinol II/62
 - Erker* I/267
 - esomeprazole II/480
 - ESPHOS I/43, I/44
 - esters I/431, I/435
 - α,β -unsaturated I/566
 - β -amino I/341–I/343
 - β,γ -unsaturated I/121
 - enolates I/609
 - homogeneous hydrogenation II/98
 - unsaturated I/442
 - estrone I/458
 - Et_2Zn I/506, I/537
 - ether
 - crown ethers I/399
 - diaryl ether I/406
 - enol ether I/434
 - etherification I/387
 - ethyl diazoacetate I/419
 - ethylene I/569
 - E*-titanium enolates I/500
 - EtMgCl I/258
 - etoposide II/10
 - eutomer II/7
 - Evans* I/159
 - excitation, photochemical II/578
 - 5-exo-trig cyclization I/568
 - 6-exo-trig cyclization I/568, I/569
 - Eyring* plots II/282
- f**
- Farina* I/525
 - fatty acid II/141
 - f-binaphane II/115
 - Fe catalyst I/177
 - $\text{Fe}(\text{C}_5\text{Me}_5)(\text{CO})_4$ I/576
 - $\text{Fe}(\text{III})$ I/483
 - Fenvalerate* I/41, I/42
 - Feringa* I/528, I/536, I/558–I/560
 - ferricenium hexafluorophosphate I/595
 - FERRIPHOS II/19
 - ferrocene I/314
 - ferrocenyl diphosphine II/114
 - chiral II/74, II/85

- ferrocenyl oxazoline ligands I/531
 ferrocenylphosphine I/313, II/176
 – ligands I/528
 fine chemicals I/171, I/182, I/188, I/307,
 II/29, II/437, II/545, II/573
 fine chemical synthesis, industrial II/29,
 II/145
 – catalyst preparation and application I/23,
 I/24
 – future I/24, I/25
 – general concepts I/15, I/16
 – hydroformylation I/29–I/51
 – use of transition metals I/17–I/23
Fischer indole synthesis I/103, I/104
Fischer-type, carbene complexes I/397–I/420
 – chiral I/400
 – γ -methylenepyrane I/400
 FK506 I/205, II/77
 FK906 II/93
 flavoenzyme II/497
 fluorinated chiral salen ligand II/349
 fluorinated phosphines II/548
 fluorobenzene II/467
 fluorocarbon solvents II/373
 fluorophase principle II/455
 fluorophilicity II/528
 fluorous biphasic separation II/169
 fluorous biphasic systems (FBS) II/163
 fluorous catalysts II/527–II/541
 – C-C bond forming reactions II/532,
 II/533
 – diazo compounds, reaction II/529–II/531
 – hydroformylation II/528
 – hydrogenation II/529
 – hydrosilation II/529
 fluorous cobalt
 – phthalocytine II/537
 – porphyrin II/536
 fluorous cyclic polyamines II/536
 fluorous phase II/169
 fluorous solvent II/527, II/528, II/541
 fluorous thioethers II/533
 fluorous-soluble catalyst II/259
 fluoxetine hydrochloride II/62, II/70
Fluspirilene I/33, I/34
 formaldehyde I/135, I/336
 formate ester I/119
 formic acid I/123, I/124, I/311
Fosfomycin II/93
 fostriecin I/534
 fragrance chemicals, chiral I/202
Frankland I/547
 fredericamycin I/609
 free-radical
 – process I/20
 – reaction II/201
 Friedel-Crafts
 – acylation I/356–I/358, I/382, I/591
 – addition I/511
 – alkylation I/356
 fructophosphinites I/155
 fruity perfume II/70
 fullerene I/312
 3(2H)-furanones I/128
 furans I/266, I/382, I/417, I/435, I/463,
 I/473
 – 2,5-disubstituted I/477
 furostifoline I/595
Fürstner I/330, I/471, I/477
- g**
 gadolinium triflate I/336
Gaudemar I/523
 Gd(O-*i*Pr) I/375
Gennari I/537
 – *Schiff* base ligands I/528
 geraniol II/10, II/11, II/341
 gibberellins I/437
 Gif-oxidation II/216, II/256
Gilman reagent I/554
 gloeosporone II/77
 glufosinate I/102, I/139, I/140
 glycals I/489
 glyceraldehyde I/493
 glycine esters I/401
 glycopeptide I/143
 glycopyranosides I/384
 glycosides, macrocyclic I/330
 glycosyl transferases I/36
 glyoxylates I/509
 glyoxylic acid I/383
 graphite I/118, I/452
 green
 – chemistry I/18, I/175, II/162, II/368
 – oxidant II/226–II/230
 – reagent II/235
 – solvent II/545
 – synthesis II/415
Grigg I/475
Grignard compounds I/506
Grignard reagent I/167, I/257, I/263, I/309,
 I/429, I/432, I/525, I/528, I/553, I/555,
 I/557, I/580
 – inorganic I/451
 – vinyl I/570
Grubbs I/24, I/322, I/428, I/432, I/442, I/443

h

- Haber-Weiss*, decomposition of hydroperoxides II/222
- hafnium II/370
- hair cosmetics I/189
- halichlorine I/534
- haliclonadamine II/93
- haloalkoxy(alkenyl)carbene chromium complex I/410
- Hammond* postulate II/292
- haptotropic rearrangement I/408
- Hartwig* I/544
- Hayashi* I/559, I/560
- HCN I/151
- heat carrier II/560
- Heathcock* I/500
- Heck* reaction I/5, I/21, I/68, I/271–I/300, I/610, II/561, II/563–565, II/586, II/591, II/615
- asymmetric I/281–I/287
 - catalysts I/274–I/281
 - coupling II/598, II/599
 - mechanism I/272–I/274
 - two-phase system II/520
- helical chirality I/407
- Helmchen* I/544, I/557
- Henry* reaction I/364, I/539
- 1-heptene I/117
- herbicides I/41
- Herrmann* I/322
- heteroaryl chlorides I/213
- heterobimetallics I/363–I/371
- hetero-cuprate I/557
- heterocycles I/257, I/260, I/267, I/344, I/450
- aromatic, synthesis I/463–I/466
- heterogeneous catalyst I/105, I/118
- heteropolyacid II/223, II/244, II/245
- heteropolyanions II/416
- salt II/444
- heteropolymetal acids II/369
- heteropolymetallic catalyst I/370
- hexacarbonyl-diiron I/578
- 1,6-hexadiene I/527
- 1-hexene I/410
- hexyne
- 1-hexyne I/174
 - 3-hexyne I/408
- high pressure II/609–II/621
- general principles II/609, II/610
 - *Lewis* acid-catalyzed cycloaddition II/610–II/613
- Hiyama* I/470
- Hiyama-Nozaki* allylation reaction I/470
- Hoechst* I/141
- Hofmann* elimination product I/485
- homo aldol reaction sequence I/93
- homocoupling, *Wurtz* I/474
- homogeneous catalyst I/105
- microwave-accelerated II/598
- Hoppe* I/494
- Horner-Wadsworth-Emmons* reaction II/620
- Hoveyda* I/322, I/327, I/528, I/531, I/535, I/558
- H-transfer, direct II/152
- Hünig's* base I/534
- hydantoin I/142
- hydrazido-copper complex II/461
- hydrazine I/104
- hydrazone I/103, I/104, I/571, II/119
- *N*-acyl II/120
- β -hydride abstraction I/258
- hydride complex I/450
- hydroacylation, intramolecular I/199
- hydroamination II/403
- base-catalyzed II/410–II/412
 - intermolecular II/408
 - intramolecular II/406, II/407
 - transition metal-catalyzed II/406–II/409
- hydroaminomethylation I/71–I/81
- intramolecular I/77
 - reductive amination I/97
- hydroaminovinylolation I/70
- hydroarylation I/287
- hydroazulene I/588
- hydroboration I/520, I/521, I/559
- asymmetric I/522, II/193–II/195
 - olefins II/193–II/198
 - application in synthesis II/196, II/197
 - rhodium-catalyzed II/620, II/621
 - supercritical CO₂ II/197, II/198
- hydrocarbons
- biodegradation II/216
 - functionalization II/217
 - oxidation II/218
- hydrocarbonylation I/105–I/109
- hydrocarboxylation I/113–I/130
- alkenes I/113–I/117
 - allene I/20–I/122
 - hydroxyalkyles I/122–I/126
 - regioselective I/117
- hydrocyanation I/21
- alkene I/149–I/151
 - alkyne I/151–I/153
 - catalytic asymmetric I/153–I/155
 - nickel-catalyzed I/153–I/155
- hydrocyclopropane I/167, I/168

