

# Subject Index 1985

## Errata

Bellamy F.D. and Ou K., 25,839-842(1984): corrected procedure for reduction of p-nitrobenzoic acid, 1362

Berkowitz W.F., Perumattam J., and Amarasekara A., 26, 3665(1985): acknowledgement of similar work published in Chem. Letters, 4562

Brinkman K. and Helquist P., 26, 2845(1985): formula, last product in Table on p.2846 corrected and reference 8a replaced, 4154

Danikiewicz W. and Makosza M., 26, 3599(1985): scheme 1 which was omitted from p 3599, 6523

Davies J.W., Malpas J.R. and Moss R.E., 26, 4533(1985): last word of second paragraph on p.4533 diazabicyclo; on p.4535 energy values corrected; revised Table 1 produced, 5226

Deshmukh M., Dunach E. and Kagan H.B., 25, 3467(1984): Line 15 after Abstract - correction, 402

Gamboni R., Mohr P., Waespe-Sarcevic N. and Tamm C., 26,203(1985): structure 1d is corrected, 3058

Guo-qiang L., Hai-jian X., Bi-chi W., Guong-zhong G. and Wei-shan Z., 26, 1233(1985): reaction conditions for Schemes 1 and 2 corrected and arrangement of compds in Table 1 changed, 1690

Jackson A.H., Rao K.R.N., Ooi N.S. and Adelakun E., 25, 6049(1984): p.6049 three corrections, 3522

Kondo N., Imai K., Isobe M., Goto T., Murasugi A., Wada C. Nakagawa C. and Harashi Y., 25, 3869(1984): corrected structures for formulae 1 and 2, 690

Mak C-P. and Fliri H., 26, 1433(1985): on p 1434 entry 8 corrected, 4010

Newcomb M., Williams W.G. and Crumpacker E.L., 26, 1183(1985): yield of isolated bromide 1 corrected, 2727

Otera J., Yoshinaga Y., Hirakawa K. and Nakata T., 26,3219(1985): entries 6 and 7 in Table 1 should be deleted, 3746

Overman L.E. and Burk R.M.,

line from bottom of p.5737, 4154

Shirahama H., Arora G.S., Osawa E. and Matsumoto T.: 24,2869-2872(1983): Formulas 10 and 11 on p.2871 corrected, 2

Sunitha K., Balasbramanian K.K. and Rajagoplan K., 26, 4393: corrections in References and Notes, 5490

Swindell C.S., de Solms S.J., 25,3801(1984): data listed for conformation B of structure 3b corrected, 1474

Uma R., Swaminathan S. and Rajagopalan K.N., 25,5825-8 (1984): Sentence on lines 20-24, page 5827 rewritten, 1114

Wakamiya T., Nakamoto H. and Shiba T., 25,4411(1984): chemical shift of <sup>1</sup>H NMR corrected, 2138

## Acetalisation

selective-, of aldehydes catalysed by alumina, 4767

## Acetals

4-oxo-2-phenylthiobutanoic acid ethylene-, Li fianion, addition to aldehydes and cyclisation to 2-alkyl-3-furoic acids, 3635

$\alpha$ -amino silyl ketene-, aldol condensation, diastereoselective synthesis of  $\alpha$ -amino- $\beta$ -hydroxy acids, 3517

addition to  $\alpha$ -alkoxy aldehydes, Lewis acid promoted, diastereoselective synthesis of syn- $\alpha$ -methylene- $\beta$ -hydroxy- $\gamma$ -alkoxy esters, 6509

chiral acetylenic-, reaction with Grignard reagents in presence of Cu salt; prep of chiral alkoxy allenes, diastereoselective  $\beta$ -elimination, 4197

dioxolane-, Pd(II)-catalysed hydrolysis or exchange reactions, 705

furanose and pyranose hemi-, stereoselective replacement of anomeric OH by F atom, 5

$\gamma$ -bromo  $\alpha$ -acetylenic-, reduction with chromous ions to  $\alpha$ -allenic acetals and hydrolysis to aldehydes, 51

ketene-, diastereoselective coupling, asymmetric synthesis of R-(+)- $\alpha$ -lipoic acid, 2535

aldehydes and ketones, cyclo-additions, 1889

ketene silyl-,  $\gamma$ -addition with quaternised methyl nicotinate, synthesis of ( $\pm$ )-sesbanine, 3267

ketene silyl-, diastereoselective aldol reaction with 2,3-O-isopropylidene-D (and L)-glycer-aldehydes, 5777

leukotriene-C<sub>4</sub>, acetylenic acetals and dithioacetals as antagonists, synthesis of butanoic acid 4,4'-[(4E,6Z,9Z-pentadecatriene-2-ynylidene)]-bis with LT-like activity, 6427

mixed vinylketene-, prep and participation in cyclohexenone synthesis, 381

S-silyl-, S,N-acetals(cf with lithium enethiolates)reaction with Schiff bases to afford  $\beta$ -aminothioamides, 1015

silylketene-, reaction with 3,3-dimethylacryloyl chloride to give  $\gamma$ , $\delta$ -ethylenic  $\beta$ -keto esters, application to synthesis of ( $\pm$ )-turmerone, 4195

silylketene-, reaction with acryloyl, methacryloyl and crotonyl chlorides and addition of MeOH to form glutaric esters, 4191

thioester silyl ketene-, reaction with aldehydes in presence of BF<sub>3</sub>OEt<sub>2</sub>, high diastereoselectivity in anti aldol condensation, 797

## Acetoxylation

2,3-dihydro-4-pyrones, route to glucal stereochemical series, 3411

## Acidity

of nitrated phenoxide, anilide and benzyl anions, effect of solvation, 2435

selective reduction of imonium salts by sodium hydrogen telluride, effect of pH, 3693

## Acylation

6- and 5,6-dialkyl-2-methoxy-4(3H)-pyrimidones transformation into 1-N-acylated pyrimidine derivs, 3345

- prep of optically active mono-benzoate of *cis*-2-cyclopenten-1,4-diol, 3099
- Friedel-Crafts-, group direction and protection, 39
- Friedel-Crafts-, of 1-*t*-butyl-dimethylsilylpyrrole, route to 3-substituted pyrroles, 5035
- intramolecular rearrangement of 4(*R*)-hydroxymethyl-3-methyl-1,3-thiazolidine to oxazolidine, 869
- Mander carbomethoxylation of ketone enclates with methyl cyano formate, mechanism, 2291
- N*-substituted 3-(4-fluorophenyl)-indoles, prep and direct formylation at 2-position, 2155
- new synthesis of  $\alpha$ , $\beta$ -unsaturated  $\gamma$ - and  $\delta$ -lactones via intramolecular acylation of  $\alpha$ -sulphinyl carbanions, 2253
- of extended enolate ions from  $\alpha$ -phenylthio(PhS-)crotonate esters, 2895
- reaction of 2-chloro-4,6-disubstituted 1,3,5-triazines with carboxylic acids, useful acylating reagents in prep of esters, amides, acid anhydrides and peptides, 2901
- reaction, 2-benzenesulphonyltetrahydropyran anion with electrophiles, 535
- regioselective-, polyalcohols via 3-acyl-2-oxazolone-zirconium complexes, 1977
- stable 3-acylindolenine deriv via intramolecular electrophilic acylation, 5593
- Adamantanes**
- 1,3,4-thiadiazoline-2-spiro-2'-adamantane by acid-base reactions of 1,3,4-thiadiazolines and thiocarbonyl ylides, 1053
- 1-bromo-, alkylation of  $\beta$ -diketones to  $\alpha$ -(1-adamantyl)- $\beta$ -diketones via Co(II), Co(III) and Zn(II) complexes, 3735
- 2-substituted-, unequivocal assignment of *syn* and *anti*  $\delta$   $^{13}\text{C}$  resonances, 2841
- 3-hydroxy-4-homoadamantyl 1-adamantanecarboxylate, prep and conversion to 3,4-homoadamantanediol, 661
- adamantanethione and diazomethane, re-examination, 1049
- cyclopentadiene, isoprene andbutadiene, diastereofacial selectivity, 3095
- active olefins, alkyl additions by tributylgermanium hydride reduction of alkyl halides, 6289
- adamantanethione and diazomethane, re-examination, 1049
- adducts from peroxidase-catalysed reaction of *N*-2-methyl-9-hydroxyellipticinium acetate with aliphatic amino acids, reinvestigation, 4933
- adducts of 2,3-bis(bromomethyl)-1,3-butadiene with propiolic acids, precursors of 2H-isoindoles and 2,3-dithianaphthalenes, 4093
- aldol dimerisation of 1-indanone and 1-tetralones, prep of  $\alpha$ , $\beta$ - and  $\beta$ , $\gamma$ -unsaturated ketones, 571
- alkyl radicals, to vinyl sulphones and vinyl phosphonium salts, 6349
- alkynyl-Cr compds, selective addition to aldehyde moiety without affecting CO group of substrate, 5585
- all-*trans*-1-acyloxy-1,3-pentadiene-5-ols as dienes in new intramolecular Diels-Alder reactions, 1249
- amine and phosphine-boryl radicals to 2-methyl-2-nitrosopropane, 2,4,6-tri-*t*-butylnitrosobenzene and phenyl-*N*-*t*-butylnitrono to nitroxide spin-adducts, 1349
- aminomalones, to difluoro- and chlorofluoro-carbene, conversion of adducts to  $\beta$ -fluorinated alanine deriva, 2445
- and aromatic substitution reactions of 1H-cyclobuta[de]-naphthalenes, 1157
- asymmetric Diels-Alder reaction between chiral isoprene units 2-(*R*)- and (*S*)-benzyloxy-2,5-dihydro-4-furancarboxyaldehyde and cyclopentadiene, 5605
- carbonyl compds and 3-bromo-1,1,1-trichloroalkanes to give 3,3-dichlorotetrahydrofurans, 4899
- chiral 1,3-oxathianes via stereoselective addition-cyclisation of hydroxythiols to electron poor acetylenes, 4539
- chiral 4-hydroxymethylbutenolide use as template for stereocontrolled conjugate addition of C-Me group, 2-Carbon extension and reformation of lactone with new side-chain, replicated butenolide subjected to second conjugate addition, 5627
- conjugate-, (trimethylstannyl)-copper reagents to  $\alpha$ , $\beta$ -acetylenic *N,N*-dimethylamides, trapping of intermediates with electrophiles, 6265
- conjugate-, allylsilanes with  $\alpha$ , $\beta$ -unsaturated acylsilanes, 2509
- conjugate-, R<sub>2</sub>Cu.BF<sub>3</sub> to enoates of sulphonamide-shielded alcohols, synthesis of  $\beta$ -substituted alcanoic acids, 6051
- conjugate-, to thioin-4-ones, route to thiathromboxane analogs, 2621
- Cu-catalysed silylzincation of acetylenes, 4629
- cuprates to vinyltriphenylphosphonium bromide, synthesis of 1,5-disubstituted  $\underline{Z}$   $\underline{Z}$ -penta-1,4-dienes, 1799
- daunosamine, new route based on stereospecific electrophilic addition to 2-acetoxy-7-oxabicyclo[2.2.1]hept-5-ene-2-carbonitrile, 5127
- diastereofaceselection, condensation of aldehydes with
- Zr enolate of chiral *N*-propionyl-*trans*-2,5-disubstituted pyrrolidine, 5807
- diastereoselective-, benzene sulphonylchloride to optically active bornyl propenoates, 4335
- diastereoselective-, nucleophiles to  $\alpha$ -methyl- $\beta$ , $\gamma$ -unsaturated carbonyl compds, 3707
- diastereoselectivity in intramolecular additions of allylsilanes to enones, 4711
- diastereoselectivity, silylzoles to chiral aldehydes, stereocontrolled homologation of  $\alpha$ -hydroxyaldehydes, 5477
- diastereospecific aprotic conjugate-, of carban-ions to cyclic enones to form vinylic sulphoxides and vinylic phosphine oxides, 1565
- diastereospecific aprotic conjugate-, of allylic anions bearing polar, charge-stabilising groups, 1569
- Diels-Alder reactions of 5,5-dicyanocyclopentadiene with dienophiles to 5-substituted 7,7-dicyanobicyclo[2.2.1]hept-2-enes with endo-selectivity, 1691
- Diels-Alder reactions of  $\alpha$ -quinoxindimethanes, stereocontrol exerted by phenyl substituents, asymmetric induction effects, 3413
- dienolate-, of 2-butenic acid to 1,3-diphenylpropenone, almost exclusive formation of R,R(S,R)-3,5-diphenyl-2-ethenyl-5-oxopentanoic acid, 2485
- electrophilic carbene to electron deficient olefin, kinetics of benzylchlorocarbene-diethylfumarate reaction, 3071
- enol borates to aldehydes and subsequent metal addition to form 1,3-diols, 1643
- ethylmetallic reagents to acrolein dimer and conversion of threo alcohol to exo-brevicombin and *Mus musculus* pheromone, 2619
- fluorides as bases in cyclopropane ring formation from nucleophiles and Michael acceptors, 3001
- fluorosulphuric acid to an epoxide, 6405
- free radical-, iodoacetamide to  $\alpha$ , $\beta$ -unsaturated esters, synthesis of 4-substituted glutarimides, 5643
- $\gamma$ - of ketene silyl acetal with quaternised methyl nicotinate, synthesis of ( $\pm$ )-sesbanine, 3267
- Grignard reagent to terminal trimethylsilyl ethene moiety, stereoselective, 2101
- haloacetoneitriles to aldehydes via cyanomethylnickel halides to  $\beta$ -hydroxynitriles, 155
- intramolecular trapping by epoxides of intermediates generated by organocuprate additions to propiolate esters, 3437
- intramolecular-, allylsilanes to conjugated dienones, regioselectivity, 2747
- intramolecular-, radicals and electrophiles to allylstannanes as methods for ring closure, 3311
- intramolecular-, to chiral vinylic sulphoxides, enantioselective synthesis of (*R*)- and (*S*)-1,7-dioxaspiro[5.5]undecane, 2221
- intramolecular-, unsymmetrical allylsilanes to enones, geometrical limitations, 2755
- isocyanide and  $\beta$ -allenic aldehydes or ketones to give 5-