- hydroesterification I/113–I/130
 - alkenes I/117–I/120
 - allene I/20–I/122
 - asymmetric I/118
 - hydroxyalkyles I/122–I/126
- hydroformylation reaction
 - (oxo reaction) I/21, I/57–I/82, I/137, II/403, II/521, II/548
 - additional carbon-heteroatom bond formation I/60, I/61
 - aldol reaction I/98
 - amidocarbonylation I/100–I/103
 - asymmetric I/61
 - carbon nucleophiles I/88–I/92
 - carbonyl ene reactions I/104, I/105
 - chiral homoallylic alcohols I/63
 - enamine I/67–I/70
 - fine chemicals synthesis, applications I/29–I/51
 - fluorous catalysts II/528
 - hydroaminomethylation I/71–I/81
 - imine I/67–I/70
 - internal olefine I/59
 - isomerization I/58, I/59
 - multiple carbon-carbon bond formations I/87–I/109
 - nitrogen nucleophiles I/64, I/65
 - O,N/N,N-acetals I/65–I/67
 - oxygen nucleophiles I/61–I/64
 - reduction I/59, I/60
 - terminal alkenes I/58
 - two-phase catalysis II/516, II/517
- hydrogen cyanide I/171
- hydrogen peroxide I/20, II/201, II/226–II/230, II/358, II/415–II/423, II/431, II/434
- oxidation II/417–II/420
- hydrogen shift
 - 1,3-hydrogen shift I/201, I/204
 - 1,5-hydrogen shift I/417
- hydrogenation I/18, I/19, I/22, I/152, I/155
 - asymmetric II/7–II/12, II/42, II/43, II/47, II/88, II/99, II/136
 - enamines II/14–II/26
 - homogeneous II/69, II/76, II/79
 - base-catalyzed II/32
 - carbonyl
 - ketones/aldehydes II/29–II/95
 - carbonyl selectivity II/34–II/38
 - catalytic II/30
 - diastereoselective II/6, II/7, II/41, II/83, II/88
 - enantioselective II/113–II/122
 - heterogeneous II/125–II/141
 - active site, accessibility II/126
 - alkenes II/135
 - apparatus and procedure II/131
 - aromatic nitro groups II/132–II/134
 - aromatic rings II/136, II/137
 - catalysts II/127–II/130
 - catalytic debenzoylation II/137–II/140
 - diffusion problems II/126
 - ketones II/134, II/135
 - nitriles II/140, II/141
 - process modifiers II/130, II/131
 - reaction conditions II/131
 - reproducibility II/127
 - separation/handling work-up II/126
 - special features, catalysts II/126
 - homogeneous II/29
 - Lindlar I/330
 - monoolefins II/4–II/6
 - olefin II/3–II/12
 - polyolefins II/4–II/6
 - stereoselective II/14
 - transfer I/19, II/120
 - two-phase II/37
 - β -hydrogen elimination I/201
- hydrogenolysis, allylic I/311
- hydrolysis
 - enzymatic II/252
 - palladium-catalyzed II/499
- hydrometalation I/106, II/168
- hydrooxepans I/91
- hydroperoxide II/368
 - alkyl I/20
 - enantiopure II/271
 - Haber-Weiss decomposition II/222
 - thermolysis II/202
- hydroperoxytungstate II/500
- hydrophosphonylations I/367–369
- hydrosilanes I/311, II/188
- hydrosilylation I/18, I/23, I/612, II/167–II/180
 - alkenes II/168–II/171
 - alkynes II/171–II/173
 - asymmetric II/173–II/180
 - carbonyl compounds II/182–II/188
 - cyclization II/178
 - enantioselective II/182
 - imine compounds II/188, II/189
 - olefins II/167, II/168
 - platinum(0)-catalyzed II/168
 - styrenes, with trichlorosilane II/174, II/175
- hydrotalcite II/444
- hydrovinylation I/612, II/552
 - alkenes I/308

- hydroxamic acid II/372
 β -hydroxy- α -amino acid esters I/370
 α -hydroxy carbonyl compounds I/364
 β -hydroxy- α -amino acids I/500
 2-hydroxyacetophenones I/370
 hydroxyalkyles, hydrocarboxylation/
 hydroesterification I/122–I/126
 hydroxyamines
 – 1,2-hydroxyamines II/309
 – β -hydroxyamines I/539
 hydroxyapatite II/505
 hydroxycarbonylation II/522
 hydroxycephem I/390
 hydroxycitronellal I/203
 β -hydroxy-esters I/499
 hydroxylamine accumulation II/133, II/134
 hydroxylation II/205
 hydroxy-palladation II/385, II/386
 hydrozirconation I/522, I/533
 hyellazole I/595
- i**
- ibogamine I/8, I/509
Ibuprofen I/114
 IFP process II/4
 imidazole I/181
 imidazolidinone chromium vinylcarbene
 complexes I/401
 imidazolium salt I/220
 imides I/433
 imido trioxosmium(VIII) II/327
 imine I/67–I/70, I/99, I/309, I/341, I/380,
 I/470
 – cyclic, enantioselective reduction II/118,
 II/119
 – hydrophosphonylation I/369
 – metal hydride complex II/498
 – *N*-alkyl imine, enantioselective
 reduction II/117, II/118
 – *N*-aryl imine, enantioselective
 reduction II/114–II/117
 – phosphinyl II/120
 immobilization I/323, II/522, II/549
Indinavir II/349
 indium I/381
 indoalkylzinc I/529
 indole synthesis, *Fischer* I/103, I/104
 indoles I/92, I/325, I/384, I/386, I/463,
 I/464, I/595
 indoline ligands II/295
 indolizidine 223AB II/77
 indolocarbazole I/408
 – indolo(2,3-*b*)carbazole I/596
- innocent solvents II/569
 inorganic support I/452
 insect growth regulator I/201
 instant ylide I/34
 intermolecular induction, asymmetric II/90,
 II/92
 iodine I/478
 iodine-zinc exchange I/520
 iodonium ylids I/158
 iodosobenzene II/233–235
 ion exchangers II/304
 ionic liquids I/278, I/323, I/485, II/15,
 II/26, II/163, II/349, II/511, II/529, II/549,
 II/559–II/570
 – chiral II/560
 – imidazolium-based II/560, II/565
 β -ionol II/36
 β -ionone II/36
 Ir catalyst II/50
 Ir(COD)(PhCN)(PPh₃)ClO₄ I/204
 iridium I/106, II/186
 – complexes II/120
 iron I/175
 iron acyl complexes I/575–I/581
 iron carbonyl I/113
 iron(0) complex I/184
 iron(III) complex, binuclear II/490
 iron(III)-tetraphenyl porphyrin II/489
 iron-butadiene complexes I/591–I/594
 iron-cyclohexadiene complexes I/594–I/597
 iron-diene complexes I/585–I/597
 – preparation I/585–I/587
Ishii oxidation system II/223
 iso coumarins II/385
 isocaryophyllene I/463
 isocyanates I/470
 isocyanides I/408
 isoflavanones I/386
 isohyellazole I/595
 isokhusimone I/458
 isomerization I/18, I/22, I/23, I/58, I/59
 – asymmetric I/206
 – unimolecular II/618
 isopulegol I/201
 isoquinolines I/190, I/191, II/11
 – isoquinoline-based pharma II/160
 isothiocyanate I/180, I/386
 isotopic effect, kinetic II/148
 isoxazolidine I/347, I/509
 – 4-isoxazolidine I/579
 ivermectin II/5

j

Jacobsen-Katsuki epoxidation I/22, II/211,
II/346, II/350

Jacobsen-type catalyst II/349

JosiPHOS II/8, II/10, II/74, II/120

juglone I/509

k

Kagan I/9

kainic acid analogs I/37

Karasch-Sosnovsky type allylic
oxidation II/256–II/263

Karstedt's catalyst II/168

Katsuki I/530

Katsuki-type salen ligand II/349

Kazmaier I/544

KCN I/151

Keck I/496

Keggin structure II/415, II/417

Kemp's triacid II/262

ketene dithioacetal I/510

ketene silyl acetals I/369

β -keto acids I/484

β -keto amides I/487

β -ketoenamines I/440

keto-ester

– cyclization I/462, I/463

– β -ketoesters I/483, I/484, I/487, I/543,
II/72

ketone I/309, I/387, I/430, I/435, I/449,
I/458, I/470, I/532

– α,β epoxy I/372

– α,β -unsaturated I/325, I/328, I/440

– aromatic I/356

– alkyl aryl II/42–II/51

– amino ketones II/59

– β -amino I/341

– β -hydroxy I/347, I/497, I/502

– β,γ -unsaturated I/94

– carbonyl hydrogenation II/29–II/95

– cyclic I/462

– cyclic aromatic II/50

– dialkyl II/54–II/56

– fluoro ketones II/54

– functionalized II/69–II/95

– hetero-aromatic II/52–II/54

– hydrogenation II/134, II/135

– methylenation I/437

– mixed couplings I/461

– unsaturated II/63–II/66

ketopantolactone II/72, II/81

keto sulfonates II/87–II/90

keto sulfones II/87–II/90

– β -keto sulfones I/484

keto sulfoxides II/87–II/90

– β -keto sulfoxides I/484

Kharasch reaction II/538

kinetic isotope effects II/301

kinetic resolution I/23, I/260, I/263–I/266,

II/61, II/161, II/162, II/270, II/300, II/301,

II/442, II/538

– cyclic allylic ethers I/266, 267

– dynamic II/90–II/95, II/145

– lipase-assisted dynamic II/149

Kishi I/471, I/475

Knochel I/430, I/504, I/528

Knoevenagel condensation I/93

Knowles I/9

Koga I/557

K-selectride I/580, I/581

Kulinkovich I/167, I/168

l

(L)-leucinol I/530

lactams I/77, I/129, I/484

– β -lactam I/39, I/343, I/414

– β -lactam 1-carbacephalothin I/413

lactones I/63, I/126, I/179, I/431

– α -alkylidene γ -lactones I/151

– β -lactones I/434

– bicyclic I/129

– γ -lactones I/166, I/412, I/484

– homogeneous hydrogenation II/98

– optically active II/270

lanoprazole II/491

lanthanide I/335, II/405, II/613

– asymmetric two-center

catalysis I/363–I/377

– chiral I/353, I/355

– triflate (lanthanide trifluoromethane-
sulfonates) I/335, I/340, I/343, I/485

lanthanocene catalyst II/171

lanthanoid alkoxides II/369

lanthanoids, homometallic I/335–I/358

– reuse, catalyst I/340

lavanduquinocin I/596

LDA I/563

L-dopa synthesis I/22

L-DOPS II/93

leaching I/275

lead I/430

Leighton I/45

levamisole II/62

levofloxacin II/62, II/63

Lewis acid I/150, I/335, I/356, I/363, I/384,
I/392, I/491, I/511, I/554

- aqueous media, catalysis I/335–I/340
- aziridination, asymmetric II/398, II/399
- chiral I/348, I/353, I/354, I/501
- cycloaddition II/610–II/613
- Lewis bases* I/622, II/361, II/362
- Leyendecker* I/557
- LHMDS I/544, I/545
- LiAlH₄ I/450
- LiClO₄ I/357
- Lidoflazine* I/33, I/34
- lid-on-off mechanism I/200
- ligands
 - acceleration effect II/154, II/275, II/276, II/279, II/285, II/304
 - alkoxide I/491
 - aminoalcohol I/530
 - anthraquinone II/293, II/294
 - aryl pincer II/154
 - bidentate phosphine I/153
 - binaphthol I/1/531
 - BINOL I/505, II/482, II/483
 - bisoxazoline I/162, II/389–II/391
 - bis(oxazolonyl)carbazole I/472
 - *Buchwald's* ligand I/215, I/239, I/249
 - carbene I/163, I/220–I/222, I/405, I/409, II/154
 - carbonyl I/397
 - chiral I/146, I/187, 313
 - cinchona alkaloids II/293–II/295, II/300
 - cyclopentadienyl I/427
 - (DHQ)2PYR ligand II/323
 - diphenyl phthalazine II/294
 - diphenyl pyrazinopyridazine II/294
 - diphosphine II/20, II/41
 - chiral, *figure* II/40
 - electrophilic carbene I/163
 - ferrocenyl oxazoline I/531
 - ferrocenylphosphine I/528
 - *Gennari's Schiff* base I/528
 - indoline II/295
 - miscellaneous II/393
 - *N*-donor I/222
 - *N,N*-donor I/308
 - nitrogen-based II/183
 - oxazoline II/184
 - P,P,N II/186
 - peptide-based I/531
 - phase transfer, thermoregulated II/517
 - phosphine I/213–I/220
 - phosphorus, monodentate I/559, II/21
 - privileged II/8
 - pyrimidine II/294
 - *S*-donor ligands I/221
 - *Schiff* base II/391–393, II/484–II/486
 - sulfonamide, chiral I/476
 - TADDOL I/508
 - dendrimeric I/505
 - TRAP I/315
 - trialkanolamines II/484
 - linalool I/19
 - Lindlar* hydrogenation I/330
 - lipid A II/77
 - α -lipoic acid II/77
 - liquid-liquid biphasic catalysis II/562, II/563
 - lithium diorganocuprate I/557
 - LiTMP I/605
 - LLB catalyst I/365, I/369
 - Ln-BINOL I/364, I/372
 - LnPB I/367
 - longithorone I/329
 - Lonza AG* I/183
 - Losartan* I/220
 - LSB I/366
 - lubricant I/189, II/560
 - Lukianol A* I/465
 - lutetium triflate I/336
 - lutidines I/187

m

 - MacMillan* I/546
 - macrocycles I/323, I/458
 - macrodiolide I/12
 - magnesium I/260, I/429
 - Mahrwald* I/502
 - malonate I/312, I/315
 - dimethyl malonate I/545
 - esters I/487, I/489
 - malonic esters I/484
 - mandelic acid I/502
 - manganese I/471, II/373
 - manganese-catalyzed epoxidation II/344–II/353
 - manganese(III) based radical cyclization I/483–I/489
 - manganese(III) complexes II/345
 - Mangeny* I/556
 - man-made catalyst, asymmetric II/349
 - Mannich* reaction I/341–I/344
 - Marek* I/546
 - Markovnikov
 - addition I/3, I/150
 - hydrocyanation I/153
 - product II/404
 - Mars-van Krevelen* mechanism II/205, II/206, II/423
 - Masamune* I/159