- membered cyclic compds, 419  
ketene silyl acetals, diastereo-selective aldol reaction with 2,3-O-isopropylidene-D (and L)-glyceraldehydes, 5777  
ketones and  $\beta$ -cyano or  $\beta$ -keto esters, addition to methacrylamide in presence of CsF/Si(OMe)<sub>4</sub>, 1311  
Li dianion of 4-oxo-2-phenylthio-butanonic acid ethylene acetal to aldehydes and cyclisation to 2-alkyl-3-furoic acids, 3635  
Li reagents to dimethyl squarate at CO to give new 2-hydroxy-3,4-dimethoxy-3-cyclobutenone, 1867  
lithiated cyclopropane ketals, prep and adducts with ketones, 2279  
lithium enolate of benzamido-acetone, regioselective alkylation at C-1 and stereospecific addition to cyclohexenone without protection of free NH, 3433  
Michael reactions promoted by solid-liquid phase transfer catalysis without solvent, application to addition of acetylacetone, methylacetoacetate and fluorene anions on hindered acceptors, 4601  
N-tosylated  $\alpha,\beta$ -unsaturated amides and lactams with R<sup>2</sup>CuLi or RMgX/CuI, 657  
new route to homoaporphines, addition of dichlorocarbene to aporphinoids, 1561  
nucleophile to cyclohexadienyliron cations, effect of ligand environment, 2399  
nucleophiles to alkyl  $\alpha$ -bromoacrylates, stereospecific formation of cyclopropanes, 1221  
nucleophilic-, to 2,3-O-isopropylidene-glyceraldehyde, high-pressure approach vs use of organometallic reagent, 4145  
organocuprate-chlorotrimethylsilane reagents to conjugated carbonyl compds, 6019  
organozinc reagents to  $\alpha$ -enals in presence of nickel acetylacetonate, 829  
paramagnetic heterocyclic aldo-nitrone, 2,2,5,5-tetramethyl-3-imidazoline-3-oxide-1-oxyl, reaction with C=C and C=N dipolarophiles, formation of adducts with radical centers, 4801  
phosphite to aldehyde, prep of chiral  $\alpha$ -hydroxyphosphonates, 493  
photo-, trans-dichloroethylene with benzenoid compds, formation of tetracyclo[3.3.0.0.2',0',6']-octanes and semibullvalenes, 949  
pivalaldehyde and lithium enolate of pinacolone to a tetrameric aggregate, 3931  
protected allylamines via Pd-catalysed amide addition to allylic substrates, 1749  
pyridine and Et<sub>3</sub>Mg plus EtLi resulting in 1,4-addition, 275  
regioselective synthesis of 2-substituted pyridines via Grignard addition to 1-(alkoxy-carboxy)-pyridinium salts, 3191  
reversal of diastereofacial selectivity in intramolecular addition of  $\delta$ -carbamoyloxy- $\alpha,\beta$ -unsaturated esters, synthesis of N-benzoyl-D,L-daunosamine, 4137  
reversible d, $\pi$ \*-complexation,  $\beta$ -cupration sequence in conjugate addition of Gilman reagents with  $\alpha,\beta$ -enones, 6015  
riboside analog of pyrimidine adduct from N-hydroxy-N-2-acetylaminofluorene and DNA, synthesis, 2659  
(+)(S)-3-trichloromethylbutyric acid via stereoselective conjugate addition of Cl<sub>2</sub>Cm<sub>2</sub>Cl to crotonate of chiral auxiliary with sulphonylamino substituent, 6047  
selenothioacetylation, addition of S-benzoyl phenyl-selenosulphide to olefins, 3263  
solvent controlled-, organo-titanium reagents to olefinic double bonds, 4423  
stepwise-, of a C-electrophile and C-nucleophile to double bond of vinylacetylene, 1269  
stereoselective conjugate addition-alkylation of iron acyls, 3075  
stereoselective-, to  $\alpha$ -alkoxy aldehydes, thioester silyl ketene acetal intermediates, 2373  
stereospecific vinyl substitution in free radical addition-elimination, 4975  
t-butoxy radicals, reaction with norbornadiene, 5081  
tertiary alcohols via CeCl<sub>4</sub>-promoted addition of Grignard reagents to ketones, 4763  
tetraalkylaluminates, enantioselective addition to phenylglyoxalate, prep of  $\alpha$ -substituted mandelic acid (-)-menthyl esters, 4181  
thioester silyl ketene acetals and aldehydes in presence of BF<sub>3</sub>OEt<sub>2</sub>, high diastereoselectivity in anti aldol condensation, 797  
to symmetrical ketones via chiral propionate enolate equivs, stereoselective, 2129  
toxic marine polyethers, synthesis of segment A of okadaic acid via anti-selectivity by hetero conjugate addition, 5203  
tricyclic diterpenes, daphnanes via high pressure intramolecular reaction of furan dienes, 2229  
uncatalysed asymmetric-, cyclopentadiene to (E)- and (Z)-(R)-4,5-di-O-isopropylidene-pent-2-enones, 1631  
use of Yb(fod), in Diels-Alder reactions of acrolein with dienes, stereoselectivity, 2507  
vinyl or aryl halide to enolate of  $\beta$ -allenyl malonate to give cyclopentenyl or vinylcyclopropyl derivs, 3795
- Alcohols**  
1-vinyl-1-cyclobutanols, Pd-rearrangement to 2-methyl-2-cyclopentene-1-ones, 2503  
3-buten-2-ol, model asymmetric olefin, conformational energy, 3647  
acyclic allylic-, mercuration diastereoselectivity, 1197  
africanol conversion to dactyolol via 1,2-shift of Me group, 873  
alkenols, prep, trans selectivity of  $\omega$ -hydroxyalkyl-triphenylphosphonium bromides, 311  
alkynyl-, conversion to  $\beta$ -iodo- $\alpha,\beta$ -unsaturated ketones, 1967  
allyl-, benzyl and tertiary, conversion into halides with BF<sub>3</sub>-etherate/halide ion, 3863  
allylic- and benzylic-, conversion to iodides using NaI/BF<sub>3</sub>·Et<sub>2</sub>O, 2717  
allylic-, conversion into oxetane/tertiary acetate grouping of baocatin III, 3663  
allylic-, hindered, rearrangement during vanadium epoxidation, 5875  
allylic-, new Claisen-nitrile oxide annulation of rings derivs with rigid stereocontrol, 2031  
allylic-, Pd-catalysed oxidative cyclisation and carbonylation to 5-membered ring lactones, 5639  
allylic-, stereospecific OH-directed ring closure, prep of tetrahydrofurans bearing 4 contiguous chiral centers and synthesis of rac-citreoviral, 2529  
allylic-, t-butyl substituted, asymmetric epoxidation, 2543  
allylic-, transposition in stereocontrolled synthesis of  $\delta$ -hydroxy allylic phosphine oxides, 1677  
allylic-, [3,3] sigmatropic rearrangement with ethyl  $\beta,\beta$ -diethoxyacrylate, regioselective synthesis of substituted allylmalonates, 6261  
and fatty acid, lipase-catalysed ester formation, preparative resolution of  $\alpha$ -substituted cyclohexanols including menthol, 1857  
 $\beta$ -acetylenic-, hydroboration followed by oxidation to hemiacetals of  $\gamma$ -aldols and dehydration to 2,3-dihydrofurans, 5683  
 $\beta$ -substituted-, new synthesis, 657  
 $\beta$ -trimethylsilyl-, Rh-catalysed hydrogenation to  $\alpha$ -trimethylsilyl ketones, 4229  
bicyclic vinyl tertiary-, inversion of stereochemistry via [2,3] sulphoxide rearrangement, 607  
biomimetic oxidation by coenzyme PQQ-trimethyl ester, 4225  
bis-allylic-, regioselectivity in Claisen rearrangement, electronic and steric effects of C-4 substituents, 3655  
chirality transfer in [2,3] sigmatropic rearrangement of anions derived from trialkylstannylmethyl allylic ethers, stereospecific synthesis of (Z)-3-benzyloxy-2-methylpropanol, 5013  
cis-1,2-diacetoxycycloalkanedimethanols, enzymatic hydrolysis, prep of chiral monoacetates with enantiomeric purity, 2073  
conjugate addition of R<sub>2</sub>Cu·BF<sub>3</sub> to enoates of sulphonamide-shielded alcohols, synthesis of  $\beta$ -substituted alcanoic acids, 6051  
E-2-(phenylsulphonyl)vinyl ethers of 2,3-epoxyalcohols, stereospecific synthesis of dihydrofurans and dihydroxy acids, 6301  
E-homoallylic-,  $\gamma$ -hydroxyketones and cyclopropyl ketones, synthesis from 3-diphenylphosphinoyl propanols by acyl transfer, 5713  
epoxidation of 3(1'-hydroxyethyl)-5,8-dimethoxy-1,2-dihydro-naphthalene-1-ol, allylic and homoallylic control of stereospecificity, 6117  
epoxy-, reactions, new results, 6277  
equatorial-, new stereocontrolled synthesis by ambiphilic reduction of cyclohexanones, 3853  
exo-allylic-, stereospecific synthesis, asymmetric synthesis of (R)-(-)-2-acetyl-5,8-dimethoxy-1,2,3,4-tetrahydro-2-naphthol, 6497  
furan terminated cationic cyclisations with allylic alcohols, enones and N-acyl imminium salts as initiators,

- routes to spiro-cyclic systems, 5347
- gas-phase deoxygenation on iron catalyst, 3373
- HLAD-catalysed oxidation with acetaldehyde as coenzyme recycling substrate, 4527
- homoallylic-, OH-directed hydrogenation, effects of chiral and achiral Rh catalysts on 1,3-stereocontrol, 6005
- homoallylic-, regio- and stereoselective formation via anodic oxidation of polycyclic cyclopropanes followed by hydrolysis, 4513
- homoallylic-, via Bi-mediated allylation of aldehydes, 4211
- improved pyridinium dichromate oxidation, 1699
- inversion of configuration via nucleophilic displacement promoted by nitrate ions, 3369
- new prep of alkyl iodides, 5445
- novel deoxygenation, use in synthesis of covalent perchlorates, 6243
- optically active 1-phenylethanols via fungal hydroxylation of ethyl benzene and derivs, 6409
- per-bicyclic phosphoranylation, 2003
- poly-, regioselective acylation via 3-acyl-2-oxazolone-zirconium complexes, 1977
- primary- and sec-, Pd-catalysed oxidations under solid-liquid phase conditions, 6257
- primary-, p-anisyl as versatile protecting group, 6291
- primary-, selective fluorination, 4207
- propargyl-, E-alkyl substituted, via fluoride ion catalysed reaction of  $\alpha$ -alkylacetylenes with silyl enol ethers, 79
- protected ester, nitrile, carbinol and carbonyl amine cyclopropanone hydrates, 2283
- protection, thexyldimethylsilyl chloride reagent, 5515
- rate of 1,3-migration of silyl group from C to O using diastereomeric 7,8-epoxy-7-(trimethylsilyl)-6-tridecanols, 4505
- reaction with benzosilacyclobutenes, rupture of benzyl-Si and aryl-Si, formation of (dialkyl)alkoxy-o-tolylsilanes and (dialkyl)alkoxybenzylsilanes, 4761
- reaction with singlet and triplet diphenylcarbene, effect of temp on reversible ylide formation, 5951
- regioselective ring opening of epoxides catalysed by organotin phosphate condensates, 3219
- Ru-catalysed oxidation with sodium bromate, 2107
- sec-, new Cr(VI) reagent for catalytic oxidation to ketones, 5855
- sec-, enantiomers, prep of precursor, 771
- selective desilylation of compds containing both phenolic and alcoholic t-butyldimethylsilyl ethers, 681
- sequential reactions of 2-halo-3-t-butyloxirane with p-chlorophenolates and sodium triazolate to threo-triadimenol, 4341
- sugar cyclic sulphites stereoselective conversion to  $\alpha$ -azido-alcohols, 6343
- tertiary-, deoxygenation via free radical method, formation of quaternary C-centres, 757
- tertiary-, via CeCl<sub>4</sub>-promoted addition of Grignard reagents to ketones, 4763
- tetrahydrofurfuryl-, regioselective opening to iodoacetones, application to synthesis of brevicomins, 2315
- trifluoromethylated propargylic- and allylic-, Claisen rearrangement to trifluoromethylated diene derivs, 219
- via selective reduction of aldehydes by formic acid-trialkylamine-RuCl<sub>2</sub>(PPH<sub>3</sub>), 3365
- with adjacent PhS group, dehydration, 3133
- Aldehydes see also Oximes, Hydrazones, Halogenocarbonyl compds,**
- 2-phenylpropanal, mutual kinetic resolution in aldol reaction with 4,5-dihydro-5-methyl-2-(trimethylsilyloxy)-3-(trimethylsilyl)furan, 1061
- 3,4-epoxy-2-methylenealkanoic acid derivs synthesis using dianion of N-phenyl-2-(phenylsulphonylmethyl)propanamide and aldehydes, 4751
- 5-stannyl-, cyclisation, formation of cyclopentanol ring with retention of configuration at C bearing stannyl group, 3857
- 6 $\alpha$ -(1R-hydroxyethyl) side chain of carbapenem and penem antibiotics, introduction via a stereocontrolled aldol reaction, 6285
- $\alpha,\alpha'$ -dihydroxy ketones, new prep from ketones and aldehydes, 4925
- $\alpha,\alpha$ -difluoroaldehydes via Claisen rearrangements, 2861
- $\alpha,\beta$ -dialkoxy-, pinacol allylboronate, stereochemistry of reactions pinacol allylboronate, comparison with reactions of crotylboronates, 3427
- $\alpha,\beta$ -unsaturated-, cycloadditions of ketene acetals, 1889
- $\alpha,\beta$ -unsaturated-, prep from ketones via 1,3-carbonyl transposition through one C homologation, 1581
- $\alpha,\beta$ -unsaturated-, zinc chloride mediated reduction with silicon hydrides and Pd(O)-catalyst, 1353
- $\alpha$ -alkoxy-, stereoselective additions, thioester silyl ketene acetal intermediates, 2373
- $\alpha$ -alkoxy-, Lewis acid-promoted additions of acetals, diastereoselective synthesis of *syn*- $\alpha$ -methylene- $\beta$ -hydroxy- $\gamma$ -alkoxy esters, 6509
- $\alpha$ -alkoxy-, Lewis acid mediated 1,2-asymmetric 1k-induction, synthesis of  $\alpha$ -nonsubstituted  $\beta,\gamma$ -*syn*-dihydroxyketone and ester, 3467
- $\alpha$ -alkoxy-, stereoselective synthesis of vinyl ethers, 1419
- $\alpha$ -costal-, structure and synthesis via S-t-butyl cyanothioacetate incorporation of labile acrolein unit, 4843
- $\alpha$ -enals, addition to organozinc reagents in presence of nickel acetylacetonate, 829
- $\alpha$ -hydroxy-, stereoselective synthesis of 1,2-diols, 1189
- $\alpha$ -hydroxy-, enantiomerically pure, prep as intermediates for synthesis of arachidonic acid metabolites, 319
- $\alpha$ -methyl-, reaction with trimethylsilyl ethylidene triarylphosphoranes, introduction of vinyl group in Cram-selective manner, 4471
- $\alpha$ -methylthio-, stereoselective reaction with allyltriphenylstannane, synthesis of anti- $\beta$ -methylthio alcohols, 6236
- acrolein dimer, stereoselective addition to ethylmetallic reagents and conversion of threo alcohol to *exo*-brevicomin and *Mus musculus* pheromone, 2619
- addition of haloacetonitriles mediated by Ni, 155
- addition of Li dianion of 4-oxo-2-phenylthiobutanoic acid ethylene acetal and cyclisation to 2-alkyl-3-furonic acids, 3635
- addition to enol borates, and subsequent metal addition to form 1,3-diols, 1643
- alkynyl-Cr compds, selective addition to aldehyde moiety without affecting CO group of substrate, 5585
- allylation in presence of ketones by Sn- or Zn-mediation, 1449
- and 1-bromo-3-iodopropane, stereoselective route to terminal conjugated (E)-dienes and trienes in presence of SnCl<sub>2</sub>, 753
- and a single C-3 unit, anti-diastereoselective homoaldol reaction, stereoselective synthesis of all 4 stereoisomeric 1-carbamoyloxy-1,3-alkadienes, 411
- aromatic-, Darzens condensation with phenacyl halides, bovine serum albumin catalyst, 2471
- aromatic-, direct conversion to nitriles using S<sub>2</sub>S-dimethylsulphurdiimide as iminating agent, dithiatetrazocines as intermediates, 2739
- aromatic-, reaction with dimethyl N-ethoxycarbonyl methyliminodithio carbonate, synthesis of 5-aryl-2-ethoxycarbonyl-4-methylthio-2,3-dihydrooxazoles, 243
- aromatic-, Wittig reaction of non-stabilised P-ylides, 4587
- aryl-, Wittig reaction with carbanions stabilised with adjacent dimethylboron group, oxidation of intermediates to erythro-1,2-diols, 5093
- asymmetric Diels-Alder reaction between chiral isoprene units 2-(R)- and (S)-benzyloxy-2,5-dihydro-4-furancarboxyaldehyde and cyclopentadiene, 5605
- $\beta$ -alkyl substituted  $\alpha,\beta$ -unsaturated, prep using anion of 1-[(2-methoxyethoxy)methoxy]-2-phenylsulphonylcyclopropane as new d<sup>-</sup>-reagent, 3613
- $\beta$ -allenic aldehydes, addition of isocyanide to give 5-membered cyclic compds, 419
- $\beta$ -substituted, new synthesis, 657
- Bi-mediated allylation to homoallylic alcohols, 4211
- bis(seleno)- and bis(thio)-allylation, 6513
- branched amino sugars via hetero Diels-Alder cycloaddition of enamincarbonyl aldehydes with enol ethers, 5273
- chiral  $\alpha$ -siloxyketone, effect of cation on diastereofacial selectivity in aldol reactions, 6009
- chiral water-soluble butadienylether with glucose hydrophilic moiety, aqueous cycloaddition with meth-acrolein to two stereoisomers, 2653
- chiral-, condensation with ethyl 1,3-dithiolane and 1,3-dithiane-2-carboxylates, diastereoface

- selectivity, 2977
- chiral-, diastereoselectivity in 1,2-addition to silylazoles, stereocontrolled homologation of  $\alpha$ -hydroxyaldehydes, 5477
- chiral-, reaction with preformed lithium enolate of methyl 2-methylpropanoate, 973
- chiral-, stereoselective aldol condensation with protected glycine and 3-butyryl thiazolidine-2-thiones to give 8-hydroxyesters, intermediates for  $\beta$ -lactam antibiotics, 977
- condensation of C with *o*-, *m* and *p*-tolualdehyde at 77K, deoxygenation to *o*-, *m* and *p*-tolylmethylenes which rearrange to benzocyclobutenes and styrene, 2959
- condensation with Zr enolate of chiral N-propionyl-trans-2,5-disubstituted pyrrolidine, diastereoface selection, 5807
- conjugated-, exclusive 1,4-reduction by sodium dithionate, 831
- conversion to t-butyl dimethylsilyl protected cyanohydrins, 4275
- cross aldolisation with  $\alpha$ -bromoketones in presence of chromium(II) chloride, 4371
- diastereoselective aldol reaction of 2,3-O-isopropylidene-D (and L)-glyceraldehydes leading to 2-deoxy-D (and L)-ribose, 5777
- (E)-cinnamyl chloride, diastereoselective reaction with aldehydes, mediated by Sn and Al, 6121
- facile synthesis of vinyl sulphides, 1795
- formylolation by means of arsonium salts, 6447
- fragile and unprotected, Wittig-Horner reaction, 53
- from alkyl and allyl sulphones, 2333
- hexadeca-11Z,13Z-dienal, synthesis from Z,2-dienes prepared via acetylene carbocyclization, 3285
- hindered-, stereospecific reaction with ylides of 3 dimethylamino-propyltriphenylphosphonium salts to form Z-olefins which convert to 1,3-dienes, 5747
- HLAD-catalysed oxidation of alcohols with acetaldehyde as coenzyme recycling substrate, 4527
- ketal-, from D-threonine, synthesis of *cis*- $\beta$ -lactams, 33
- Knoevenagel condensation, catalysis, 4453
- Knoevenagel-type condensation with 1,3-bis(phenylsulphonyl)propene to produce electron deficient 1,3-bis(phenylsulphonyl)butadienes, 67
- nitroarenes, reaction with nitromethane anion to form nitromethyl derivs, conversion to nitroaromatic aldehydes, 3599
- nucleophilic additions to 2,3-O-isopropylidene-glyceraldehyde, high-pressure approach vs use of organometallic reagent, 4145
- olefination, by  $\alpha$ -triethylsilyl t-butylimine of propionaldehyde, 2391
- pivalaldehyde and lithium enolate of pinacolone addition to a tetrameric aggregate, 3931
- prep by reduction of  $\gamma$ -bromo  $\alpha$ -acetylenic acetals and hydrolysis of  $\alpha$ -allenic acetals formed, 51
- prep of  $\alpha$ -hydroxymethyl ketones via alcohols from reaction of 1,4-dioxen-2-yl lithium with aldehydes or ketones, 3453
- propargylic-, cycloaddition-retro-reaction sequence to 14-membered ansa steroid, 1705
- prostaglandins from Corey lactone involving BF<sub>3</sub>-mediated reactions of a sulphone and aldehydes, 5597
- reaction with chiral 2-[(tributylstannyl)methyl]propanamides via 1,6-asymmetric induction to give  $\alpha$ -methylene- $\gamma$ -butyrolactones, 1337
- reaction with P-chloroylides to give vinylphosphine oxides, 439
- reaction with thioester silyl ketene acetals in presence of BF<sub>3</sub>OEt<sub>2</sub>, high diastereoselectivity in anti aldol condensation, 797
- reaction with trimethylsilyl trichloroacetate, formation of silylated trichloromethyl carbinols, 1175
- reinvestigation of reaction of glyoxal with 2-(N-alkylamino)-ethanol, 1853
- route to 3-amino-2,3,6-trideoxy-D- or L-hexoses via nitroaldol reaction between O-benzyl D- or L-lactaldehyde and alkyl 3-nitropropionates, 1261
- (S)-2-benzoyloxypropanal, reactions with Li, Mg and Zr enolates of 2-methoxypropanoate, stereostructures of products, 1001
- selective acetalisation catalysed by alumina, 4767
- selective  $\gamma$ -alkylation of triisopropylsilyl anion, synthesis of  $\alpha$ -triisopropylsilyl aldehydes, 5375
- selective methylenation with methylene dianion synthon, 5581
- selective reduction by formic acid-trialkylamine-RuCl<sub>2</sub>(PPh<sub>3</sub>), to alcohols, 3365
- selectivity of alkyl metal complexes in reactions with heptanal and diethylketone, comparison with Hal, M-Me, 4063
- selectivity of Cl, HF-Bu, in reaction with heptanal and diethylketone, comparison with alkyl-Zr and alkyl-Ti complexes, 4059
- stereoselective aldol reactions using TiCl<sub>4</sub> as stereochemical template, 4129
- stereospecific intramolecular Diels-Alder reaction to form lactones, 3307
- syntheses using methylthiomethyl *p*-tolyl sulphone, 2455
- tandem aldol condensation-radical cyclisation sequence, new highly convergent method for annulation of carbocycles, 6431
- tetrakis(2-formyl-2-propyl)-ethylene, reactions and structural analysis, 1639
- transient isopropylidene methylenemalonate, generation from either Meldrum's acid or diisopropylidene methylenemalonate and formaldehyde and trapping by dienes, 3195
- unsaturated trifluoromethyl ketones via crossed aldol condensation of 1,1,1-trifluoroacetone with aryl or  $\alpha$ , $\beta$ -unsaturated aldehydes, 2873
- unsaturated-, enantioselective cyclisation, via chiral Lewis acid catalysis, 5535
- use of thiazolium-2-carboxylates to induce benzoin condensations, 5457
- use of Yb(fod)<sub>3</sub> in Diels-Alder reactions of acrolein with dienes, stereoselectivity, 2507
- Alkaloids**
- ( $\pm$ )-homochelidonine, stereoselective synthesis, 5163
- 1-deoxynojirimycin and 1-deoxymannojirimycin, enantiomerically pure, total synthesis by aminomercuration, 1123
- 3-(3,3-dimethylallyl)-4-(3,3-dimethylallyloxy)quinolin-2-one reversible Claisen rearrangement to buchapsine and loss of its 1,1-dimethylallyl group, 4253
- 3-methyl-6,7-dehydro-aspidospermidine system, synthesis, 1963
- 3- $\omega$ -epoxido faresyl indoles, intermediate in biogenesis of sesquiterpene indole alkaloids, 3985
- 3R,5R,9R(-)-gephyrotoxin-223 AB, enantiospecific synthesis, 1515
- (-)-elenolic acid and (-)-ajmalicine, enantioselective synthesis, 865
- ( $\pm$ )-dihydrofumariline-1, stereoselective synthesis, 917
- ( $\pm$ )-isoretrosecanol total synthesis from pyrrole, 2831
- ( $\pm$ )-obscurinerividine, total synthesis, 1769
- (+)- $\beta$ -conhydrine enantiospecific synthesis from chiral 2-cyano-6-oxazolopiperidine synthon, 3803
- (+)-castoanspermine, total synthesis from D-mannose, 4617
- (+)-codonopsinine, and absolute configuration of (-)-codonopsinine, 3255
- $\alpha$ -acyl iminium ion intramolecular reaction with allyl silane, intermediate for synthesis of ( $\pm$ )-mesembrine, 4083
- $\alpha$ -mannosidase inhibitor related to swainsonine, stereospecific synthesis, 3747
- $\alpha$ -yohimbine, total synthesis, 5227
- aaptamine, synthesis from 6-methoxy-3,4-dihydroisouquinoline, 1259
- Aizoaceae and Amaryllidaceae, synthons for construction, use of C-arylation by aryllead triacetates, 5331
- amauramine, total synthesis, 847
- antitumour, enantiomeric pair of unprotected AB-ring systems of sesbanimide A, synthesis from D- and L-xylose, 4639
- aporphine, intermolecular benzene cyclo-addition to dehydronor-aporphines and oxoaporphines, total synthesis of PU-3, 4559
- aryl[2,3-a]quinolizin-2-ones, synthesis, 1277
- berbin-8-ones from 2'-halogeno-1-benzylisquinolines and metal carbonyls, 3159
- biomimetic route to clavicipitic acids, intermediate in ergot biosynthesis, 4043
- buddamin from *Buddleia davidii*, reappraisal of structure, 5251
- canthin derivs, synthesis using dialkyl oxalates, new regioselective N-alkylation, 385
- d,l-histrionicotoxin, total synthesis, 5887
- dihydrodioscoringine and new dumerorine from *Diozorea dumerorum*, isolation and stereostructural elucidation, 1615
- ergot, total synthesis via dehydrogenation of indolines with phenylselenic anhydride, 4187
- Fe++ containing enzyme forming methylenedioxy group in berberine acts on columbamine

- and not (S)-tetrahydrocolumbamine, 201
- formamidines as  $\alpha$ -amino carbanion precursors, synthesis of 2-aryl-piperidines, -pyrrolidines and nicotine analogs, 5863
- fused pyrrolines via intramolecular cycloadditions of azides, application to pyrrolizidine alkaloids, 3527
- gluco indole, ophiorhines A and B, structure and isolation from *Ophiorrhiza japonica*, 5299
- heliotridine and related compds, synthesis, 2857
- histrionicotoxin ring system, stereocontrolled synthesis, 3883
- homocaridone, containing tropone ring system, isolation and annulation approach, 3523
- racemic anhydrocannabisativine, via tetrahydropyridine moiety, 2237
- racemic cannabisativine, synthesis, 2241
- regio- and stereo-selective alkylation at 3'-terminal end of ribonucleotides by N-2-methyl-9-hydroxyellipticinium acetate, 2891
- silica supported alkaloid for HPLC resolution of racemic arylalkyl-carbinols and binaphthol derivs, synthesis, 3361
- stable 3-acylindolenine deriv via intramolecular electrophilic acylation, 5593
- benzene, role of Lewis acid catalysis, 4699
- conversion of 3-hydroxyvinyl selenides into 1,3-bis(seleno)-propenes, 1885
- dialkylketones, synthesis from alkenes via hydroboration-carbenoidation, 6361
- electron deficient alkenes, cycloaddition of methylene-cyclopropane, regioselective formation of 2,3- or 3,4-disubstituted methylenecyclopentanes, 1045
- electron-rich, acid sensitive olefins, stereospecific synthesis via  $\alpha, \beta$ -epoxysilanes, 139
- indole, asymmetric synthesis, 3291
- indolizidines, synthesis by intramolecular ene cyclisations, prep of (E)-alkylidene analogs of pumiliotoxin, 4167
- isoindolobenzazocine, magallanesine, isolation from *Berberis darwinii*, 993
- isotindolisoquinoline alkaloids, (+)-nuevamine structure revision, 2925
- janussines A and B from *Strychnos johnsonii*, cross point in biogenesis of quaidimeric alkaloids, 2441
- mode of inhibition of glycosidase activity by polyhydroxylated piperidines, pyrrolidines and indolizidines, mechanism, 5073
- N-2-methyl-9-hydroxyellipticinium acetate peroxidase-catalysed reaction with aliphatic amino acids, reinvestigation, 4933
- N-methyltetrahydroellipticine, intramolecular cycloaddition of carbazoles to acetylenic vinyl-ketenimines, 1647
- necatorone, synthesis, 5975
- new 2-acylindole type from *Vinca difformia*, structure, 1513
- new class of glycosides of polyhydroxylated piperidine alkaloids from seed of *Xanthocercis zambesiaca*, 1465
- new pyrrolizidine N-oxide and revised structure of scleratine, 5721
- new pyrrolizidine, from *Senecio latifolius*, 929
- new route to 1-oxygenated carbazoles, synthesis of murrayafoline-A, 5841
- new route to homoporphines, addition of dichlorocarbene to aporphinoids, 1561
- new, ekeberginine from *Ekebergia senegalensis*, structure by use of 2D long-range  $6c/6h$  correlation with 1D proton-coupled  $^{13}C$  NMR, 4249
- nigellidine, structure and isolation from *Nigella sativa*, 2759
- phenanthrene, from *Crinum bulbispernum* identical with pratorine and pratorimine, revised structures, 4301
- piperidine, synthesis of (+)-pinidine, 729
- protoberberine and spirobenzyl isoquinoline alkaloids, synthesis, diradical cyclisation processes probing photoinduced electron transfer, 5867
- pyrrolizidine, (+)-isoretonecanol synthetic study, 3311
- pyrrolizidine, total synthesis of (+)-supinidine via intramolecular [4+1]pyrroline cyclisation of verticillanes, 3397
- taxane, putative biogenetic precursor verticillene, total synthesis, 3393
- thebaine, via attachment of Fe(CO)<sub>5</sub>, access to northebaine, 14 $\alpha$ -substit thebainone deriv and codeine analog lacking oxide ring and dihydrophenanthrene nucleus replaced by dihydrofluorene, 501
- venoterpene and cantleyne, absolute configuration, 837
- vepridimerines A-D, biogenetic-type total synthesis, 4529b0185
- yohimbine congeners, use of imine-diene cyclocondensation in synthesis, 5983
- Alkanes**
- 2,5-dihydrochloro-2,5-dimethylhexane, thermal decomposition, 4027
- hybridisation-dependence of D-induced  $^{13}C$  NMR isotope shifts over one bond, data for ethane, ethylene and acetylene, 1491
- n-hexane conversion into 1-hexene, 1999
- regioselectivity changes in hexane hydroxylation with iodo-benzene catalysed by tetraaryl-porphyrinatoiron complexes, 4247
- Alkenes**
- 1,1-difuryl olefins and unsymmetrical difurylmethane derivs, synthesis, 6399
- 1-alkenes, reaction with ethyl  $\alpha$ -chloro- $\alpha$ -phenylthioacetate, to afford butyrolactones via ene reaction products, 2463
- 2,2-dimethyl-3-buten-1-yl, radical rearrangements to 2-methyl-4-penten-2-yl, kinetics at 37-74 $^\circ$ , 1179
- (+)-trans-bergamotene synthesis from geranylacetone using intramolecular ketene-olefin cycloaddition, 3535
- activated carboxylic acids, intramolecular lactone annulation onto olefins by Mn(III) yields bicyclo[3.3.0] and [4.3.0]lactones, 3761
- active olefins, alkyl additions by tributylgermanium hydride reduction of alkyl halides, 6289
- alkenes, electro rich, and N-methylformanilide, synthesis of quinolines, 1901
- alkenes, electron poor, trapping of tribromomethyl anion, 6353
- alkenes, ionic reactions with N-halo electrophiles promoted by BF<sub>3</sub> etherate, 1811
- and  $\alpha, \beta$ -unsaturated ketones, oxidation using bleomycin-Zn(II) and bleomycin-Fe(III)-iodosyl-
- exo-tetrasubstituted olefins, stereospecific construction, synthesis of cyano-carbacyclins, 3491
- formylolation of aldehydes by means of arsonium salts, 6447
- fragmentation of {2-arylethyl} phosphorchloridates to 1-chloro-2-arylethanes and/or arylethylenes, 945
- hybridisation-dependence of D-induced  $^{13}C$  NMR isotope shifts over one bond, data for ethane, ethylene and acetylene, 1491
- hydroxyalkenes, oxidative cyclisation, prep of  $\gamma$ - and  $\delta$ -lactones, 127
- new reagents for [2+2] and [2+4] cycloadditions to olefins, 1,3,2,4,5-dioxadithiazin-2,2,4,4-tetraoxides, 5689
- olefin addition, dipole effect of diastereoselectivity, 6313
- olefin, model asymmetric, conformational energy of 3-buten-2-ol, 3647
- olefination by  $\alpha$ -triethylsilyl t-butylimine of propionaldehyde, 2391
- olefinic double bonds, solvent controlled additions of organo-titanium reagents, 4423
- olefinic enol ethers, Pd-mediated cycloalkenylation, interception of tetrahedral intermediates, 5411
- olefins, conversion to  $\gamma$ -lactones by intermolecular carbonyl-lactonisation using cyanoacetic acid or malonic acid derivs in presence of Mn(III), 4291
- olefins, cyclopropanation with 2-lithio-2-phenylsulphonyl propane, 6115
- olefins, hydroboration with acetoxyboronylhydride in presence of reducible functional groups, 1757
- olefins, photoaddition of 1,4-diphenylbutadiyne to cross-linked products, 765
- olefins, selenothioacetylation, addition of S-benzoyl phenyl-selenosulphide, 3263
- olefins, terminal and internal, conversion to ketones using polyethylene glycols, 3363
- olefins, tetrasubstituted, hydrosilylation, new silicon based protective group reagent, 5511
- olefins, via conversion of alkylmercuric halides, 559
- Pummerer rearrangement product, reaction with 1-alkenes, synthesis of 1,3-dienes and sex pheromone of red bollworm moth, 5791
- tetraarylethylenes, by coupling of activated thiotetraarylbenzo-

phenone, 5135  
 tetrakis(2-formyl-2-propyl)-  
 ethylene, 1639  
 vicinal dichloroethenes, Pd-  
 catalysed bisethynylation,  
 stereospecific synthesis of *cis*-  
 and *trans*-1,6-bis(trimethylsilyl)-  
 hex-3-ene-1,5-diyne, 709  
 Z-olefins via stereospecific  
 reaction of ylides of 3-  
 dimethylaminopropyltriphenyl-  
 phosphonium salts with hindered  
 aldehydes, 5747  
 Z-olefins with  $\beta$ -nitroolefinic  
 moiety and ethylthio group,  
 regio- and stereoselective  
 formation from 1,3-dienes, 779  
 [Z]-1,2-dihalo-1-alkenes, stereo-  
 and regio-selective synthesis  
 from 1-alkynes, 1065

#### Alkoxides

allyl(chloromethyl)dimethylsilane  
 and (chloromethyl)dimethylvinyl-  
 silane, alkoxide attack on Si to  
 give 1-(3-butenyl)methoxy-  
 dimethylsilane and allylmethoxy-  
 dimethylsilane, 1119  
 C-H bond-, regioselective intra-  
 molecular insertion by (phenyl-  
 thio)carbene, 4483  
 Li enolate opening of *cis* and  
*trans*-but-2-ene oxides in  
 presence of BF<sub>3</sub>·OEt<sub>2</sub> by S<sub>N</sub>2  
 mechanism, 4815  
 methoxides, reactions with (halo-  
 methyl)silanes at Si,  
 facilitation by aprotic solvents  
 and cation separation, 1115  
 Si-guided intramolecular  
 9,10:1',2' anthracene photo-  
 dimerisation in bis(9-anthryl)-  
 dimethylsilane, 1505