- MCM-41, mesoporous II/223, II/342,
 II/352, II/363, II/373
McMurry reaction I/449–I/466
 – intramolecular I/455
 – natural product synthesis I/456–I/458
 – nonnatural products I/458–I/461
 MCPBA I/577
 Me_2AlCl I/428
 Me_3SiCl I/471, I/473, I/491, I/555
Meerwein-Ponndorf-Verley-Oppenauer
 reaction II/460
 mefloquine II/62
 melatonin I/36
 memory effect I/310
 menogaryl I/408
 menthol I/405
 mephoxalone II/62
Merck I/534
 $\text{MeRe}(\text{O})_3$ II/502
 merulidial I/7
 mesoporous material II/337
 metal carbene complex I/397, II/396
 metal centre, chiral I/418
 metal peroxo complex II/368
 metal-carbon bond I/397
 1-metalla-1,3,5-hexatrienes I/416
 metallacyclobutane I/409
 metallacyclopentane I/258
 metallaoxetane II/292, II/347
 – mechanism II/278, II/280, II/282
 metallic colloids II/586
 metal-ligand bifunctional catalysis II/147–
 II/149
 metallonitrene II/392
 metalloporphyrins II/229
 metathesis I/21, I/62, I/261, I/414, I/506
 – alkene I/321–I/328
 – alkyne I/330, I/331
 – cross-enyne I/328
 – cross metathesis (CM) I/321, I/326
 – enyne I/328, I/329
 – olefin I/427, I/442, II/553, II/601
 – – asymmetric I/327
 – ring-opening (ROM) I/328
 methacrylates I/325, I/327
 methallylation I/472
 methallylchromate I/478
 methallylestere I/44
 methallylmagnesium chloride I/478
 methallyltitanium reagent I/494
 methane monooxygenase II/226
 methoprene I/201
 4-methoxyacetophenone I/357
 methoxycarbonylation I/125
 2-methoxypropene I/346
 methyl acrylate I/118
 methyl formate I/119, I/121
 methyl methacrylate I/118
 methyl propiolate I/174
 methyl pyruvate II/71
 methyl salicylate I/486
 methyl trioxorhenium II/268
 methyl vinyl phosphinate I/102
 methyl-2-methoxymethylacrylate I/120
 methylenecycloalkane I/4, I/116
 methylenepanem I/390
 O-methylpodocarpate I/487
 methyltrioxorhenium II/357
Metolachlor II/114
 MIB I/530
 micellar systems I/338–I/340
 micelle I/630
Michael reaction I/366, I/371, I/374, I/384,
 I/392, I/511, I/536, I/538, I/577
 – asymmetric I/367
 – chiral I/400
 – nitroolefin addition I/399
 – oxa-*Michael* addition I/539
 microwave I/251, I/274, I/384, II/597–II/607
 – irradiation II/163
 migratory insertion II/147
Mikami I/497, I/506, I/511
 MiniPHOS
 – *t*-Bu- II/19
Mitsunobu reaction I/592
Miyaura I/559
 Mn(III) enolate I/484
 Mn(III)/Cu(II) I/483
 $\text{Mn}(\text{OAc})_3$ I/483, I/486, I/488
 $\text{Mn}(\text{OAc})_3 \cdot 2\text{H}_2\text{O}$ I/485
 mnemonic device II/277, II/289, II/290
 MOD-DIOP II/8
 molybdenum I/404, I/410, I/443, II/372,
 II/373
 – catalyzation I/6, I/327, I/330
 monocarbene-palladium(0) complex I/221
 monocyclopentadienyl-
 dialkoxytitanium I/493
 monooxygenase II/224
 – enzymes II/205, II/207, II/210
 MonoPHOS II/25
 monophosphine II/175, II/176, II/182
 – chiral I/410
 monophosphine palladium(0) diene I/216
 monophosphine palladium(I) complex I/216
 monophosphonite II/186

- monosulfonated catalyst II/118
 montmorillonite I/118, II/25
 morphine I/288, II/346
 MTO II/357–II/359, II/432
 – polymer-supported II/363
Mukaiyama I/451
 – aldol reaction I/94, I/381, I/382, I/502, I/503
 muscone I/532
 mycalolide I/475
 mycosamine I/591
 mycrene II/520
- n**
- N,N*-donor ligands I/308
 $\text{Na}_2\text{Fe}(\text{CO})_4$ I/575
 NaBD_4 I/311
 NaBH_4 I/151
N-acetyl amino acid derivatives I/100
N-acetylcysteine I/134
N-acyl- α -amino acid I/133
N-acyl-oxazolidinone I/509, I/510
N-acetylsarcosine I/134
 Nakadomarin A I/325, I/326
Nakai I/497, I/530
 nanocluster II/585
 nanoparticle II/585, II/588
 – palladium II/444, II/528, II/533
 nanosized material II/585
 – amorphous Fe II/586
 naphthalenes I/178, I/179
 naphthoquinone I/178, I/338
Naproxen I/114, I/154, II/9, II/515, II/521
Narasaka I/508, I/510, I/511
N-arylpiperazines I/234
 natural products I/288–I/298, II/253
N-benzylideneaniline I/344
N-demethylation II/503
N-donor ligands I/222
Negishi I/267, I/430, I/523, I/525
 neobenodine II/52, II/70
Neocarazostatin B I/596
 neomenthol II/94
 ngaione II/86
N-H activation mechanism II/409
N-halogeno-succinimides I/513
 NHC (*N*-heterocyclic carbenes) I/220, I/278, I/322
N-heterocyclic carbenes I/242
N-hydroxyphthalimide (NHPI) II/203, II/204, II/223, II/224
 Ni catalyst, heterogeneous II/56
 Ni complex I/171
 $\text{Ni}(0)$ I/179
 $\text{Ni}(\text{CN})_2$ I/122
 $\text{Ni}(\text{CN})_4^{2-}$ I/151, I/152
 $\text{Ni}(\text{P}(\text{OAr})_3)_x$ I/150
 nickel I/106, I/113, I/150, I/175, I/211, I/244
 – arylphosphite complex I/151
 – catalysis I/538
 – co-dimerization II/552
 – complex I/11
 – cyanide I/121
 – phosphite I/152
 – complexes, zero-valent I/149
 NiCl_2 I/476
Nicolaou I/325, I/442
 Nilsson I/557
 niobium II/371, II/372
Nippon Steel I/185
Nishiyama I/162
 nitration I/358
 nitrene
 – complexes II/578
 – precursor II/327
 – transfer II/389–II/396
 – donor II/390
 nitric acid I/358
 nitrile I/19, I/155, I/172, I/309, I/315, I/440, I/543
 – amidocarbonylation I/143
 – chemoselective hydrogenation II/140, II/141
 – optically active I/187
 – reactions I/440, I/441
 – unsaturated I/152
 nitro I/309
 – β -nitro esters I/484
 – β -nitro ketones I/484
 nitroaldol reaction I/364, I/365
 – enantioselective I/364, I/365
 nitroalkanes I/386
 nitroalkene I/539
 nitroarenes II/132
 nitroethane I/364
 nitroethanol I/364
 nitrolefins I/537
 nitromethane I/357
 nitrones I/534, II/500
 nitropropane I/364
 β -nitro-styrene I/511, I/512
N-methallylamides I/103
N-methyl ephedrine I/535
N-methylimidazole I/354
N-methylmorpholine *N*-oxide I/621
Nolan I/322
 nonacarbonyliron I/585

- nonlinear effect II/260, II/480, II/482,
 II/486
 norbornene I/153, I/175, I/443
Normant I/525, I/546
 noroxopenlanfuran II/6
Noyori I/530
Nozaki I/158
 nucleophilic substitution I/251, II/613
 nucleoside I/9
Nugent I/505
 nylon-6,6 I/149
- o**
- O,*N,N,N*-acetals I/65–I/67
 1,7-octadiyne I/191
 octahydro-1,1'-binaphthol I/505
 octahydro-binaphthol I/510
 octene
 – 1-octene I/570
 – 2-octene I/59
 – 4-octene I/59
 1-octyne I/174
Oehme I/184
Oguni I/501, I/529
Ojima I/81, I/101
Ojima-Crabtree postulation II/173
 okicenone I/488
 olefination I/450
 – carbonyl I/427, I/430–I/439
 – – intramolecular I/442
 – decarbonylative I/281
 – *Heck* reaction (see *there*)
 – *Peterson* olefination I/430
 – *Wittig* olefination I/3, I/386, I/430
 olefins I/113, I/311, I/428
 – *α*-olefin I/176
 – aromatic I/570
 – dimerization I/308
 – 1,2-disubstituted I/160
 – epoxidation II/358–II/375
 – fluorinated I/116
 – hydroboration II/193–II/198
 – hydrosilylation II/167, II/168
 – hydrozincation I/529
 – internal I/59
 – isomerization I/199–I/208
 – metathesis I/442, II/601
 – – asymmetric I/327
 – optically active I/199
 – osmylation II/278
 – rearrangement II/248
 – unfunctionalized I/206
 oligoindoles I/464
 olivin I/408
 one-electron
 – oxidants I/485
 – transfer process II/203
Oppenauer oxidation I/470, II/149
Oppolzer I/531, I/532, I/557
 optical fibers I/46
 organic synthesis, transition metals
 – atom economy I/11, I/12
 – basic aspects I/3–I/12
 – chemoselectivity I/4, I/5, I/18
 – diastereoselectivity I/8, I/9, II/38–II/42
 – enantioselectivity I/9
 – regioselectivity I/6, I/7, I/18, I/58
 organoaluminium I/553
 organobismuth I/385–I/387, I/392
 – pentavalent I/379
 organoboron I/553
 organochromium
 – compound I/471
 – reagents I/469
 organocopper
 – derivatives I/553
 – reagent I/563
 organolanthanide complex II/8
 organolithium I/397, I/398, I/400, I/491,
 I/519, I/555, I/576, I/580
 organomagnesium I/491, I/519
 organomanganese reagents I/555
 organometallics, allyl I/337
 organonitrile I/149
 organorhenium oxides II/357
 organosamarium I/553
 organotin I/553
 organotitanium compounds I/427
 organozinc I/553
 – reagent I/167, I/519
 organozinc bromide I/563
 organozirconium I/553
 orlistat II/83
 orphenadrine II/52, II/70
Orsay reagent II/480
 ortho-directing effect I/604
 oscillation, microwave-induced II/597
Oshima I/522
 osmaoxetane mechanism II/292
 – stepwise II/279
 osmaoxetanes II/282
 osmium carbene complex I/158
 osmium tetroxide,
 microencapsulated II/304
 osmylation, mechanism II/278–II/282, II/284
 – (2+2) mechanism II/279, II/301