#### Akylation

$\alpha$ -methylglucoside, protection by  
 DHP and akylation of resulting  
 tetrahydropyranyl ethers, 5769  
 and epimerisation of lithium  
 norcaranylidenoids, 5371  
 and silylation of 2H-azirines,  
 2637  
 and sulphenylation of chiral O-  
 silylated imide enolates, 5339  
 aromatic compds with Pummerer  
 rearrangement intermediates,  
 prep of methyl-aryl compds, 2787  
 aromatic compds, silica-alumina  
 supported transition metal oxide  
 catalyst, 3281  
 arylalkynes by alkyl iodides, 1843  
 asymmetric synthesis of  $\alpha$ -hydroxy  
 acids by akylation of chiral N-  
 (benzyloxyacetyl)-*trans* 2,5-bis-  
 (methoxymethoxymethyl)-  
 pyrrolidine, 1343  
 asymmetric tandem-, of  $\alpha$ -  
 alkylidene- $\gamma$ -butyrolactone  
 derivs, 3027  
 asymmetric-, of chiral dipole  
 stabilised anions, mechanistic  
 model, 3295  
 $\beta$ -diketones with 1-bromoadamantane  
 to  $\alpha$ -(1-adamantyl)- $\beta$ -diketones  
 via Co(III), Co(III) and Zn(II)  
 complexes, 3735  
 bis(seleno)- and bis(thio)-, of  
 ketones and aldehydes, 6513  
 bisethynylation of vicinal  
 dichloroethenes, Pd-catalysed,  
 stereospecific synthesis of *cis*-  
 and *trans*-1,6-bis(trimethylsilyl)-  
 hex-3-ene-1,5-diyne, 709  
 competitive reactions of RMgX with  
 nitrobenzenes, ketone, ester,  
 cyano- and iodo-derivs and some  
 functionalised nitrobenzenes,  
 115

diastereoselective tandem-, of  
 acyclic  $\alpha,\beta$ -unsaturated  
 esters based on use of dithio-  
 acetalunit, 3031  
 enantiomerically pure aminocyclo-  
 hexanes via Birch reduction-  
 alkylation of chiral anthranilic  
 acid deriv, 1619  
 enolisable ketones, carbonyl  
 methylation, 5579  
 exclusive  $\gamma$ -, of diene allylic t-  
 amines with Grignard reagents,  
 1009  
 $\gamma$ -, of  $\alpha,\beta$ -unsaturated ketones,  
 $\alpha^1$ -phenylsulphonyl group as  
 regioselective control, 169  
 intramolecular, stereoselective-,  
 of 3-, 5-, 6- and 7-membered  
 carbocyclic compds with extra-  
 cyclic chiral center 1723  
 lithium enolate of benzamido-  
 acetone, regioselective alkyl-  
 ation at C-1 and stereospecific  
 addition to cyclohexenone with-  
 out protection of free NH, 3433  
 methoxy(phenylthio)trialkylsilyl-  
 methane in new synthesis of  $\alpha$ -  
 ketosilanes, 2675  
 N-, of weak N-H-acids by PT  
 catalysis, mechanism, 297  
 new regioselective N-, synthesis  
 of canthin alkaloid derivs using  
 dialkyl oxalates, 385  
 nitrones by N-, of aldoxime and  
 ketoxime-O-trimethylsilyl  
 ethers, 4331  
 polyalkoxy-2-aza-propenylum  
 salts, synthesis via oxygen-  
 alkylation of alkoxy substituted  
 N-methylene amides,  
 stereochemistry, 3547  
 quadruple bio-, of sterol side  
 chain, 4031  
 quinone-imonium cation, synthesis  
 using DMSO as methylating agent,  
 3145  
 reaction, 2-benzenesulphonyltetra-  
 hydropyran anion with  
 electrophiles, 535  
 regio- and stereo-selective-, at  
 3'-terminal end of ribo-  
 nucleotides by N-2-methyl-9-  
 hydroxyellipticinium acetate,  
 2891  
 regioselective-, of lithium  
 enolates derived from 2-  
 heptanone, 1599  
 regioselective-, of piperazine-  
 dione derivs, 2955  
 selective-,  $\gamma$ -alkylation of tri-  
 isopropylsilylallyl anion,  
 synthesis of  $\alpha$ -trisopropylsilyl  
 aldehydes, 5375  
 selective methylation of  
 aldehydes with methylene dianion  
 synthon, 5581  
 spiro-, of indene, prep of spiro  
 hydrindandione ring system of  
 Fredericamycin A, 4725  
 stereoselective conjugate  
 addition-alkylation of iron  
 acyls, 3075  
 stereoselective ortho-, of  
 phenoxyvinylphosphorane to  
 spirophosphorane, 5443  
 stereoselective-, of benzylic  
 acetates and free alcohols of  
 ( $\Pi^*$ -arene)tricarbonyl-Cr  
 complexes to *exo*-alkyl Cr-  
 complexes, 767  
 stereospecific-, at C-6 of  
 pyranose sugar, conversion of  
 glycosyl fluorides into C-  
 glycosides, 1823  
 trimethylsilyloxy mercaptides to  
 vinyl sulphides, 1795  
 use of chiral butyrolactone as  
 template to control stereo-  
 chemistry of C-methylation on

corresponding enolate, two-C  
 homologation and second C-  
 methylation, 5623

#### Alkynes

1-alkynes, stereo- and regio-  
 selective synthesis of [Z]-1,2-  
 dihalo-1-alkenes, 1065  
 1-ethoxy-3-trimethylsilyl-1-  
 propyne, regio- and stereo-  
 selective reaction with  
 saturated and ethylenic carbonyl  
 derivs giving new  $\alpha$ -functional  
 allylic, conjugated dienic or  
 tienic silanes, 1861  
 1,4-diarylbutadiynes and mixtures  
 of 1,4-dialkyl-1,3-butadiynes  
 and 3-alkyl-4-(1-alkynyl)-hexa-  
 1,5-diyne-3-enes, Pd promoted  
 prep, 523  
 1,4-diphenylbutadiyne and olefins  
 photoaddition to cross-linked  
 products, 765  
 7,8-acetylenic analogs of  
 hexahydro leukotriene-E<sub>4</sub> with  
 agonist and antagonist  
 activities, synthesis,  
 stereoselective route to E- and  
 Z-enynes, 6423  
 acetylenes, Cu-catalysed silyl-  
 zination, 4629  
 alkoxyalkyne, reaction with  
 pyrrole- and phenyl-carbene Cr-  
 complexes, dimer formation via  
 o-quinonemethide and subsequent  
 dimerisation, 1159  
 alkynes, iodination, phenyl shifts  
 to vinyl cations formed, 1967  
 analogs of leukotriene via  
 acetylene carbocupration, 2731  
 arylalkynes, alkylation with alkyl  
 iodides, 1843  
 cycloaddition with pyrrole-carbene  
 chromium complex to give  
 acetylated hydroindoloquinone  
 deriv, 2969  
 electron poor acetylenes,  
 stereoselective addition-  
 cyclisation of hydroxythiols,  
 prep of chiral 1,3-oxathianes,  
 4539  
 enyne triflates, reaction with  
 nucleophiles, 2301  
 F-alkylacetylenes, generated *in*  
*situ*, treatment with silyl enol  
 ethers, new route to E-alkyl  
 substituted propargyl alcohols or  
 4-(1H,1F-alkylidene)1,3-  
 dioxolane derivs, 79  
 formation via coupling alkyl and  
 allyl halides with propargyl  
 dianion equivalent with high  
 positional selectivity, 271  
 hybridisation-dependence of D-  
 induced <sup>13</sup>C NMR isotope shifts  
 over one bond, data for ethane,  
 ethylene and acetylene, 1491  
 keto alkyne cyclisations to  
 heterocyclic analogs of  
 prostacyclins, 1171  
 phenols from metal-carbynes and  
 diynes, 2159  
 phenyl acetylene oligomerisation  
 over titanium oxide on silica  
 gel-alumina, 6245  
 photocycloaddition of N-methyl-  
 thiophthalimide, 2249  
 terminal acetylenes, conversion to  
 Mannich bases via gem-amino-  
 ethers, prep of cyclic amino-  
 acetylenes from  $\omega$ -acetylenic sec  
 amines, 3203  
 terminal acetylenes, Pd-complex  
 catalysed reactions with di-  
 phenylketene giving disub-  
 stituted acetylenes, 3697  
 trimethylsilylthyne, double  
 coupling with *cis*- and *trans*-1,2-  
 dichloroethene, 709  
 vinyl acetylene, stepwise addition  
 of a C-electrophile and a C-  
 nucleophile to double bond, 1269

**Allenes**

- 1-chloro-1-aryloyl-3,3-diarylallene, Cu-assisted cross coupling to 3,7-dioxo-2,6-diaryl-4,8-bis(diarylmethylene)-bicyclo[3.3.0]octa-1,5-diene, and 1,1,4,4-tetraaryl-3,6-diaryloxyhexa-1,2-diene-5-yne, 631
- allylic functional groups, reductive removal by nickel boride, 2581
- as acceptor-donor reagents in 3+2 annulations, synthesis of carbapenam ring system, 4315
- bromo-, conversion to alkylallene by t-Bu(CN)CuLi, stereochemistry, 65
- chiral alkoxy-, via reaction of chiral acetylenic acetals with Grignard reagents in presence of Cu salt; diastereoselective  $\beta$ -elimination, 4197
- controlled lithiation, formation of efficient propargylic anion equivalent in coupling with alkyl and allyl halides, 271
- Ni-promoted route to substituted allenes by reaction of 1-bromo-1,1-dialkylallene with alkyl metals, 5101
- photooxygenation of tetramethylallene competing with (2+2)cycloaddition and ene reactions with singlet oxygen, 5029
- tetraphenyl-, electron transfer photooxygenation, formation of 1,3-dihydroperoxy-1,1,3,3-tetraphenyl-2-propanone and decomposition under chemiluminescence, 173
- tricyclic thromboxane A<sub>2</sub> analogs, prep using oxyallyl method, 4411
- aldehydes, mediated by Sn and Al, 6121
- alkylation of aromatic compds, silica-alumina supported transition metal oxide catalyst, 3281
- BF<sub>3</sub>-etherate on alumina catalysis in improved synthesis of cannabidiol, 1083
- chiral bisazetidines via hydroalane reduction of bis- $\beta$ -lactams, 2035
- organo-compds, ketone synthesis via Pd-catalysed carbonylation, 4819
- organo-, promoted pinacol-type rearrangement, conformational effects, 4781
- selective acetalisation of aldehydes catalysed by alumina, 4767
- tetraalkylaluminates enantioselective addition to phenylglyoxalate, prep of  $\alpha$ -substituted mandelic acid (-)-menthyl esters, 4181
- trialkyl-, reagents, allylation of allylic cyclohexenyl esters, regio- and stereochemical study, 777
- trialkyl-, stereoselective alkylation of benzylic acetates and free alcohols of ( $\eta^6$ -arene)tricarboxyl-Cr complexes, 767
- with R<sup>2</sup>CuLi or RMgX/CuI, 657
- natural insecticidal isobutylamides, synthons for general routes, 2477
- natural polyene isobutylamides, stereochemistry of Wittig reactions, 2481
- oxaziridine-amide isomerisation, use in creation of peptide bonds, 6065
- polyalkoxy-2-aza-propenylum salts, synthesis via oxygen-alkylation of alkoxy substituted N-methylene amides, stereochemistry, 3547
- precursor of thienamycin and related carbapenems, cyclisation of N-propargyl epoxyamide to acetylenic 2-azetidinone, 4521
- protected allylamines via Pd-catalysed amide addition to allylic substrates, 1749
- resolution of  $\beta$ -hydroxycarboxylic acid derivs on chiral stationary phase derived from (R,R)-tetramide, 4217
- sec-, carboxamides, R<sup>2</sup>NHCOR<sup>1</sup>, new synthesis using 2-methyl-2-oxazoline as building block and N-methylenes, 3537

**Allomonones**

- ( $\pm$ )- $\delta^9$ (<sup>12</sup>)-cannabinene, total synthesis, 4847
- aglaïne-1 polypropionate metabolite, C-C connectivity via long range <sup>1</sup>H-<sup>13</sup>C couplings, 3389
- defence against rice blast, stereoselective synthesis of cortolic and dimorphecolic acids, 465
- new sesquiterpenes in proposed Russulaceae chemical defence system, 3163

**Allylation**

- aldehyde, in presence of ketones by Sn- or Zn-mediation, 1449
- aldehydes, Bi-mediated allylation to homoallylic alcohols, 4211
- carbonucleophiles and protection-deprotection of amines, 2449
- cyclopropene and cyclopropane derivs via selective cycloallylation of alkenyl-lithiums, 5671
- direct-, of aryl bromides with allyl acetate, 6457
- Pd-catalysed-, of lithium 3-alkenyl-1-cyclopentolate-triethylborane and application to selective synthesis of methyl (Z)-jasmonate, 2177
- regioselective photo-, of dicyanopolycyclic aromatic compds with allyltrimeethylsilane, 5819
- stereospecific-, of "ribo" and "galacto" aldulosose derivs, 823
- with trialkylaluminum reagents of allylic cyclohexenyl esters, regio- and stereo-chemical study, 519

**Aluminium compounds**

- (E)-cinnamyl chloride, diastereoselective reaction with

**Amides**

- 2-alkyl-3-oxoamides, potassium triethylborohydride reduction to 3-hydroxyamides with anti-diastereoselectivity, 4643
- 3,4-epoxy-2-methylensalkanoic acid derivs synthesis using dianion of N-phenyl-2-(phenylsulphonylmethyl)propenamide and aldehydes, 4751
- 3-hydroxy-4-enylamides stereoselective intramolecular aminocarbonylation catalysed by Pd, 4479
- (+)-pederin, total synthesis, stereocontrolled synthesis of (+)-benzoylpredamide, 6461
- alkylamides via dialkylcupro-lithium reagents and N-methyl-2-(2,4,6-trimethyl)cyclo-11,3-oxo-iminium salts, 1013
- and esters from aziridine 2-carboxylic acid salts, 4439
- anilides, synthesis of 2-phenylindoles via thallation, 5963
- carboxylic amides,  $\alpha,\beta$ -unsaturated by homoligation of ketones via Pd-catalysed enol triflates, 1109
- cathodic degradation of di-imines in presence of oxygen, synthesis of amides, 3005
- chiral 2-[(tributylstannyl)methyl]propenamides, reaction with aldehydes via 1,6-*asymmetric* induction to give  $\alpha$ -methylene- $\gamma$ -butyrolactones, 1337
- dianion of N-phenyl-2-(phenylsulphonylmethyl)propenamide, reagent for synthesis of (E)- $\alpha,\beta$ -unsaturated amides and 5,6-dihydro-2H-pyrans, 4747
- methacryamide, addition to ketones and  $\beta$ -cyano or  $\beta$ -keto esters in presence of CsF/Si(OMe)<sub>2</sub>, 1311
- N,N-diethylthiophene-2-carboxamide, 3,5-dilithiated, regioselective synthesis of 2,3- and 2,3,5-substituted thiophenes, 1149
- N-methylformanilide and electron-rich alkenes, synthesis of quinolines, 1901
- N-tosylated  $\alpha,\beta$ -unsaturated amides, conjugated addition
- stereoselective liver-esterase hydrolysis of rigid bicyclic meso-diester, prep of optically pure 4,7-epoxytetra- and hexahydrophthalides, 4087
- synthesis, using new coupling reagent, benzotriazol-1-yl diethyl phosphate, 1341
- tertiary benzamides, phtalamides and O,0'-aryl dicarbamates, dilithiated synthons, 1145
- (trimethylstannyl)copper reagents conjugate addition to  $\alpha,\beta$ -acetylenic N,N-dimethylamides, trapping of intermediates with electrophiles, 6265
- unsaturated-, synthesis of iodolactam, 1803
- chiral formamidines derived from  $\beta$ -carbols via, route to indole alkaloids via metallation and alkylation, 3291
- chiral formamidines, stereoselective deprotonation, deuteration and alkylation, 3295
- convulsant pyrrole-3-carboxamide from *Brunfelsia grandiflora*, 2623
- dipole measurements of 7 polar amidine containing compds of biological interest, 1897
- formamidines as  $\alpha$ -amino carbanion precursors, synthesis of 2-aryl-piperidines, pyrrolidines and nicotine analogs, 5863
- azides using tetracarbonylhydride-ferrate a selective reducing agent, 3277
- sodium azide, reaction with 9-bromo-6,7,8,9-tetrahydro-4H-pyridol[1.2a]pyrimidin-4-ones to give 9-amino-6,7-dihydro analogs, 3521
- 1,4-epimine compds, synthesis, reaction of IBDA-iodine with N-nitroamines, N-cianamines and N-phosphoramidates, 2493
- 2-aminopyridine, reaction with benzil, correction, 247
- $\alpha,\alpha$ -dimethylaryalkylamines, new synthesis from 1-diphenylphosphinyl-2,2-dimethyl-



- aziridine, 1245  
activation of P-chiral dialkyl phosphates with triphenylphosphine-CCl<sub>4</sub>, reaction of intermediate phosphonium salt with aniline or pyridine with inversion of configuration at chiral P-atom, 4379  
aminobiphenyls, via reaction of arylhydrazines benzene in presence of TFSA, 5811  
aminocyclohexanes, enantiomerically pure, via Birch reduction-alkylation of chiral anthranilic acid deriv, 1619  
aromatic-, alkylation in presence of inorganic bases by PT catalyst, 297  
aromatic-, and heteroaromatics, radical cations generated via action of nitroxides, 4201  
benzenediazonium chlorides, 4-substituted, reaction with methylamine-formaldehyde mixture to give 3,7-bis(4-X-aryl)-1,5,3,7-dioxadiazocines, 1043  
CD of  $\beta$ -cyclodextrin with amino moiety, binding ability for ferrocenecarboxylic acid in DMSO, 899  
cycloaddition insecticides, amine-induced photodehalogenation, 5211  
diene allylic t-amines, exclusive  $\gamma$ -alkylation with Grignard reagents, 1009  
formamidines as  $\alpha$ -amino carbanion precursors, synthesis of 2-aryl-piperidines, -pyrrolidines and nicotine analogs, 5863  
histamine liberating thapsigargin and trilobolide, absolute configurations, 107  
intramolecular reactions of acyclic N-acyliminium ions with propargyl silanes leading to derivs of 3-vinylidene-pyrrolidine, 3-vinylidene-piperidine or 1-amino-2-vinylidene-cyclopentane, 3151  
macrocycles with sulphide and amine binding sites as chiral ligands for Ni-catalysed cross coupling of Grignard reagent with vinyl bromide, 3499  
methylamine, photoreactions with 4-nitrocatechol ethers occurs at meta position in respect of nitro group, 2489  
methylamine, reaction with cycloheximide carrying 4-nitrocatechol ether moiety, model for photoaffinity labelling, 2489  
N,N-disubstituted hydroxylamines Ti(III) induced transformations to imines and sec amines, 4633  
N-acetoxy-N-acetylaminobiphenyl, solvolysis, no nitrenium ion involved in production of hydroxamic acid, 147  
N-methanesulphonylalkylamines, regioselective cyclisation to N-methanesulphonylpyrrolidines, 1877  
neutral aminyl radicals, prep and H-abstraction to epimine compds, 2493  
open-chain aliphatic aminium radicals, intramolecular H-abstraction with 8-membered cyclic transition state, 3407  
primary and sec. via BF<sub>3</sub>-etherate ring opening of substituted aziridines by organocopper reagents, 1153  
protected allylamines via Pd-catalysed amide addition to allylic substrates, 1749  
reaction with di-2-pyridyl thionocarbonate to form isothio-  
cyanates, 1661  
sec, dehydrogenation with phenyl-selenic anhydride or acid, synthesis of  $\alpha$ -cyanamines, 1229  
sec-, reductive carboxylation, synthesis of tertiary N-methylated amines, 5367  
selective reduction of C=C in conjugated enones by benzylamine, variant of Sommelet reaction, 5217  
stereochemistry of products of reaction with 1,3-dimethylthymine epoxide, 3587  
tertiary aromatic-, electron transfer of organic ligands from iron carbonyl complexes, 737  
tertiary-, axially disymmetric, reductive cleavage by LAH, synthesis of new 1,1'-binaphthyl substituted amines, 421  
tryptophan, oxidative transformation to 3-(2-amino-phenyl)-2-pyrrolidine or kynurenine, 5871  
vanillylamine, direct lithiation and metal-halogen exchange of bromisovanillylamines, 2151  
vanillylamine, direct lithiation and metal-halogen exchange of bromisovanillylamines, 2151  
via rapid reduction of aliphatic nitro compds, 6413
- Amino acids**  
2-alkylated-3-deuteriated-1-amino-cyclopropane-1-carboxylic acids, regioselective synthesis, 481  
2-amino-3-hydroxy-4-pentenol acid derivs, lactonisation, synthesis of natural 3,4-dihydroxy-prolines, 5307  
4-amino-2(5H)-furanones, new synthetic method, 2459  
 $\alpha,\beta$ -dehydro- $\beta$ -amino acid derivs via tin-promoted addition of malonates to nitriles, 2603  
 $\alpha$ -amino silyl ketene acetals, aldo condensation, diastereoselective synthesis of  $\alpha$ -amino- $\beta$ -hydroxy acids, 3517  
 $\alpha$ -dehydroxyglutamic acid derivs, synthesis and reactions, 85  
amino acid derivs, prep of pyrrolidines, 2775  
alanine derivs, aminomalonates reaction with difluoro- and chlorofluoro-carbene, conversion of adducts to  $\beta$ -fluorinated alanine derivs, 2445  
aliphatic-, peroxidase-catalysed reaction with N-2-methyl-9-hydroxyellipticinium acetate, reinvestigation, 4933  
analog structure of host-specific toxin from Helminthosporium carbonum, 969  
bicyclic dipeptide with shape of 8-turn central part, synthesis from L-glutamic acid and L-cysteine, 647  
bioactive (+)-3-methylenecyclopropylglycine and (+)-3-(carboxycyclopropyl)glycine, synthesis, 83  
carzinophilin degradation product, enantioselective synthesis of (2S,3S) 4-amino-2,3-dihydroxy-3-methylbutyric acid, 3299  
chiral synthesis of statine, 2973  
condensation with meso-tetra(2-aminophenyl) and meso- $\alpha,\gamma$ -bis-(2,6-diaminophenyl)porphyrins, 1019  
cycloaddition of 2-chloroacrylonitrile and N-(2-pyridine-carbonyl)proline and thio analog afford bridged compds, 5447  
depsipeptides with D- $\alpha$ -hydroxy carboxylic acids, synthesis via  
L- $\alpha$ -halo-carboxylic esters and cesium salts of N-protected amino acids, 5257  
erythro- and threo-3-fluorophenyl-alanine from protected glycine synthon, 3067  
glycine cation equiv, electrophilic, prep and reaction with heteroatom nucleophiles, 695  
glycine, protected, and 3-butyryl thiazolidine-2-thiones stereoselective aldol condensation with chiral aldehydes to give  $\beta$ -hydroxyesters, intermediates for  $\beta$ -lactam antibiotics, 977  
helminthosporic acid analog, prep using oxallyls, 6133  
inhibitor of  $\gamma$ -aminobutyric acid transaminase, (E)- $\beta$ -fluoromethylglutamic acid prep, 4091  
isoxazolin-5-one-2-yl ring system, synthesis via 5-endo-dig cyclisation, enantio-synthesis of L- $\beta$ -(isoxazolin-5-one-2-yl)-alanine, 5931  
L-proline, transformation to N-amino-2-pyrrolidones via mesoionic system, 5739  
N,O-bisacryloyl-L-phenylalaninol, synthesis, application in prep of L-phenylalanine ethyl ester selective acrylic polymer, 3623  
new bulgecinine, amino acid in bulgecins, synthesis, 4759  
new route to chiral  $\beta$ -hydroxy- $\alpha$ -amino acids, cleavage of oxirane with hydrazoic acid, 5309  
optically active aminoketones from (S)-serine, 4055  
protected racemic  $\beta,\gamma$ -unsaturated  $\alpha$  amino acids via  $\gamma$ -phenyl-seleno- $\alpha,\beta$ -unsaturated esters, 1959  
protected vinylic amino acids via intermolecular Lewis acid catalysed ene reactions, 3115  
rac 2-alkyl-1-aminocyclopropane-1-carboxylic acids, resolution, 485  
S-(5'-deoxy-5'-adenosyl)-( $\pm$ )-2-methylhomocysteine from ( $\pm$ )-2-methylmethionine, 1135  
S-nitroso and S-phenylsulphonyl derivs of L-cysteine and glutathione, 2013  
specific inhibition of  $\beta$ -D-glucuronidase by 3R,4R-dihydroxy-L-proline, 5379  
stacking interaction between tryptophan and uracil in synthetic model, 4467  
synthesis, reaction of glycine cation equiv with carbon nucleophiles, 699  
thiosulphonate derivs, synthesis, 3879  
tryptophan, oxidative transformation to 3-(2-amino-phenyl)-2-pyrrolidine or kynurenine, 5871
- Amino alcohols**  
1,2-amino-, and carboxylic acids, stereochemistry of Ph,P-CCl<sub>3</sub> mediated cyclisation to oxazolines with inversion of carbinal center, 4687  
 $\beta$ -amino-, from epoxides and halo-magnesium alkylamides, 3107  
 $\beta$ -amino-, enantiospecific prep from N-cyanomethyl-4-phenyl-1,3-oxazolidine synthon, 6345  
regiospecific opening of oxetanes with trimethylsilyl cyanide-zinc iodide, approach to  $\gamma$ -amino alcohols, 4971  
reinvestigation of reaction of glyoxal with 2-(N-alkylamino)-

- ethanol, 1853  
Ru-catalysed oxidation of cyanohydrins to acyl cyanides, reagents for selective N-benzoylation of aminoalcohols, 925
- Aminocarbonylation**  
3-hydroxypent-4-enylamides catalysed by Pd, 4479
- Amino esters**  
α-amino esters, via reaction Grignard reagents with methyl 2-acetamidoacrylate in presence of CuI, 4387  
active-, of amino acid derivs, reagents for synthesis, 1721  
amino norbornenecarboxylates, synthesis via methyl acrylate and amino butadienecarboxylates, 3445  
aromatic amino acid ethyl-, via α-chymotrypsin in solns of high EtOH concentration, 6081  
methyl-, of N(3,5-dinitrobenzoyl)amino acids, chiral solvating agents for NMR determination of enantiomeric purity, 2989  
N,O-bisacryloyl-L-phenylalaninol, synthesis, application in prep of L-phenylalanine ethyl ester selective acrylic polymer, 3623  
t-butyl 4-alkoxy-3-amino-2-alkenoates, lactonisation, 2459
- Amino ethers**  
gem-amino-, conversion of terminal acetylenes to Mannich bases, prep of cyclic aminoacetylenes
- Amino ketones**  
azabicyclic enamines by pyrolysis of aminomethylene Meldrum's acid involving -1,4 H shift from aminomethyleneketene intermediate, 833  
L-proline, transformation to N-amino-2-pyrrolidones via mesoionic system, 5739  
optically active aminoketones from (S)-serine, 4055
- Aminolysis**  
chiral α-aminonitriles from new N-cyanomethyl-1,3-oxazolidine synthon, 3567
- Amino sugars**  
branched, via hetero Diels-Alder cycloaddition of enamine-carbaldehydes with enol ethers, 5273  
chiral nitronate dianion (+)-D-glyceraldehyde, generation and use in synthesis of 3-amino-2,3-dideoxy sugars, 6269  
daunosamine, new route based on stereospecific electrophilic addition to 2-acetoxy-7-oxa-bicyclo[2.2.1]hept-5-ene-2-carbonitrile, 5127  
deoxygenated aminoglycosides, prep and new pathway to L-daunosamine, 1863  
glycosidase inhibitors, enantiomerically pure 1-deoxynojirimycin and 1-deoxymannojirimycin, total synthesis by aminomercuration, 1123  
N-acetyl-D,L-acosamine and N-benzoyl-D,L-ristosamine, diastereoselective synthesis, 4133  
reversal of diastereofacial selectivity in intramolecular addition of δ-carbamoyloxy-α,β-unsaturated esters, synthesis of N-benzoyl-D,L-daunosamine, 4137  
route to 3-amino-2,3,6-trideoxy-D-or L-hexoses via nitroaldol reaction between O-benzyl D-or L-lactaldehyde and alkyl 3-nitropropionates, 1261  
stereocontrol in isoxazoline reductions, synthesis of amino-deoxy-DL-xylo- and arabinopentose derivs from furoisoxazolines, 2997
- Ammonium salts**  
allylic ammonium salt intermediates in substitution of allylic t-amines with Grignard reagents, 1009  
anti-[2.2](1,6)azulenophane via fluoride induced 1,8-elimination from trimethylsilyl-tetraalkylammonium salts, 4835  
cationic dihexacyclidimethylammonium bromide, permeation of Ellman's anion from surface to interior, 603  
dehalogenation of mono- or polychlorinated aromatic compds via ammonium formate catalytic transfer hydrogenolysis, 1381  
quaternary-, reductive cleavage by LAH, synthesis of new 1,1'-binaphthyl substit amines, 421  
quaternary-, cleavage by sodium hydrogentelluride, 6197
- Anilinium salts**  
N-adamantylidylcarbonyl-N,N-dimethyl-4-cyanoanilinium bromide, synthesis and aqueous reactivity, 2183  
benzamides, use in tandem directed lithiations, 6213  
10-methyl-4-ketohydroazulenes synthesis using organotin, (3+2)-cyclopentane annulations, 3531  
carbocycles, new highly convergent method, via tandem aldol condensation-radical cyclisation sequence, 6431  
fused cyclopentanes with bridgehead OH group, synthesis using Lewis activated bis-functional annulation, 3629  
intramolecular lactone annulation of activated carboxylic acids onto olefins by Mn(III) yields bicyclo[3.3.0] and [4.3.0]lactones, 3761  
new approaches to 5- and 6-membered carbocyclics, 2513  
new Claisen-nitrile oxide annulation of rings onto allylic alcohol derivs with rigid stereocontrol, 2031  
new cyclohexenone, reaction of α-n-butylthiomethylene ketones with 1-lithio-1-methoxycyclopropane to afford α-n-butylthiomethylene spirobutanones and their ring expansion, 713  
pyrrolizidine alkaloids, total synthesis of (±)-supinidine, via intramolecular [4+1]pyrroline annulation approach, 3523  
ring transfer of furans to fused furans by tandem intramolecular Diels-Alder and ring opening of adducts, 2689
- Annulenes**  
2-ethoxy-6,11-dimethyl-7,9-bis-dehydroaza[14]annulene and benzannulated derivs, synthesis, 635  
2-ethoxy-6,11-dimethyl-7,9-bis-dehydroaza[16]annulene and 2-ethoxy-8,13-dimethyl-9,11-bis-dehydroaza[18]annulene, synthesis from annulenes, 639  
4:7,10:13-diepoxy[15]annulene, transformation by carbonyl transposition reactions, 5567  
dihydro[10]annulen-11-one, skeletal rearrangement, effect of temp and counter ion, 3511  
dimeric[14]annulenes, electrochemical behaviour, 4879  
doubly charged ions of bridged [4n]annulenes, evaluation of diatropic and current effects, 3091  
hydrazino bridged [14]annulenes, frontier orbital control, 5425  
new bridged [4n]annulene, 1,6:9,14-bismethano[6]annulene, molecular structure and dynamic behaviour, 3087  
Ni-catalysed coupling of bromides of 1,6-methano[10]annulene and azulene, synthesis of biannulene and bi-, ter-, quater- and poly-azulenes, 3829
- Anthocyanins see also Pigments**  
bis-malonylated, from *Monardia didyma*, structure of monardain, 5879
- Anthracene and derivatives**  
1,3-bis[2-(2-naphthyl)vinyl]benzene photocyclisation leads regioselectively to dinaphth-[1,2-a:2',1'-j]anthracene, 3773  
9,10-anthracenediones, functionalised, synthesis via tosylate and triflate phenolic activation, 157  
cis and cis-perhydroanthracene
- new tetrahydroanthraquinones from genus *Cortinarius*, 2593
- Antibiotics**  
1-neothramycin synthesis, application of 4-benzodiazepines, one-step synthesis, 5947  
1a- and 1β-methyl thienamycin, total synthesis and stereochemical assignments, 587  
2-azidocarbapenems, prep and reactions, 5407  
4-demethoxy-8-nordauromycinone, total synthesis, 691  
6-deoxy-daunomycinone and 1-hydroxy-4-demethoxy-11-deoxy-daunomycinone, regioselective synthesis, 5693  
11-deoxyanthracacyclines via cycloaddition of substituted tetrahydrohomophthalic anhydride, regioselective synthesis, 1549  
(-)-carpetimycin A, synthesis, 2217  
(±)-aphidicolin, total synthesis, 6147  
(±)-cycloodesmol, new stereoselective total synthesis via stereoselective cyclopropane ring formation, 235  
(±)-pyrenophorin and (±)-colletallo, syntheses, 1989  
(+)-thienamycin from 3(R)-hydroxybutyric acid, stereocontrolled synthesis, 1523  
(+)-thienamycin, carbapenem and penems, saynthon for synthesis, 937  
acetoxazetidionones, reaction with trimethylsilylacetyl thiolesters, prep of azetidione-thiolester precursors to carbapenems, 573  
amphotericin B, synthesis of C-D fragment and C(21)-C(37) unit of