- (3+2) mechanism II/279, II/301
 - Otsuka* I/199
 - Overman* I/475, I/532
 - overoxidation II/482
 - oxa-conjugate addition I/538
 - oxalic acid I/124
 - oxanorbornene I/417
 - oxazolidine I/544
 - chiral I/414
 - oxazolidone I/509
 - derivative I/353
 - oxazolines I/411
 - ligands II/184
 - oxazolonylferrocenylphosphines II/154
 - oxepins I/263
 - oxidation I/18, I/20, I/22, I/379
 - 1,4-oxidation, palladium-catalyzed II/249–253
 - aerobic II/204, II/224, II/345, II/437–II/473, II/504, II/536, II/586
 - alkane II/221
 - allylic I/308, II/243–263
 - *Baeyer-Villiger* II/210, II/267–II/272, II/448
 - basics II/201–II/211
 - biomimetic II/244
 - C-H compounds II/215–II/236
 - direct II/205–II/207
 - enantioselective II/211, II/252
 - enzymatic I/20
 - Gif II/216, II/256
 - hydrocarbons II/218
 - ligand design II/210
 - molecular oxygen II/420–II/423
 - *Oppenauer* I/470, II/149
 - tandem oxidation-reduction II/162
 - TBHP II/257
 - TEMPO-mediated II/209
 - *Wacker* (*see there*)
 - oxidative addition I/123, I/141, I/212, I/223, I/224, I/232, I/235, I/272, I/309, I/483, II/150
 - oxidative cleavage II/427–II/434
 - acid formation II/433, II/434
 - aldehydes, formation II/432, 433
 - keto-compounds, formation II/428, II/429
 - one-step II/429, II/430
 - optimized catalyst systems/reaction conditions II/430, II/431
 - oxidative cyclization II/275
 - oxidative decomplexation I/611
 - oxidative demetalation I/404
 - Oximidine II* I/325, I/326
 - oxo reaction (*see* hydroformylation reaction)
 - oxo transfer process II/358
 - oxomanganese complex II/350
 - oxomanganese(V) complex II/346, II/348, II/351
 - oxone II/430
 - oxoruthenium species II/503
 - oxycarbonylation, intramolecular I/129
 - oxy-Cope I/312
 - oxygen I/117
 - catalytic transfer II/207–II/210
 - donors II/208
 - molecular II/219–II/224 II/420–II/423
 - nucleophiles I/61–I/64, II/386, II/387
 - rebound mechanism II/207
 - oxygen-rebound mechanism 227
 - ozonolysis II/427
- p**
- paclitaxel II/328
 - Padova* reagent II/492
 - palladacycle I/213, I/239, I/276
 - palladacyclobutane I/308
 - palladium I/100, I/106, I/113, I/118, I/119, I/125, I/141–I/146, I/175, I/185, I/231, I/246, I/543
 - acetate I/114, I/118
 - complex I/158
 - palladium(0) complexes I/120, I/308
 - palladium(II) acetate I/309
 - palladium catalyst I/130, I/141
 - allylic substitutions I/307–I/315
 - cationic I/125
 - hydrolysis II/499
 - palladium chloride I/114
 - palladium nanoparticles II/444, II/528, II/533
 - palladium phosphine I/151
 - palladium phosphite I/151
 - palladium-catalyzed reaction I/545
 - p-allylpalladium intermediate I/12
 - pancreatic lipase inhibitor II/83
 - Panek* I/475
 - PAP I/216
 - Paquette* I/432
 - Paracetamol* I/144
 - Parlman* I/575
 - Pateamine A* II/77
 - Pauson-Khand* cyclization I/263, I/619–I/631, II/601
 - catalytic I/622, I/623
 - hetero I/628
 - promotor-assisted I/621
 - stereoselective I/624–I/626

- stoichiometric I/620, I/621
- synthetic applications I/627
- transfer carbonylation I/629, I/630
- Payne* reagent II/210
- Pb(OAc)₄ I/323
- Pd(0) I/418
 - complex I/4, I/5, I/127, I/418
 - phosphine complex I/207
- PdC I/124
- PdCl₂ I/121, I/153
- PdCl₂(PPh₃)₂ I/107, I/116, I/117
- Pd(dba)₂ I/120, I/127
- Pd₂(dba)₃ I/127
- Pd(OAc)₂ I/122, I/129, I/418
- Pd(PPh₃)₄ I/120, I/178, I/418
- PEG II/396, II/549, II/554
- PENNPPOS I/23
- pentacarbonylchromium I/398
- pentadecanoic acid II/96
- 1,4-pentadienes I/106
- pentafulvenes I/411
- 3-pentanone I/502
- pentaphenylbismuth(V) I/385
- 1-pentyne I/404
- peptide II/375
- peptidomimetics I/37
- peptoid I/144
- peracetic acid II/230
- perfluoroalkane II/527
- perfluoroalkyl aldehydes I/509
- perfluorinated
 - liquids II/216
 - solvents II/562
- perfluorohydrocarbons II/511
- perfluorozinc aromatics II/588
- perfumes II/69, II/70
- periplanone I/472
- peroxides
 - alkyl II/231
 - sulfur-containing II/231–II/233
- peroxo species II/269
- peroxometal pathway II/209
- peroxotitanium species II/481
- peroxy acid, organic II/230, II/231
- peroxy radicals II/257
- peroxytungstophosphate II/500, II/501
- Peterson* olefination I/430
- Pfaltz* I/558
- PhanePHOS II/24, II/25
- pharmaceuticals I/18, I/100, I/149, I/288–I/298, I/379
- phase transfer I/315
 - catalyst I/241
 - reaction I/309
 - ligands, thermoregulated II/517
- phenanthrenes I/178, I/179
- 1,10-phenantroline I/245
- phenanthrolines I/313
 - chiral II/263
- Phenipiprane* I/33, I/34
- Pheniramine* I/30, I/32
- phenolates I/299
- phenolethers I/605
- phenols I/385
- phenylacetylenes I/330
- phenyl-CAPP II/8
- phenylenes I/178
- 1-phenyl-ethanol I/506
- phenylethanolaminotetraline agonist II/58
- 1-phenylethylzinc reagent I/527
- phenyl glycine I/414
- phenylglyoxal I/342, I/345
- phenylhydrazine I/104
- phenylmenthol I/400, I/414
- phenylmenthylacetoacetate esters I/489
- 3-phenylpropionaldehyde I/337
- phenylvinylsulfide I/353
- phospha-conjugate addition I/538
- phosphacyclobutene I/440
- (phosphanyloxazoline)palladium complex I/314
- phosphine I/136, I/179
 - bidentate II/182
 - dissociation I/322
 - monodentate II/176
 - water-soluble II/514
- phosphine ligands I/213–I/220
 - bidentate I/153
 - secondary I/218
- phosphine oxide I/218, I/241
- phosphine-phosphite, bidentate II/195
- phosphine-Ru complex II/70
- phosphinite nickel catalyst, carbohydrate-based I/154
- phosphinooxazolines I/285
- phosphinotricine I/140
- phosphinous acid I/241
- phosphite I/214, I/277
- phosphoramidite I/287, I/536, II/21, II/175
- phosphorus I/309
- photoassisted
 - reactions II/573
 - synthesis I/184
- photocarbonylation I/413
- photocatalysis II/573–II/579
 - heterogeneous II/574