- the aglycone, 5239  
 anthracycline precursor, synthesis of chiral tetralin from  $\alpha$ -D-isoasocharino-1,4 lactone, 5295  
 anthracyclonones, optically active, asymmetric synthesis, 6481  
 anthramycin analogs structure and synthesis, 4297
- CO vineomycins, 5341  
 antiherpetic agent, synthesis of (S)-9-(2,3-dihydroxy-1-propoxy-methyl)guanine, 1815  
 antitumour and antimicrobial flavonoid, uvaretin, synthesis, 4807  
 antitumour geparvarin, new nitrile oxide based synthesis, 5319  
 antitumour halogenated clavulone analog, synthesis, 5053  
 antitumour hexamethylmelamine, acylhydroperoxide oxidation to 2,4-bis(dimethylamino)-6-[(dimethylamino)oxy]1,3,5-triazine, 5247  
 antitumour, 6-ethyl-10-methoxy-7H-pyrrolo[4,3-c]carbazole, new synthesis, 4929  
 antiviral aphidicolin via reaction of key dienoid intermediate with unsymmetrical dienophiles, 2833  
 avermectin B<sub>1a</sub>, chemical degradation, 4279  
 avermectin-milbemycin hybrid synthesis, 4283  
 benz[*a*]anthraquinone X-14881 C and ochromycinone, synthesis by directed ortho metallation, 9  
 biosynthesis of terrecyclic acid A, confirmation of cyclisation mechanism and H-shifts using [2-<sup>2</sup>H<sub>2</sub>] acetate and [2-<sup>13</sup>C<sub>2</sub>H<sub>2</sub>] acetate, 3845  
 B/C component of CC-1065, synthesis via regioselective introduction of oxygen functionality, 2985  
 carbapenem and penem, 6 $\alpha$ (1R-hydroxyethyl) side chain, introduction via a stereocontrolled aldol reaction, 6285  
 carbapenem, 1-substituted, synthesis, 4739  
 carbapenem, synthesis based on symmetrisation-asymmetrisation, 5831  
 carpetimycins, optically active, via stereoselective reduction of chiral 3-isocyanoazetidione, 223  
 carzinophilin degradation product, enantioselective synthesis of (2S,3S) 4-amino-2,3-dihydroxy-3-methylbutyric acid, 3299  
 construction of optically active tricyclic lactone sub unit for total synthesis of (+)-pleuromutilin, 1603,1607  
 construction of pentacyclic carbon skeleton and total synthesis of ( $\pm$ )-naphthyridinomycin, 1911  
 cyclobutanone analogs of  $\beta$ -lactam antibiotics, synthesis of N-acetyldeazathienamycin, 5363  
 cycloheximide with 4-nitroatechol ether moiety, reaction with methylamine, model for photoaffinity labelling, 2489  
 DEF-ring system of nogalmycin, chiral synthesis, 2693  
 degradation of (+)-pleuromutilin or tiamulin direct to (-)-bicyclic ketone intermediate, 1611  
 dindromaesinin, prep from p-methoxyphenol via substitutions of new orthoquinones, 3993
- dioxabicyclononane unit of tirandamycin, synthesis, 2173  
 discodermins B,C and D, structure and isolation from *Discodermia kiliensis*, revised structure of discodermin A, 855  
 enantioselective synthesis of chlorothricolide intermediate, 4297
- 1,5-dihydro-2H-1,4-benzodiazepin-2-one, biomimetic model for construction of spirocyclic diketone center, 3063  
 galbonolides A and B, non-glycosidic macrolides from *Streptomyces galbus*, 6167  
 hexahydrobenzofuran fragment of milbemycins and avermectins, model study for synthesis, 5759  
 key tricyclic lactam intermediate and total synthesis of ( $\pm$ )-naphthyridinomycin, 1907  
 kinamycin D, C-assignments, long-range heteronuclear COSY experiment, 4019  
 kinamycin, biosynthesis, 4023  
 lactam, intermediates via stereoselective aldol condensation of protected glycine and 3-butyryl thiazolidine-2-thiones with chiral aldehydes to give  $\beta$ -hydroxyesters, 977  
 methylenomycin B, total synthesis, 6397  
 mitomycin C, new chemistry, 3923  
 N-formyl, new formylation reagent, 4-formyl-2-methyl-1,3,4-thiadiazolin-5-thione, 3703  
 naphthacenequinone SS-228R, synthesis, 3887  
 nargenicin studies, dehydrative rearrangement of a dihydroxy-octahydronaphthalene, 5845  
 neocarzinostatin, with bicyclo-[7.3.0]dodecadiene structure, 331  
 neooxazolomycin, structure, 1077  
 neplanocin and related cyclopentenyl-containing nucleosides, synthesis, 3669  
 new 3'-deamino-3'-hydroxy-daunorubicin analogs, synthesis and rate of glycoside elimination under electro-reduction, 2641  
 new C<sub>2</sub>-unit substitution at C-4 of 4-acetoxyazetidione deriv, synthesis of dethiathienamycin, 89  
 new halogenated marine prostanoids, antitumour chloro-olones from *Clavularia viridis*, 5787  
 new isotetracenone, capoamycin structure, 3471  
 new isotetracenone, kerriamycins A,B and C structures, 3475  
 new macrolide-polyether, sorangicin A, structure and isolation from *Sorangium cellulosum*, 6031  
 new, chromoxymycin, structure, 3273  
 northern hemisphere of milbemycins, synthesis via formation of C-15 to C-16 bond, 5837  
 oxazolidone reaction with N-benzylamines, asymmetric induction to cycloadducts and subsequent reduction to homo-chiral  $\beta$ -lactam derivs, 3783  
 oxazolomycin,  $\beta$ -lactone structure, 1073  
 patulolide A, new macrolide from *Penicillium urticae*, structure, 2341  
 phosphorylating agent, S-4-methyl-phenyl-O,O-bis[1-benzo-
- triazolyl]phosphorothioate, prep polyene macrolide, comparative study of polyene syntheses, 4891  
 polyene macrolides, association with alkali metal salts in MeOH, 253  
 precursor of thienamycin and related carbapenems, cyclisation of N-oxapyanone oxazolidone to carbapenems, 4015  
 rebeccamycin, two synthetic approaches, 4015  
 regioselective and stereoselective conversion of ribonucleosides to 3'-deoxynucleosides; cordycepin from adenosine, 4295  
 right fragment of salinomycin, stereocontrolled synthesis, chelation controlled Grignard reaction, 1541  
 route to 3-amino-2,3,6-trideoxy-D-or L-hexoses via nitroaldol reaction between O-benzyl D-or L-lactaldehyde and alkyl 3-nitropropionates, 1261  
 simple route to 4-demethoxy-7-deoxydaunomycinone, 4703  
 stereo- and regio-controlled synthesis of racemic and optically active (-)-blastomycinone, 2815  
 stereoisomers of 7-hydroxyethyl-2,2,5-trimethyl-3-oxa-1-azabicyclo[4.2.0]octan-8-one, structure/activity of 1-methyl carbapenems, 583  
 stereoselective construction of C-ring fragment of trichothecenes from 4-cumyloxy-2-cyclopentenol, 3765  
 stereoselective synthesis of C(1)-C(9) and C(11)-C(17) fragments of protomycinolide IV based on asymmetric pinacol-type rearrangement, 3711  
 substituted 4-(bromomethyl)-N-hydroxy  $\beta$ -lactams, synthesis, 5385  
 swinholide-A, new macrolide from *Theonella swinhoei*, structure, 511  
 tetracyclic compds of potential value as anthracycline precursors, 111  
 tetrahydropyran "left wing" of ionophore X-14547A via stereoselective 1,2-carbonyl addition and oxapyranone-dihydropyran rearrangement, 1163  
 thienamycin and epithienamycin C, enantiomeric synthesis of intermediates, 5493  
 thienamycin synthesis, improved entry to key intermediate from methyl (R)-3-hydroxybutanoate via direct epimerisation at C-3 on 2-azetidione rings, 4647
- Antimony and compounds**  
 carbonyl compds, selective reduction with diphenylstibine, 5171  
 cycloaddition of oxetane and CO<sub>2</sub>, catalysed by Ph<sub>2</sub>SbI, formation of trimethylene carbonate, 1323  
 debromination of phenacyl and benzyl bromides with tertiary stibine, 3211
- Aromaticity**  
 some cyclic C<sub>6</sub>H<sub>6</sub> isomers and their potential trefoil aromaticity, 1585
- Aroylation**  
 Ru-catalysed oxidation of cyanohydrins to acyl cyanides, reagents for selective N-

- benzylation of aminoalcohols, 925
- Arsenic and compounds**  
formylolation of aldehydes by means of arsonium salts, 6447
- Arylation**  
Aizoaceae and Amaryllidaceae alkaloids, synthons for construction, use of C-arylation by aryllead triacetates, 5331  
intramolecular-, C-, of 2-O-benzylated cyclic sugar derivs, useful 1,2-cis-C-glycosylation, 2055  
Pd-catalysed-, of vinyltrimethylsilane in presence of AgNO<sub>3</sub>, 3131  
regioselective benzylation of lithium enolates derived from 2-heptanone, 1599
- Association**  
n vs π competition in phenols-alkyl ketones association is a function of phenols acidity and branching of CO group, 3331
- Asymmetric induction and synthesis**  
3-methyl-2-cyclohexenone, photo-addition to optically active enoates, asymmetric induction and absolute configuration of adduct, 6163  
α-tocopherol side chain, synthesis, 5153  
alkylation and sulphenylation of chiral O-silylated imide enolates, 5339  
alkylation of chiral dipole stabilised anions, mechanistic model, 3295  
allylic esters, asymmetric coupling with arylmagnesium-bromide, 3259  
anthracyclinones, optically active, asymmetric synthesis, 6481  
chiral 2-[(tributylstannyl)methyl]propenamides, reaction with aldehydes via 1,6-asymmetric induction to give α-methylene-γ-butyrolactones, 1337  
chiral α-aminonitriles from new N-cyanomethyl-1,3-oxazolidine synthon, 3567  
chiral intermediates for prostanoids, asymmetric synthesis of cis-4-t-butyl-dimethylsiloxy-2-cyclopenten-1-ol and cis-4-tetrahydropyranyloxy-2-cyclopenten-1-ol, 5803  
conjugate addition of R<sub>2</sub>C=BF<sub>2</sub> to enoates of sulphonamide-shielded alcohols, synthesis of β-substituted alcanoic acids, 6051  
cycloaddition of dichloroketene with chiral enol ethers, approach to optically active cyclopentenone derivs, 5525  
diastereofaceselection, condensation of aldehydes with Zr enolate of chiral N-propionyl-trans-2,5-disubstituted pyrrolidine, 5807  
diastereoselection in Rh-mediated intramolecular C-H insertion, prep of a trans-3,4-dialkylcyclopentane, 3059  
diastereoselective coupling reactions of a ketene acetal, synthesis of R-(+)-α-lipoic acid, 2535  
dictyopterene B and its enantiomer, syntheses via asymmetric S<sub>N</sub>2 reactions, 3319  
Diels-Alder reaction between chiral isoprene units 2-(R)- and (S)-benzyloxy-2,5-dihydro-4-furancarboxyaldehyde and cyclopentadiene, 5605  
Diels-Alder reactions of o-quinodimethanes, stereocontrol exerted by phenyl substituents, asymmetric induction effects, 3413  
dihydroxylations via chiral oxazolidines, 5459  
effect of metal hydride and silica gel on Sharpless asymmetric epoxidation, 6221  
enantio- and stereo-controlled synthesis of (+)- and (-)-eldanolide based on asymmetric pinacol-type rearrangement, 861  
enantiospecific synthesis of (-)-megaphone by controlled consecutive 1,4- and 1,3-asymmetric induction, 903  
epoxidation of t-butyl substituted allylic alcohols, 2543  
exo-allylic alcohol, stereospecific synthesis, and synthesis of (R)-(-)-2-acetyl-5,8-dimethoxy-1,2,3,4-tetrahydro-2-naphthol, 6497  
high induction during reduction of pyruvate and phenylglyoxylate esters of chromium complexed carbinol, 429  
higher induction by reduction of β-ketosulphoxides and transformation into optically active epoxides, prep of β-hydroxy-sulphoxides of opposite stereochemistry, 435  
indole alkaloids, synthesis, 3291  
intramolecular Diels-Alder reactions of N-acyl-camphor-sultam trienes, 5437  
Lewis acid mediated 1,2-asymmetric lk-induction to α-alkoxy-aldehyde, synthesis of α-non-substituted β,γ,δ-syn-dihydroxyketone and ester, 3467  
microbial metabolite, (+)-citroviral, enantioselective synthesis using hydroxylation of tiglate esters, 6485  
new approach to 11-deoxy-prostanoids, 5009  
optically active allylsilanes by hydrosilylation of 1-arylbutadienes, 3023  
oxazolidone reaction with N-benzylamines, asymmetric induction to cycloadducts and subsequent reduction to homo-chiral β-lactam derivs, 3783  
oxidation of 3-phenylpropionates of chiral alcohols derived from (+)-camphor by MoO<sub>3</sub>.Py.HMPPT, 203  
reduction of 2-ethoxycarbonyl-4,4-thylenedioxy-cyclohexanone to ethyl (1R,2S)-4,4-ethylenedioxy-2-hydroxycyclohexane 451  
(R)- and (S)-citramalate synthesis in high enantiomeric purity, 3907  
regio- and stereo-controlled synthesis of octahydro-naphthalenol portion of dihydro-compactin, 1131  
(S)-1-acetoxy-2-aryloxypropionitriles, synthesis by asymmetric hydrolysis of the racemates with an enzyme, synthesis of (S)-propanolol, 5533  
(+)(S)-3-trichloromethylbutyric acid via stereoselective conjugate addition of Cl<sub>2</sub>/MgCl<sub>2</sub> to crotonate of chiral auxiliary with sulphonylamino substituent, 6047  
sesquiterpenoid botrydial, synthesis of quaternary C-centres, 5433  
spatane diterpene, synthesis of stoechospermol via intramolecular(2+2)-photocycloaddition, 3035  
stereoselective construction of C-ring fragment of trichothecenes from 4-cumyloxy-2-cyclopentenol, 3765  
stereospecific synthesis of γ-butyrolactones from acyclic vinyl sulphoxides, synthesis of optically pure oak lactones, 5381  
synthesis of (R) or (S)-4,4-dialkyl-2-cyclopentenones, 2047  
synthesis of (S)-methyl-3-hydroxy-alkanoates from ketene and 2,2-dichloroaldehydes via 4-(1,1-dichloroalkyl)-2-oxetanones, 4665  
synthesis of α-hydroxy acids by alkylation of chiral N-(benzyloxyacetyl)-trans 2,5-bis-(methoxymethoxymethyl)-pyrrolidine, 1343  
synthesis of α-hydroxy carboxylic acids, direct oxidation of chiral amide enolates using 2-sulphonyloxaziridines, 3539  
tandem alkylation of α-alkylidene-γ-butyrolactone derivs, 3027
- Autoxidation**  
alkylbenzenes, catalysed by cerium(IV)ammonium nitrate, 3353
- Aza compounds**  
1,1-diphenyl-3-arylisquinolin-4-ones new synthesis via cyclisation of 2-azabuta-1,3-dienes, 5213  
2-aza-1,3-diene prep via N-(1-triethylsilylallyl) protodesilylation, mechanism, 47  
2-azidocarbapenems, prep and reactions, 5407  
2-ethoxy-6,11-dimethyl-7,9-bis-dehydroaza[14]annulene and benz-annelated derivs, synthesis, 635  
2-ethoxy-6,11-dimethyl-7,9-bis-dehydroaza[16]annulene and 2-ethoxy-8,13-dimethyl-9,11-bis-dehydroaza[18]annulene, synthesis from annulenes, 639  
4-aza-1,6,8-trienes, intramolecular Diels-Alder cyclisation, ratio of cis vs trans isomers, effects of solvent, steric bulk and nature of electron demand, 3575  
aza-β-lactams via rhodium carbene mediated cyclisation, 3171  
carcinogenic aza-arene dihydro diols and diol epoxides, novel synthesis of trans-tetrahydro diol diacetates as precursors, 6417  
polyalkoxy-2-aza-propenylium salts, synthesis via oxygen-alkylation of alkoxy substituted N-methylene amides, stereochemistry, 3547  
regioselectivity in photo ring contraction of 4-diazo-pyrrolidine-3,5-diones to aza-β-lactams, 3167
- Azetidines**  
(3S,4R)-3-[(R)-1-hydroxyethyl]-4-acetyloxy-azetidin-2-one, stereocontrolled total synthesis of chiral building block, 937  
4-iodomethylazetidin-2-one reaction with t-butyl ester of propionic acid, formation of β-lactam ynamide, 4141  
acetoxyazetidiones, reaction with trimethylsilylacetyl thiolesters, prep of azetidione-thiolester precursors to

- carbapenams, 573  
 azetidione, introduction of alkyl, aryl, allyl and alkenyl groups at 4-position, 547  
 chiral 3-isocyanazetidione, stereoselective reduction, prep of optically active carpetimycins, 223  
 chiral bisazetidines via hydroalane reduction of bis- $\beta$ -lactams, 2035  
 ethyl 3-hydroxybutyrates and N-aryldimines cycloaddition to series of 3-(1'-hydroxyethyl)-2-azetidiones, stereochemistry, 3903  
 N-hydroxyazetidone, precursor of  $\beta$ -lactam, synthesis, 2809  
 new C<sub>2</sub>-unit substitution at C-4 of 4-acetoxazetidione deriv, synthesis of dethiathienamycin, 89  
 precursor of thienamycin and related carbapenems, cyclisation of N-propargyl epoxyamide to acetylenic 2-azetidione, 4521  
 thienamycin synthesis, improved entry to key intermediate from methyl (R)-3-hydroxybutanoate via direct epimerisation at C-3 on 2-azetidione rings, 4647
- Azetines**  
 trapping of 1-azetin-4-one with siloxydienes as cyclocondensation adducts, 6309
- Azides**  
 2,6-dimethylphenyl azide, photolysis in N<sub>2</sub> at 12K gives 2,6-dimethylphenylnitrene; in CO, isocyanate or azacycloheptatetraene are formed, 359  
 amination, using tetracarbonylhydridoferrate a selective reducing agent, 3277  
 fused pyrrolines via intramolecular cycloadditions of azides, application to pyrrolizidine alkaloids, 3527  
 phenyl azide, temp-dependent photochemistry in diethylamine, 2147  
 phenyl azides, 1,3-dipolar cycloaddition to methyl 3-pyrrolidinoacrylate, kinetics and mechanism, 4661  
 sodium azide, reaction with 9-bromo-6,7,8,9-tetrahydro-4H-pyridol[1,2-a]pyrimidin-4-ones to give 9-amino-6,7-dihydro analogs, 3521
- Azido acids and esters**  
 conjugate bases of 1,2,3,4-tetrahydro-9H-carbazole and other indole derivs, action of t-butyl azidoformate, 2017
- Aziridines**  
 1-diphenylphosphinyl-2,2-dimethylaziridine, new synthesis of  $\alpha,\alpha$ -dimethylaryllalkylamines, 1245  
 BF<sub>3</sub>-etherate ring opening of substituted aziridines by organocopper reagents leading to primary and sec amines, 1153  
 esters and amides from aziridine 2-carboxylic acid salts, 4439  
 N-tosyl-2-(1,3-butadienyl)-aziridine Pd-promoted transformation into N-tosyl-2-vinyl-3-pyrrolone, 857
- Azirines**  
 2H-azirines, alkylation and silylation, 2637  
 new bi-2H-azirin-3-yl compds from 2,3-diazido-1,3-butadienes, 5261  
 spiro- and ring-fused azirines, conformational analysis, 4399
- Azocines**  
 aromatic aldehydes, direct conversion to nitriles via S,S-dimethylsulphurdiimide iminating agent, dithiatetrazocines as intermediates, 2739
- Azo and Azoxy compds**  
 2,2'-hydrazonaphthalene, enantioselective reduction, 119  
 2-methylphenylazo compds conversion to diareno-1,2-diazepines, 1345  
 azocyclobutane and azocyclopropylmethane, generation of C<sub>2</sub>H<sub>2</sub> radicals, comparison of PE spectra with data from pyrolysis of methyl nitriles, 2427  
 formation of 1,2,4-triazoles from oxidative addition of 1,4-diphenylazomethane and aryl aldehyde phenylhydrazones to nitriles, 5655  
 vicinal <sup>13</sup>C-<sup>13</sup>C coupling constants for series of bi(poly)cyclic azo-, azoxy- and imino compds for N=N-, N=NO- and N=C, 4427
- Azoles**  
 diastereoselectivity in 1,2-addition of silylazoles to chiral aldehydes, stereocontrolled homoligation of  $\alpha$ -hydroxyaldehydes, 5477
- Azomethines**  
 pyrazolid-3-one azomethinimines and (E)- $\beta$ -nitrostyrene, 1,3-dipolar cycloaddition, generation of seemingly "non cisoid" adducts, 5123
- Azulenes**  
 10-methyl-4-ketohydroazulenes synthesis using organotin, (3+2)-cyclopentane annulations, 3551  
 anti-[2.2](1,6)azulenophane via Fluoride induced 1,8-elimination from trimethylsilyl-tetraalkylammonium salts, 4835  
 cycloaddition of tetrachlorothiophene-S,S-dioxide, 2607  
 Ni-catalysed coupling of bromides of 1,6-methano[10]annulene and azulene, synthesis of bianulene and bi-, ter-, quater- and polyazulenes, 3829  
 stable diatropic 1,6- and 2,6-di-t-butyl-cyclopent[7]azulene-1ides, dominated by polymethide conjugation, prep, 2567
- Benzene derivatives**  
 alkylation of aromatic compds with Pummerer rearrangement intermediates, prep of methylaryl compds via methylthio-methylaryl products, 2787  
 alkylbenzenes, photo-oxidation catalysed by cerium(IV) ammonium nitrate, 3353  
 benzene, novel complexation with cyclophane, 1325  
 dithiated species generated by metal-halogen exchange and ortho metallation, reaction with electrophiles to give poly-substituted aromatics, 1145  
 ethyl benzene and derivs, fungal hydroxylation, 6409  
 phenylindenes, electro-oxidation depends on electrolyte anion and non-nucleophilic solvents, 1265  
 spiro hydrindandione ring system of Fredericamycin A via spiro-alkylation of indene, 4725  
 stable 3-methylene-1,4-cyclohexadiene, a non aromatic tautomer of benzene, 4715  
 t-butyl dimethylsiloxy-3,5-dimethoxybenzene, regioselective lithiation, 123  
 toluene- $\alpha$ -d and - $\alpha$ -t in aqueous NaOH, measurements of H-isotope exchange, 6317
- Benzodiazepines**  
 1,4-benzodiazepines, one-step synthesis, application to synthesis of neothramycin, 5947
- Benzofurans**  
 hexahydrobenzofuran fragment of milbemycins and avermectins, model study for synthesis, 5759  
 precursor of 4,5-dimethylbenzo[b]furan from *Desmia hornemanni*, isolation of 2-(1-chloro-2-hydroxyethyl)-4,4-dimethylcyclohexa-2,5-dienone, 2335  
 tetrahydrobenzofurans, new route, 3449  
 triacetoxylbenzofuran, conversion to khellinone, 1385
- Benzofurazans**  
 4,6-dinitro-benzofuroxans and -benzofurazans new 7-substituted, by H-displacement in 4,6-dinitro-benzofuroxan and -benzofurazan, 1307
- Benzofuroxans**  
 4,6-dinitro-benzofuroxans and -benzofurazans, new 7-substituted, by H-displacement in 4,6-dinitro-benzofuroxan and -benzofuran, 1307
- Benzoisothiazoles**  
 2,3-dihydro-2,3-disubstituted-1,4-benzothiazines from 2-aryl-2,3-dimethylbenzotriazoles, 1457  
 3-methyl-2,3-dihydrobenzothiazoles, use in dye enhanced photoreductions of halides, sulphonium salts and pyridinium salts, 1453
- Benzophenoxazines**  
 benzofalphenoxazine derivs, formation by triethylphosphite deoxygenation of 1-(2-nitrophenoxy) and 2-(2-nitrophenoxy)-naphthalenes, 393
- Benzopyrans**  
 substituted derivs via tributyltin hydride induced heteroring annelation of o-iodoaryl allyl ethers derived via aromatic directed metallation, 6001
- Benzoquinones**  
 benzoquinone/porphyrin/benzoquinone molecule, structure and fluorescence, 6055  
 new benzoquinone-bridged porphyrin, 6059
- Benzotriazines**  
 4-methylene-1,2,3-benzotriazines, pyrolysis, 941
- Benzotriazoles**  
 new coupling reagent, benzotriazol-1-yl diethyl phosphate for amide and peptide synthesis, 1341
- Biogenesis**  
 Br-containing diterpenoids, ( $\pm$ )-cooneindiol and ( $\pm$ )-aplysin 20, synthesis, 343  
 Fredericamycin, biomimetic model

for construction of spirocyclic diketone center, 3063  
 indolosesquiterpenes isopolyathenol and neopolyathenol from Polyalthia sauveolens, biogenesis, 4937  
 janussines A and B from Strychnos johnsonii, cross point in biogenesis of quasidimeric alkaloids, 2441  
 taxane alkaloids putative biogenetic precursor verticillene, total synthesis, 3393

#### Biologically active compounds see also Drugs

- 2'-5' linked oligoribonucleotides, synthesis, 761  
 3-deazooxanosines, C-nucleoside isosteres of oxanosine, synthesis, 5785  
 (±)-aphidicolin, total synthesis, 6147  
 (±)-indolactam fraction of teleocidin B, conformational isomerism, 1069  
 (S)-1-acetoxy-2-aryloxypropionitrile, synthesis by asymmetric hydrolysis of the racemates with an enzyme, synthesis of (S)-propanolol, 5533  
 (+)-pederin, total synthesis, stereocontrolled synthesis of (+)-benzoylpedamide, 6461  
 absolute stereochemistry of panaxynol by exciton chirality method, 5775  
 alkaloid necatorone, synthesis, 5975  
 ancovenin, new inhibitor of angiotensin I converting enzyme, structure, 665  
 antitumour and antimicrobial flavonoid, uvaetin, synthesis, 4807  
 aryl[2,3-*a*]quinolizin-2-ones, synthesis, 1277  
 azadirachtin and 22,23-dihydro-23β-methoxyazadirachtin, structures, 6435  
 base catalysed formation of N-alkyltriazenes from N-hydroxymethyl-N-alkyltriazenes, 1557  
 benzyl-6-aminopenicillininate conversion into crystalline 6-α-formido deriv without chromatography, 377  
 bioactive phenyltetrahydrofuran-2-pyrone, goniothalenol, characterisation and isolation from Goniothalamus giganteus, 955  
 carcinogenic aza-arene dihydrodiols and diol epoxides, novel synthesis of trans-tetrahydro diol diacetates as precursors, 6417  
 cyclic pentapeptide analogs of thymopentin, NMR, 177  
 cyclopentenonyl fatty acids, synthesis of (±)-dicranenones, 2089  
 cyclopropyl analogs of precocene I, synthesis and activity against bean aphid, 4677  
 dipole measurements of 7 polar amidine containing compds of biological interest, 1897  
 diterpenes, (+)-spatol with natural configuration, total synthesis, 6109  
 diterpenoids, identity of coleonol and forskolin via structure revision, 551  
 free sialic acid by aldol-condensation of 2-acetamido-6-O-acetyl-2-deoxy-D-mannose with pyruvic acid in presence of immobilised acylneuraminase pyruvate-lyase, 2439
- histamine liberating thapsigargin and trilobolide, absolute configurations, 107  
 isoquinuclidine ring system, prep via modified Polonovski reaction, 801  
 key chiral intermediate for mevinolin and compactin, prep of ethyl 5(S),6-epoxy-3(R)-(methoxymethoxy)hexanoate, 1185  
 leukotriene D<sub>4</sub>, prep of diketo-piperazine analog, 1951  
 lipopolysaccharides from Aeromonas salmonicida, synthesis of oligosaccharide sequences with repeating unit of O-specific chain, 6043  
 lipoxin A, synthesis and stereochemistry, 281  
 lipoxin B, synthesis and structure, 1919  
 lyngbyatoxin A and teleocidin B, prep by application of new indole synthesis, 4047  
 N-acetyl-N-oxo-1,4-benzoquinone imine, an acyl nitron, prep and intramolecular rearrangement to N-acetoxy-1,4-benzoquinone imine, 2467  
 N-alkylthiazolium halides, including thiamine, reaction with KO<sub>2</sub>, chemistry and biological implications, 2917  
 new isotetracenone antibiotic capoamycin, structure, 3471  
 new isotetracenone antibiotics kerriamycins A, B and C, structures, 3475  
 new stable analogs of prostacyclins, (±)-6α-oxo-6,9-methano-15-hydroxyprosta-5,13-dienoic acids, 4101  
 new synthesis of 3,5-diamino-1,2,4,6-thiatriazine 1,1-dioxides, selective prep of 2-alkyl or 6-alkyl isomers, 1101  
 new synthesis of 4-alkyl-3,5-diamino-1,2,4,6-thiatriazine 1,1-dioxides, 1105  
 new synthesis of α,α-dimethylaryl-alkylamines from 1-diphenylphosphinyl-2,2-dimethylaziridine, 1245  
 novel 3-oxocyclopenten-2-phosphonate deriv, intermediate for 2-alkyl substituted cyclopentenones, 93  
 phidolopin from Phidolopora pacifica, synthesis of 7-(4-hydroxy-3-nitrobenzyl)-1,3-dimethylxanthine, 2355  
 platelet activating factor via cyclic tin intermediate, 1379  
 platelet activating factor, stereocontrolled synthesis from (S)-(-)-malic acid, 5195  
 quinonoid 6-methyl- and 6,7-dimethyldihydropterins, synthesis, 4003  
 regio- and stereo-selective alkylation at 3'-terminal end of ribonucleotides by N-2-methyl-9-hydroxyellipticinium acetate, 2891  
 regiocontrolled H-D exchange of biologically important indoles under UV, 5891  
 route to 3-amino-2,3,6-trideoxy-D- or L-hexoses via nitroaldol reaction between O-benzyl D- or L-lactaldehyde and alkyl 3-nitropropionates, 1261  
 selective inhibition of 5-lipoxygenase by 1,1-disubstituted 2,5-cyclohexadienes, 2039  
 serotonin and bufotenine derivs as potential electrophilic or photoactivable labels for serotonergic sites, azidoethyl-3 indole deriv most promising compd, 4443
- synthesis of 5-ylidenepyrrole-2-one, pukeleimide, from Lyngbya majuscula, 3617  
 synthesis of riboside analog of pyrimidine adduct from N-hydroxy-N-2-acetylaminofluorene and DNA, 2659  
 trifluoromethylated diene derivs, Claisen rearrangement of trifluoromethylated propargylic and allylic alcohols, 219  
 trihydroxy derivs of adenosine, guanosine, uridine and cytidine, prep using periodate and borohydride supporting resins, 1305

#### Bioluminescence

Cypridina biluciferyl, activity, structure, 239

#### Biosynthesis

- 5-enolpyruvyl-shikimate-3-phosphate, chiral synthesis, 21  
 aldosterone inhibition by 11β-hydroxy-18-ethylprogesterone, 1137  
 and structure of lipoxin B, 3939  
 biomimetic route to clavicipitic acids, intermediate in ergot biosynthesis, 4043  
 columbamine immediate precursor of berberine, 201  
 diterpene cystoseirol of mixed biosynthesis from Cystoseira mediterranea, 4919  
 enzyme prep from E.coli in formation of *o*-succinylbenzoic acid from iso-chorismic acid, key in vitamin K<sub>2</sub> biosynthesis, 1487  
 gram-negative bacterial lipopolysaccharide, investigation, 677  
 identification of new eicosanoid from *in vitro* experiments with Clavularia viridis, biosynthesis of clavulones, 4771  
 intermediate in menaquinone, 1703  
 isolation of Δ<sup>9</sup>(<sup>11</sup>)-sterols from Psolus fabricii, holothurin biosynthesis, 3513  
 kinamycin, 4023  
 leukotriene, methylene cyclopropane analogs of arachidonic acid, potential mechanism-based inhibitors, 1973  
 presqualene pyrophosphate-bifarnesol, synthesis of bifarnesol, 3303  
 terrecyclic acid A, confirmation of cyclisation mechanism and H-shifts using [2-<sup>3</sup>H]<sub>2</sub> acetate and [2-<sup>13</sup>C<sub>2</sub>H]<sub>2</sub> acetate, 3845
- Bismuth and compounds**  
 Bi-mediated allylation of aldehydes to homoallylic alcohols, 4211
- Bonds see also H-bonds**  
 5α,8α-peroxides, bisfragmentation of C(5)-C(10) and C(8)-C(9) bonds and elimination of AcOH to form new bicyclic 5,10;8,9-diseco-steroid derivs, 389  
 alkyl lithium, 8 C-H bond, hydride abstraction and regioselective insertion by ethyl(phenylthio)methylene carbenoid, 6489  
 aryl-aryl bonds, construction, 29  
 northern hemisphere of milbemycins, synthesis via formation of C-15 to C-16 bond, 5837
- Boron and compounds**  
 1,2-dimethylcyclopentene, hydroboration, stereochemistry, 6125  
 (E)-vinylboronic acids, chlorination to (Z)-vinyl chlorides, 279  
 α-alkoxy acetylenic ketones