- photochemistry I/412, I/413
- photo-complex catalysis II/573
- photolysis I/413, I/611
 - catalyzed II/574
- photolytic induction I/587
- phox II/115
- phtalane-Cr(CO)₃ I/606
- a*-picoline I/186
- Pictet-Sprengler* I/92
- pigments I/379
- Pimozide* I/34
- pinacol I/449
- pinacolone II/56
- pinane diphosphine I/313
- pincer complexes I/218, I/277, II/538
- pindolol I/364
- a*-pinene II/222, II/576
- pinnatoxin I/475
- PINO II/204
- pipecolic acid I/66
- pipecolinic acid I/138
- piperidine I/568, 569
- piperidone I/545
- Pitiamide A* I/523
 - synthesis I/524
- pivalophenone II/45
- planar-chirality II/184
- platinum diphosphine complexes II/268
- PMDTA I/401
- Pme₃ I/441
- poly(tartrate ester) II/341
- polyamide I/100
- 1,2-polybutadiene, hydrocarboxylation I/116
- polycondensation I/460
- polydimethylsiloxane II/26
 - membrane II/74
- polyenes, dihydroxylation II/299
- polyethylene glycol monomethyl ether II/341
- polyfluorooxometalates II/417
 - metal-substituted II/418
- polyisoprenoid substrates II/301
- polyketones II/568
- poly-L-leucine I/126
- polymers I/149
 - synthesis I/428
 - water-soluble II/516
- polymer-supported
 - complex II/163
 - tartrates II/342
- polymerization I/310, I/427
 - ROMP (ring-opening metathesis polymerization) I/323, I/443, I/444
- polyoxo-heterometalates II/381
- polyoxometalates II/206, II/415–II/423
 - metal-substituted II/420
- Polyoxyypeptin A* II/93
- polyphenylenes I/178
- polyphosphomolybdate, vanadium-containing II/228
- polypropionate I/495
- polyquinanes I/442
- POMs-catalyzed epoxidation II/419
- pony tails II/528, II/540
- porphyrins I/460, II/218
 - complex II/394–II/396
 - hindered II/206
- Posner* I/556
- potassium cyanide I/122
- pressure wave II/583
- Pringle* I/153
- product-inhibitor catalysis I/201
- profene I/30, I/154
- proline I/564
- prolinol I/544
- propargyl
 - halides I/472
 - stannanes I/496
- propargylic hydroxylamines I/534
- propionate aldol addition I/500
- propranolol II/62
- protoporphyrin IX I/66
- prostaglandin II/11
 - E₂ I/330
- prostatomegaly II/44
- protease inhibitor II/600
- protecting group I/243
- pseudopeptide I/576
- Pt/Al₂O₃, alkaloid-modified II/79
- Pt/C I/20
- PTC (phase-transfer catalyst) I/121
- PtCl₂(dppb) I/105
- pulegone II/66
- pybox I/162, II/183
- pyrans I/179, I/266
- Δ²-pyrazolines I/414, I/415
- pyrenorphin II/77
- pyrethroid insecticide I/22, I/41
- pyridine I/171, I/172, I/182–I/185, I/187, I/346, I/417, I/440
- 2-pyridinecarboxaldehyde I/336
- pyridine-imines II/183
- pyridones I/179
 - 2-pyridones I/180
- pyridoxine I/191
- 2-pyridylphosphine I/125

- pyrimidine ligands II/294
 pyroglutamic acid I/402
 pyrones I/179
 – 2-pyrones I/180, I/353, I/509
 pyrroles I/92, I/108, I/463, I/464
 – 2*H*-pyrrole derivatives I/414
 pyrrolidines I/564, I/566, II/606
 1-pyrroline I/413
 pyruvic aldehyde dimethylacetal II/59, II/60
- q**
- quaternary carbon I/384
 – chiral I/314
 quaternary stereocenters I/523
 quaternization II/139
 quinazoline I/67
 quinazolinone I/67
 quinine II/79
 quinoline I/346
 quinone I/177, I/178
 – monoacetals I/509
- r**
- (R')₂Zn I/503
 R₂CuLi I/554
 radiation-induced reactions II/583–II/594
 radical trap II/390
 radicals, stabilization, benzylic
 position I/608
Raney cobalt II/34
Raney Cu II/98
Raney nickel II/34, II/82, II/86, II/127,
 II/140, II/161, II/603
 rare-earth catalyst II/553
 RCM 323
 rearrangements
 – allylic I/312
 – *Claisen* I/432, I/546, I/544, I/577
 – *cinca-Claisen*-type rearrangement I/525
 – *Cope*-type (3,3) sigmatropic I/411
 – haptotropic I/408
 – olefin II/248
 – (3,3)-sigmatropic I/435
 recycle, catalyst II/25, II/26
 reducing agents I/450
 reduction I/59, I/60, I/449
 – allylic I/311
 – coupling I/437, I/533
 – elimination I/106, I/150, I/212, I/232,
 I/235, 238, I/246, I/307, I/416, I/528,
 I/529, I/555, I/592
Reetz I/560
 refinement reaction II/403
- Reformatsky
 – reaction I/476, I/543, 544, II/590
 – reagent I/565
 regioselectivity I/6, I/7, I/18, I/58, I/273
 Re-Os bimetallic catalyst II/96
Reppe I/171
 Rh catalysis I/559
 Rh complex I/158, I/162
 Rh(CO)(PPh₃)₃ClO₄ I/204
 Rh(cod)Cl₂ I/206
 Rh(I) I/199
 – enolate I/315
 Rh(I)-(S)-BINAP I/199
 Rh(OAc)₄ I/163
 Rh₂(cap)₄ I/163
 Rh₂(pfb)₄ I/163
 RhCl₃ I/419
 rhenaoxetane II/281
 rhenium II/373
 – catalyzed epoxidation II/357–II/365
Rhizoxin D I/496
 rhodium I/62, I/72, I/80, I/94, I/101, I/106,
 I/136, I/155, I/174, I/175, II/182–II/186,
 II/188
 – carbonyl complex I/29
 – complexes II/120
 – monohydride II/151
 rhodium(I)-bis(phosphine) catalyst I/204
 rhodium(II) complex, dinuclear I/157, I/161,
 I/163–I/166
Rieke zinc I/520
 ring closure
 – 5-*endo*-trig I/416
 – electrocyclic I/408
 rivastatin II/79
Roelen I/29
 roflamycoin II/86
 ROH addition II/383–II/385
 rolipam I/415
 ROMP (ring-opening metathesis polymeriza-
 tion) I/323, I/443, I/444
 roxaticin II/79
 Ru catalyst I/9
 Ru(II) complex
 – chiral I/158
 – pybox I/162
 Ru₂Cl₄(diop)₃ I/206
 Ru₃(CO)₁₂ I/119
 Ru-catalyzed oxidation II/503
 RuCl₂(PPh₃)₃ I/119
 ruthenium I/443, II/186, II/189
 – carbene complex I/322, I/328
 – catalyst I/323

- chiral I/328
 - complex I/11, I/72, I/158, II/121
 - hydride II/149
 - monohydride complexes II/146
 - polyoxometalates II/206
 - salen complex II/449
 - Rychnovsky* I/45
- S**
- (*S*)-(-)-7-methoxy-3,7-dimethyloctanal I/202
 - (*S*)-4-hydroxycycloheptenone I/206
 - salen complexes II/394, II/395
 - salen oxovanadium(IV) complexes II/486
 - (salen)Mn(III) complexes, chiral II/488, II/489
 - salicylaldehyde I/336
 - salicylilalamide A II/77
 - salvadoricine I/458, I/464
 - SAMP I/570
 - SAP methodology II/521
 - sarcosinate I/133, I/136, I/139, I/140
 - Sc(OTf)₃ I/337, I/350
 - scaffold, chiral I/313, I/314
 - scandium
 - catalysts I/353
 - triflate I/338, I/339
 - scCO₂ (supercritical carbon dioxide) I/78, I/323, II/116, II/383, II/438, II/539, II/545, II/551, II/567
 - hydroboration II/197, II/198
 - Sch* 38516 I/258
 - Schiff* base II/421
 - chiral I/501
 - ligand II/391–II/393, II/484–486
 - peptide sulfonamide I/537
 - Schrock* I/321, I/327, I/427
 - metal carbene complex I/397
 - Scolastico* I/556
 - scopadulciic acid I/289
 - S*-donor ligands I/221
 - secofascaplysin I/465, I/466
 - Seebach* I/504, I/506, I/511
 - selectride reagent II/41
 - selenium I/309
 - selenoesters I/433
 - (SEM)-protection I/593
 - semicorrins I/158
 - Semmelhack-Hegedus* route I/397
 - sensors II/560
 - Sharpless* I/22
 - AD reaction I/539, II/305
 - epoxidation II/211
 - model II/291–II/293
 - Sheldon* I/18, I/36
 - Shibasaki* I/161, I/540
 - Shilov* reaction II/217
 - SHOP (*Shell Higher Olefin Process*) I/24, I/321
 - Shvo* catalyst II/149, II/152
 - (3,3)-sigmatropic rearrangement I/435
 - silanes I/472
 - silica, mesoporous II/363
 - silicate II/500
 - silyl cyanide I/152
 - silyl enol ether I/97, I/310, I/336, I/338, I/438, I/510, I/555, I/559
 - silyl enolates I/342
 - silyl esters I/433
 - silylaldehyds I/47
 - silylation
 - allylic I/313
 - hydrosilylation I/18, I/23
 - silylmetalation II/168, II/170
 - Simmons-Smith* reaction I/157, I/167, I/511, I/541, I/593
 - single-electron transfer II/584
 - single-site reaction II/568
 - SIPHOS II/21
 - Sn(OTf)₂ I/416
 - Soai* I/530, I/559
 - sodium dodecylsulfate I/338
 - solid phase chemistry I/471, I/611
 - solvent
 - chiral co-solvent I/603
 - environmentally benign II/15, II/198
 - ionic liquid I/382
 - solvent-free products II/545
 - sonochemistry II/583, II/584
 - sonoelectroreduction II/589
 - Sonogashira* reaction I/21, I/610, II/518, II/533, II/566, II/600, II/601
 - sonolysis II/587
 - sparteine I/313, I/557, II/184, II/489
 - spiroannulation I/596, I/597
 - spiro-bis lactone I/434
 - spiroindole I/597
 - spiroketals I/434, I/438
 - SpiroNP II/20
 - SpirOP II/20
 - spiroquinolines I/597
 - SR 5861 1A II/62
 - SS20846A I/592
 - stannanes I/472
 - stannyl acetylene I/405
 - steganone I/611
 - stereochemistry I/3

stereomutation II/94
 stereoselectivity I/18, I/88
 stereopolide I/7
 steric tuning II/7
 steroids I/76, I/172, I/176, I/297, I/408,
 I/489, II/234, II/349
Stille I/610
 – coupling II/599, II/600
Strecker process I/508
Strukul's catalyst II/270
Stryker's reagent II/187
 styrene I/30, I/105, I/150, I/570
 – hydrosilylation II/174
 styrene-Cr(CO)₃ I/604
 sugars I/337, I/349
 – sugar acyl iron I/576
 sulfide oxidation II/479–II/493
 – asymmetric II/481
 – catalyzed by
 – – chiral ruthenium/tungsten
 complexes II/490, II/491
 – – chiral salen manganese(III)
 complexes II/486, II/487
 – – chiral salen vanadium
 complexes II/486, II/487
 – – chiral titanium complexes II/479–II/486
 – – iron non-porphyrin complexes II/490
 – kinetic resolution II/491–II/493
 sulfides I/472
 sulfynilimines I/581
 sulfobacil A II/77
 sulfonamide ligands, chiral I/476
 sulfonate I/309
 sulfonium ylids I/158
 sulfonyl chloride I/380
 sulfonylation, allylic I/313
 sulfoxidation II/479
 sulfoxide I/309, II/479
 sulfur I/309
Sumitomo I/158, I/159
 superconductors I/379
 supercritical fluids I/622, II/15
 supercritical state II/545
 super-heating II/601
 superparamagnetic material II/586
 support II/128
 surfactant II/560
 sustainable chemistry I/18
Suzuki reaction I/21, I/211–I/225, I/523,
 I/610, II/533, II/552, II/561, II/591, II/600
 – asymmetric I/225
 – mechanism I/212, I/213
Suzuki-Stille coupling II/518

symmetric activation /deactivation II/66–
 II/68
syn 1,2-diols I/540
 syngas I/102

t

TACN complex II/352
 TADDOL I/494, I/499, I/501, I/506, I/508,
 I/510, I/533, I/537, I/539, II/272
 – dendrimeric ligands I/505
 – titanium complex I/167, I/168, I/530
Tagasso menthol process I/22, I/23, I/201
Takai I/472, I/477
Takasago I/199–I/202
Takemoto I/314
Tamao-Fleming oxidation II/168, II/171
 tamoxifen I/461
 – (Z)-tamoxifen I/529
 tandem
 – coupling I/460
 – reaction
 – – cyclization I/66
 – – hydroformylation (*see there*)
 TangPHOS II/20
 tantalum II/371, II/372
 tantalum tartrate II/343
 tartaric acid II/82
 tautomerization, enantioselective I/204
Taxol I/457, II/328, II/349
 – C13 side chain II/317, II/324
 TBHP oxidation II/257, II/479, II/485
 (*t*-BuO)₄Ti I/502
Tebbe reagent I/428, I/431–I/433
Tebbe-Claisen strategy I/432
 technetium II/373
Tedicyp I/218, I/278
 telomerization I/21, II/403
 – two-phase catalysis II/520
 template effect I/449
 TEMPO II/209, II/440, II/449, II/451, II/452
 teniposide II/10
 terpene I/489
 terpenoids, chiral I/199
 tetraalkylammonium salts I/274
 tetraallyltin I/337
 tetraarylbiuth(V) I/385
 tetrahydrobenzazepine I/607
 tetrahydroisoquinoline I/191
 tetrahydrolipstatin II/77, II/83
 tetrahydropyrans I/388, I/389, I/436
 tetrahydropyridine I/68, I/344, I/345
 tetrahydroquinolines I/344, II/160
 – derivatives I/354, I/355

- tetrakis(triphenyl-phosphine)
 palladium(0) I/224, I/225, I/234
 tetramethylammonium
 triacetoxymethylborate I/591
 tetraphenylphosphonium salt I/277
 TF-505 II/70
 TfOH I/390
 theonellamide F II/79, II/80
 thermolysis II/202
 thermomorphic behavior II/528
 thienamycin II/11
 thioanisole I/357
 thioesters I/433, I/438
 thioimides, α,β -unsaturated I/348
 thiols I/368
 thiopenes I/417, I/435
Thorpe-Ingold effect I/106
 three component coupling reaction I/345–
 I/347, I/473
 threo- β -hydroxy- α -amino acids I/500
 thujopsene I/388
 Ti(3⁺)-salts I/455
 TiCl₃ I/450
 TiCl₃/LiAlH₄ I/463
 TiCl₃/Mg I/451
 TiCl₄ I/336, I/341, I/343, I/429, I/437, I/461
 Ti-F bond I/496, I/505
 Ti-MCM-41 II/337
 Ti(MgCl)₂(THF)_x I/451
 Ti(Net₂)₄ I/437
 Ti(O-*i*Pr)₄ I/437, I/501, I/504, I/505, I/508
 Ti(OR*)₄ I/503
 tin amide I/232
 tin hydride I/311
Tischenko disproportionation II/149
 titanacycle formation I/427
 titanacyclobutanes I/428
 titanacyclobutenes I/440
 titanacyclopropane intermediate I/168
 titania, mesoporous II/587
 titania-silica aerogel, amorphous
 mesoporous II/338
 titanium I/449, II/187, II/188, II/189
 – complexes II/121, II/187
 – chiral I/491, I/511
 – powder I/455, I/464
 – reagents, preparation I/491, I/492
 – titanium-mediated reactions I/491–I/513
 titanium carbenes
 – precursors I/427–I/429
 – mediated reactions I/427–I/444
 titanium-catalyzed epoxidation II/337–
 II/343
 titanium dioxide I/492
 titanium enolates I/501
 titanium-graphite I/452, I/453, I/461,
 I/463
 titanium oxide I/450
 titanium silicate-1 II/337
 titanium silsesquinoxanes II/339
 titanium tartrate
 – catalyst, heterogeneous II/343
 – complex II/481
 titanium tetrachloride I/491
 titanium tetrafluoride I/496
 titanium tetra-*iso*-propoxide I/491, I/494,
 I/497
 titanocene I/427, I/429
 – bis-cyclopropyl I/436
 – bis(trimethylsilylmethyl) I/436
 – dibenzyl I/436
 – dichloride I/428
 – dimethyl I/428, I/433–I/436
 titanacyclobutanes I/432
 Tm I/345
 TMEDA I/430, I/438
 TMSCl I/455, I/555
 TMSCN I/375
 TMSOTf I/343, I/382, I/555
a-tocopherol II/11, II/64, II/70
Tolpropamine I/33
 toluene-Cr(CO)₃ I/605
Tomioka I/557, I/560
 TPPTS I/219, I/275
 TPSH I/592
 traceless linkers I/611
 transalkylation, amines II/498
 transannular coupling I/459
trans-cyclohexane-1,2-diamine bis-trifluor-
 methylsulfonamide I/504
trans-cyclohexane-1,2-diamine bis-trifluor-
 methylsulfonamido-titanium I/504
trans-effect I/322
 transfer carbonylation I/629, I/630
 transferhydrogenations II/145–II/163
 – catalysts II/152–II/154
 – general background II/145, II/146
 – hydrogen donors/promoters II/152
 – ligands II/154, II/155
 – mechanism II/146–II/152
 – miscellaneous transfer II/161–II/163
 – substrates II/155–II/161
 transition metal complex I/4
 transition metal-arene complexes I/601
 transmetalation I/212, I/232, I/477, I/519,
 I/521–525

- transmission electron microscope
 (TEM) II/591
trans-verbenol II/576
 TRAP ligand I/315
 β,β -trehalose II/515
 trehalose dicorynomycolate II/93
 tri(acetonitrile)iron complex I/588
 tri(*o*-tolyl)phosphine I/213, I/235
 trialkanolamine ligands II/484
 trialkyl aluminium compound I/507, I/558
 triarylbismuth carbonates I/386
 1,4,7-triazacyclononane II/227, II/351–II/353
 tricarbonyl(η^4 -cyclopentadienone)iron complexes I/589
 tricarbonyliron fragment I/585
 tricarbonyliron-cyclohexadiene complex I/588
 tricarbonyliron-diene complex I/588
 trichlorosilane II/174
 tricyclohexylphosphine I/129, I/214, I/216, I/224, I/239
 triene I/325
 triethyl orthoformate I/61
 trifluoroacetic acid I/485
 trifluoroketo ester II/75
 trifluoropropene I/137
 1,1,1-trihalides I/472–I/474
 1,4,7-trimethyl-1,4,7-triazacyclononane
 trimethylaluminium I/439
 trimethylamine *N*-oxide I/588, I/621
 trimethylenemethane (TMM),
 cycloaddition I/312
 triorganozincates I/557
 tri-*o*-tolylphosphine I/231
 trioxane I/336
 trioxoimidoosmium(VIII) complex II/311
 triphenylbismuthonium 2-oxoalkylides I/387
 triphenylphosphine I/577
 – polyether-substituted II/517
 tris(cetylpyridinium)
 12-tungstophosphate II/434
 tris(hydroxymethyl)phosphine I/323
 trisoxazolines II/262
 tri-*tert*-butylphosphine I/216, I/239, I/277
 tropolones I/387
Trost I/313, I/331, I/539
Trost-Tsuji reaction I/309, II/566
 TS-1 II/500
 tuneable acidity II/569
 tungstate-catalyzed reaction II/500
 tungsten I/404, I/443, II/372, II/373
 turnover frequency (TOF) II/30
 twin coronet iron porphyrin II/489
 two-center catalysis, asymmetric I/371–I/377
 two-electron reduction I/461
 two-phase catalysis I/275, II/511–II/522
 – alkylation II/517–II/520
 – aqueous-organic systems II/512–II/520
 – counter phase catalysis II/521
 – coupling reaction II/517–II/520
 – hydrocarboxylation II/520
 – hydroformylation II/516, II/517
 – hydrogenation, unsaturated
 substrates II/512–II/516
 – inverse phase catalysis II/521, II/522
 – supported aqueous phase catalyst II/520,
 II/521
 – telomerization II/520
 tyrosinase II/218
- U**
 U-106305 I/541, I/542
Uemura I/386
 UHP II/500
 ultrafine powders II/587
 ultrasound, ultrasonic II/583–II/594
 – activation I/520
 – irradiation II/82
 uracil derivatives I/525
 urea/hydrogen peroxide II/363, II/468
 ureidocarbonylation,
 palladium-catalyzed I/142
 urethane I/597
- V**
van Leeuwen I/60
 vanadium II/371, II/372
 vanadium complex
 – asymmetric II/486
 – zeolite-encapsulated II/228
Vannusal A I/489
Vasca complex II/4
Venturello compound II/418
Venturello-Ishii catalytic systems II/418
 vinyl acetate I/43
 verbenone I/504, II/222
 vicinal diamines II/333
 vicinal diols II/427
 vigabatrin I/9
 vinyl arenes I/154
 vinyl bromide I/527
 vinyl carbenes I/440
 vinyl chromium I/474
 vinyl cyclopropanes I/309
 vinyl epoxide I/309
 vinyl ethers I/343, I/345, I/509

vinyl fluoride I/45, I/325
 vinyl iodides I/473
 vinyl radicals I/485
 vinyl silane I/119, I/436, I/473
 vinyl sulfide I/345
 vinylation I/5, I/171
 vinylcyclopentadienes I/419
 vinylcyclopropane I/410
 vinylcyclopropanecarboxylate I/592
 vinylic halide I/476
 2-vinylpyridine I/184, I/186, I/188
 vinylstannane I/570
 vinylzinc nucleophiles I/531–I/533
 vitamin I/408
 – B₁₂ I/477, II/591
 – B₁₂ 12
 – D I/5
 – E II/11, II/520
 – K₃ II/230
 Vollhardt I/172
 VPI-5, microporous II/223

w

Wacker process I/20, I/185, I/309, II/207,
 II/379–II/387, II/428, II/441, II/536, II/555
 Wacker-Hoechst acetaldehyde process II/379,
 II/380, II/428
 Wacker-Tsuji reaction II/381–II/383
 Wakamatsu I/100, I/133
 Wakatsuki I/172
 Walsh I/504 I/530
 water I/113, I/184
 – supercritical I/184
 water gas shift reaction II/517
 Weinreb I/345
 Wells-Dawson structure II/417
 Wentilactone B I/489
 Wilkinson complex (Ph₃P)₃RhCl I/19, II/5, II/6
 Wilkinson's catalyst I/105, I/176, II/513,
 II/548, II/621
 Wittig I/472
 Wittig olefination I/3, I/386, I/430
 Wittig reagent I/88, I/89, I/431, I/433
 Wittig-Horner reaction I/593
 Wurtz homocoupling I/474

x

XANTPHOS I/59, I/72, I/238

y

Yb(OTf)₃ I/489
 ylide formation I/163
 ylides I/386

ynamines I/589
 yne-aldehydes I/628
 ynol ethers I/589
 ytterbium catalyst I/353
 ytterbium triflate I/336–I/338, I/353, I/355
 yttrium II/179, II/180
 Yus I/505

z

Z-*a*-haloacrylates I/474
 Z-2-chloroalk-2-en-1-ols I/473
 zeolite Y II/363
 zeolites II/230, II/259, II/268, II/339,
 II/390, II/404, II/588
 Zhang I/530
 Ziegler I/563
 – catalyst I/177
 – Co-Fe catalyst II/141
 Ziegler polymerization catalyst I/461
 Ziegler-Natta system II/8
 zinc I/429
 – insertion in C-X-bonds I/520, 521
 – zinc-mediated reactions I/519–I/547
 zinc I/451, I/453
 zinc acetylide I/535
 zinc bromide I/568
 zinc enolates I/536, I/544, I/545, I/560,
 I/564
 – reactions I/543–547
 zinc ester enolates I/476
 zinc prolinol complex I/539
 zinc-mediated reactions
 – aldol reactions I/539, I/540
 – asymmetric conjugate addition I/536–
 I/539
 – carbometalation I/529
 – cross-coupling reaction I/525–I/529
 – cyclopropanation I/541–I/543
 – organozinc addition to C=X I/530–I/535
 – preparation/coupling reactions I/519,
 I/520
 – transmetalation I/521–I/525
 – zinc enolates, reactions I/543–I/547
 – zinc insertion into C-X bonds I/520, I/521
 zindoxifene I/465
 zirconocene I/257–I/267
 zirconium II/370
 Zn I/151, I/437
 Zn(OTf)₂ I/534, I/546
 ZnBr₂ I/567
 ZnI₂ I/382
 Zr-Mg ligand exchange I/263
 ZrO₂, Cr salt-doped II/97