- stereoselective reduction with zinc borohydride and K-selectride, 5139
- allyl, benzyl and tertiary alcohols conversion into halides with  $\text{BF}_3$ -etherate/halide ion, 3863
- amine-and phosphine-boryl radicals to 2-methyl-2-nitrosopropane, 2,4,6-tri-*t*-butylnitrosobenzene and phenyl-*N*-*t*-butylnitrono to nitroxide spin-adducts, 1349
- anions of alkylidimesitylboranes, reaction with oxiranes followed by oxidation to 1,3-diols, 5097
- aryl aldehydes, Wittig reaction with carbanions stabilised with adjacent dimesitylboron group, oxidation of intermediates to erythro-1,2-diols, 5093
- $\text{BF}_3$ -etherate on alumina catalysis in improved synthesis of cannabidiol, 1083
- $\text{BF}_3$ -etherate ring opening of substituted aziridines by organocopper reagents leading to primary and sec amines, 1153
- catechol boron halides, cleavage of ether, ester and carbamate protecting groups, 1411
- dialkylketones, synthesis from alkenes via hydroboration-carbenoidation, 6361
- borane approach to synthesis of polyquinanes, 4863
- dimethyl(methylthio)sulphonium fluoroborate, sulphen-etherification and sulphen-lactonisation, 6159
- dithia[6]radialenes, formation by boron trifluoride-catalysis of "thiiranoradialene", 3019
- enantioselective aldol reaction of chiral acyl thiazolidine thione derived from boron enolates, 4855
- enol borates, addition to aldehydes and subsequent metal addition to form 1,3-diols, 1643
- haloboration of 1-alkynes, 1065
- homogeneous deblocking with 2-bromo-1,3,2-benzodioxaborole, 1415
- hydroboration of  $\beta$ -acetylenic alcohols followed by oxidation to hemiacetals of  $\gamma$ -aldols and dehydration to 2,3-dihydrofurans, 5683
- hydroboration of olefins with acetoxyborohydride in presence of reducible functional groups, 1757
- iodide ion promotion of benzyl chloride-borate ester carbonylation, 2273
- ionic reactions of *N*-halo electrophiles with alkenes promoted by  $\text{BF}_3$  etherate, 1811
- isoprenylation, new reagent 2-di-propylborylmethyl-1,3-butadiene, synthesis of ipenol and ipsdienol, 2797
- Pd-catalysed allylation of lithium 3-alkenyl-1-cyclopentenolates-triethylborane and application to selective synthesis of methyl (2)-jasmonate, 2177
- pinacol allylboronate, stereochemistry of reactions with  $\alpha,\beta$ -dialkoxyaldehydes, comparison with reactions of crotylboronates, 3427
- potassium triethylborohydride reduction of 2-alkyl-3-oxo
- 6453
- synthesis of 2-substituted methylenecyclopentanes and cyclohexanes, reaction of carbonyl compds and alkoxy-acetylenes with 1-(dialkylboryl-methyl)cyclopentene and -cyclohexene, 4551
- triorganylboranes from organo halides by modified organo-metallic route using ultrasomics, 4311
- unsymmetrical biaryls obtained by cross coupling of directed metallation-derived arylboronic acid, reaction with aryl halides, 5997
- vinyl ethers, stereoselective hydroboration, 6297
- Carbanions**
- 3,4-epoxy-2-methylenealkanoic acid derivs synthesis, using dianion of *N*-phenyl-2-(phenylsulphonylmethyl)propenamide and aldehydes, 4751
- anion derived from 2-benzene-sulphonyltetrahydropyran, reaction with electrophiles to give alkylated and acylated products, 535
- anion of 2-nitropropane and 3-bromo-1-nitrocyclohex-1-ene,  $\text{S}_{\text{RN}}1$  substitution, 539
- cationic dihexadecyldimethylammonium bromide, permeation of Ellman's anion from surface to interior, 603
- chiral nitronate dianion from (+)-D-glyceraldehyde, generation and use in synthesis of 3-amino-2,3-dideoxy sugars, 6269
- cyclononatetraenyl dianion, reactions with electrophiles, geometry and conformation of 1,3,6-cyclonatrienes, 5351
- dianion metallation of *N,N*-dimethylvanillylamine and *N,N*-dimethylisovanillylamine, 2151
- dianion of  $\alpha$ -cyanoacetone, reaction with lactim ethers to give bicyclic 2-amino-4(1*H*)-pyridones, 259
- dianion of *N*-phenyl-2-(phenylsulphonylmethyl)propenamide, reagent for synthesis of (*E*)- $\alpha,\beta$ -unsaturated amides and 5,6-dihydro-2*H*-pyrans, 4747
- diastereospecific aprotic conjugate additions of allylic anions bearing polar, charge-stabilising groups, 1569
- efficient propargylic anion equivalent formation for coupling with alkyl and allyl halides, 271
- formamidines as  $\alpha$ -amino carbanion precursors, synthesis of 2-aryl-piperidines, -pyrrolidines and nicotine analogs, 5863
- Horner-Wittig reaction with 4-hydroxy-2-alkenylphenylphosphine oxides give dianions and hence 3-hydroxydienes, 249
- Michael reactions promoted by solid-liquid phase transfer catalysis without solvent, application to addition of acetylacetone, methylacetoacetate and fluorene anions on hindered acceptors, 4601
- new organometallic complex, a
- methane anion to form nitro-methyl derivs, conversion to nitroaromatic aldehydes, 3599
- nitronate anions, of 3-ethyl-5-hydroxymethyl-5-nitrotetrahydro-1,3-oxazine, nucleophiles for  $\text{S}_{\text{RN}}1$  reactions, prep of new tetrahydro-1,3-oxazines with trisubstituted ethylenic double bond in 5-position, 323
- optically pure sulphonyl carbanions, reaction with  $\alpha$ -halocarboxylic esters, 5601
- p*-toluenethiolate anion, and *N*-tosyl-diarylsulphilimines, irradiation, S-N bond cleavage, 775
- phosphorus acyl chlorides phosphorylation, generation of alkylidene-diphosphonate anions convertible to vinyl-phosphonates, 4435
- photooxygenation of nitroaromatic compds involving nitrobenzyl carbanions, 2387
- reaction with epoxides derived from tartaric acid, 3121
- selective  $\gamma$ -alkylation of triisopropylsilyl anion, synthesis of  $\alpha$ -triisopropylsilyl aldehydes, 5375
- selective methylenation of aldehydes with methylene dianion synthon, 5581
- stable radical-carbanion with independent radical and anion sites, rapid spin charge exchange, 5589
- sterically congested cyclononatetraenyl anion, temp-dependent electrocycloisolation to tetra-cyclic frames, 1695
- substituent effect on reverse Menschutkin reaction of 1-methylpyridinium cations with iodide anion, 5065
- surfactant vesicles, charge type and trans-membrane transport of fluorescent probes, 4827
- tertiary nitronate anions, reaction with 1-methyl-2-chloro-methyl-5-nitroimidazole to yield 1-methyl-5-nitroimidazoles with trisubstituted ethylenic double bond in 2-position, 1023
- tertiary-, steric and electronic limitations of  $\text{S}_{\text{RN}}1$  reaction with *p*-nitrobenzyl substrates, 3495
- tetra anion of acepleiadylene and dianion of pyrene, formation in , electrochemical reduction, 415
- thiocarbonyl compds, desulphurisation to oxo-deriv via peroxy-S intermediate from 2-nitrobenzenesulphonyl chloride and superoxide anion, 1079
- vinyl selenide anions in stereospecific synthesis of vinyl alkyl selenides from vinyl halides, 2225
- with captodative substitution, oxidation to dimers, 4607
- Carbazoles**
- 1-oxygenated-, new route to, synthesis of murrayafoline-A, 5841
- 6-ethyl-10-methoxy-7*H*-pyrido[4.3-*c*]-, new synthesis, 4929
- intramolecular cycloaddition to acetylenic vinylketenimines to carbazoles, synthesis of *N*-methyltetrahydroellipticine,
- sulphoxides with *t*-hexylchloro-borane-methyl sulphide complex,
- of solvation, 2435
- nitroarenes, reaction with nitro-
- via 2-vinylindoles, 6389

**Carbenes**

- alkyllithium,  $\beta$  C-H bond, hydride abstraction and regioselective insertion by ethyl(phenylthio)methylene carbenoid, 6489
- aryloxymethylchlorocarbene, 1,2-H migration, effect of  $\beta$ -aryloxy group on stereochemistry, evidence for "negative" hyperconjugation of carbene lone pair, 1651
- cyclic disulphides, desulphurisation and insertion reactions with carbenes, 5187
- dialkylketones, synthesis from alkenes via hydroboration-carbenoidation, 6361
- difluoro-, reaction with quadricyclane, 5403
- electrophilic-, addition to electron deficient olefin, kinetics of benzylchlorocarbene-diethylfumarate reaction, 3071
- in situ* protection in alkyne-carbene cycloaddition, 2969
- new route to homoaporphines, addition of dichlorocarbene to aporphinoids, 1561
- persubstituted hexamethoxycyclopropane prep and pyrolysis to dimethoxycarbene and tetramethoxyethylene, 1931
- phenylthio-, regioselective intramolecular insertion into C-H bond of alkoxides, 4483
- pyrrole derivs, competitive intramolecular carbenoid reactions, 6035
- pyrrole- and phenyl-, Cr-complexes, reaction with alkoxymethide and subsequent dimerisation, 1159
- reaction with bicyclo[2.1.0]pentane, 5399
- reaction with oxetane, generation of oxonium ylides, Stevens rearrangement and protonation to tetrahydrofurans and 1,3-dialkoxy-cyclopropanes, 193
- Se stabilised carbenium ions, bis-(seleno)- and bis(thio)-alkylation of ketones and aldehydes, 6513
- singlet and triplet diphenyl-carbene reaction with alcohols, effect of temp on reversible ylide formation, 5951
- vinyl carbenoids, [3+4] cycloaddition with furans, 5659
- soln., 3251
- 2,2,5,5-tetramethylpyrrolidine-1-oxyl and  $\beta$ -cyclodextrin, association, equilibrium constant, 741
- 2,3-dideoxy-3-nitro furanosides and pyranosides, enantiospecific synthesis, 6269
- 2,3,5,6-di-O-isopropylidene-D-manno-furanose, chain extension with 2-lithio-1,3-dithiane to D-glycero-D-galacto-heptose, 3689
- 2,6-dideoxy- and 2,4,6-trideoxy-sugars via hetero Diels-Alder reaction, diastereoselective synthesis, 2065
- 2-deoxy-D-glucopyranosyl phenylsulphones, route to C-glycosides via reductive lithiation, 6185
- 2-O-benzylated cyclic sugar derivs, intramolecular C-arylation, useful 1,2-cis-C-glycosylation, 2055
- 3a-(1<sup>8</sup>B-D-glucopyranosiduronyl)-8a-isovaleryloxy-scirpen-3,4,15-triol 15-acetate produced *in vitro* from T-2 toxin, structure, 5231
- 4-O-benzyl-2,3-dideoxy-L-threo-hex-2-enono-1,5-lactone, synthesis, use of L-tartaric acid, 3731
- (+)-castanospermine total synthesis from D-mannose, 4617
- acetoxylation of 2,3-dihydro-4-pyrones, route to glucal stereochemical series, 3411
- allyl-C-glycopyranosides using peracetylated glycopyranoses, stereoselective synthesis, 1479
- anomeric free OH of protected aldoses and ketoses, reaction with (diethylamino)sulphur trifluoride to give glycosyl fluorides, 3
- anomeric OH of furanose and pyranose hemiacetals, stereoselective replacement by F atom, 5
- antiherpetic agent, synthesis of (S)-9-(2,3-dihydroxy-1-propoxy-methyl)guanine, 1815
- antitumour alkaloid, enantiomeric pair of unprotected AB-ring systems of sesbanamide A, synthesis from D- and L-xylose, 4639
- $\beta$ -cyclodextrin deriv, synthesis, binds guest molecules in heptane because cavity is more polar than solvent, 267
- $\beta$ -cyclodextrins, unsymmetrically disubstituted 6A,6B- and 6A, 6G-derivs, enzyme-based discrimination of clockwise and counterclockwise isomers, 6439
- $\beta$ -D-glucosides stereoselective synthesis using stannous
- D-glycopyranosyl phenyl sulphones, acylation of lithiated anions and subsequent formation of  $\alpha$ -D-C-glucosides, 6193
- D-glycopyranosyl phenylsulphones, use in stereocontrolled synthesis of  $\beta$ -D-C-glycosides, 6189
- deoxymannojirimycin, fagomine and 2R,5R-dihydroxymethyl-3R,4R-dihydroxypyrrolidine from D-glucose, enantiospecific synthesis and configuration, 1469
- deprotection of alkoxy-carbonyl derivs of sugars in presence of Ir, Rh and Pd catalysts, 5045
- diastereoselective aldol reaction of 2,3-O-isopropylidene-D (and L)-glyceraldehydes leading to 2-deoxy-D (and L)-ribose, 5777
- exciton coupling, excimer emission and unique binding of  $\gamma$ -cyclodextrin substituted by two naphthyl residues, 3339
- flexibly capped  $\beta$ -cyclodextrins, prep and characterisation by H-bonded adenine-thymine, 1735
- free sialic acid by aldol-condensation of 2-acetamido-6-O-acetyl-2-deoxy-D-mannose with pyruvic acid in presence of immobilised acylneuraminase pyruvate-lyase, 2439
- highly functionalised ribofuranose and ribopyranose derivs via iodine cyclisations of D-ribohept-2-enonates, 1943
- levulinic acid formation, mechanism, 2111
- lipopolysaccharides from *Aeromonas salmonicida*, synthesis of oligosaccharide sequences with repeating unit of O-specific chain, 6043
- methyl 2,4,6-tri-O-benzyl- $\alpha$ -D-glucopyranoside and methyl 3,4,6-tri-O-benzyl- $\beta$ -D-mannopyranoside, novel synthesis, 807
- methyl 3-O-benzyl-2,4,6-trideoxy-6-iodo- $\alpha$ -D-erythro-hexopyranoside in synthesis of HMG-CoA reductase inhibitor, 2947
- methyl esters of 11S and 12S-HETE, synthesis via D-arabinose, 2993
- mevinolin and compactin, new prep of optically active analogs in which 8-hydroxy- $\Delta$ -lactone moiety is derived from D-glucose, 4995
- new synthesis of p-nitro-calix[6]arene, 3343
- novel glucoside of fagomine in *Fagopyrum esculentum* seeds, isolation and characterisation, 1465
- oligosaccharide structure of de-O-acetylated LPS from *E. coli* Re mutant F 515, 6321

**Carbocations**

- bridgehead, C-6-phenylselenyl bicyclo[4.2.2]piperazinediones hydroxylation to 6-peroxy and C-6-hydroxy bicyclic piperazinediones, 37
- NMR isotope shifts as probe of



- stereocontrol in isoxazoline reductions, synthesis of amino-deoxy-DL-xylo- and arabinopentose derivs from furo-isoxazolines, 2997
- stereospecific alkylation at C-6 of pyranose sugar, conversion of glycosyl fluorides into C-glycosides, 1823
- stereospecific allylation of "ribo" and "galacto" aldulose derivs, 823
- Carbolines**
- 1-alkyl- $\beta$ -carbolines, treatment with dialkyl oxalate, synthesis of canthin alkaloid derivs, 385
- 4-oxo-tetrahydro- $\beta$ -carboline, hydrazine mediated conversion into 4-amino- $\beta$ -carboline, 2139
- new entry into 4-substituted and 3,4-disubstituted  $\beta$ -carbolines, 2139
- Carbonates**
- mixed carbonates, reagents for synthesis of active ester of amino acid derivs, 1721
- trimethylene carbonate, formation by cycloaddition of oxetane and CO<sub>2</sub> catalysed by Ph<sub>3</sub>SbI, , 1323
- Carbocation ions**
- activated 1-aminopyrazolium cations, regioselective nucleophilic substitution and synthesis of 5-substituted 1-methylpyrazoles, 5485
- alkylaromatic radical cations, reactivities of i-Pr, Et, and Me groups in gas phase side-chain deprotonation, 4269
- cation binding properties of 12-membered ring N-pivot lariat ethers, 151
- chiral  $\alpha$ -siloxyketone, effect of cation on diastereofacial selectivity in aldol reactions, 6009
- complexation by N-(3,6,9-trioxadecyl)monoaza-12-crown-4 lariat ether, K<sup>+</sup> cation completely enveloped by donor groups in both ring and side arm, 4035
- crown ethers capped metallo-porphyrins, complexes with metal cations, 3739
- doubly charged ions of bridged [4n]annulenes, evaluation of diatropic and current effects, 3091
- ESR characterisation of N,N-dimethyl-p-anisidinium dimer radical cation, 6369
- gem-dibromocyclopropanes, reaction with diphenylphosphide ion to form cyclopropyldiphenylphosphines, 105
- glycine cation equiv, electrophilic, prep and reaction with heteroatom nucleophiles, 695
- glycine cation equiv, reaction with carbon nucleophiles, amino acid synthesis, 699
- hybridisation and structure of  $\alpha$ -ferrocenyl- $\beta$ -t-butylvinyl cation via <sup>13</sup>C NMR, 1493
- initiation of cyclisation with 4-substituted cyclohexenyl cations, 2921
- intramolecular reactions of acyclic N-acyliminium ions with propargyl silanes leading to derivs of 3-vinylidene-pyrrolidine, 3-vinylidene-piperidine or 1-amino-2-vinylidene-cyclopentane, 3151
- intramolecular reactions of acyclic N-acyliminium ions, allyl silanes as nucleophiles, 3155
- methoxides, reactions with (halomethyl)silanes at Si, facilitation by aprotic solvents and cation separation, 1115
- nitrenium ion not involved in production of hydroxamic acid, solvolysis of N-acetoxy-N-acetylaminobiphenyl, 147
- O-protonated acyl-substituted  $\pi$ -complexes, stabilisation of  $\alpha$ -carbocationic centre, direct participation of transition metal, 3605
- oligooxa[n.n]paracyclophane quin-hydrones, cation-induced CT absorptions, 6175
- oxidation of electron rich compds to radical cations with ClO<sub>2</sub> in dichloromethane, 1765
- quinone-imonium cation, synthesis using DMSO as methylating agent, 3145
- quinonoid crown ethers, synthesis and cation binding properties, 3583
- radical cation disproportionation in electron-transfer oxidation of dioxenes to  $\alpha$ -diketones, 789
- radical cations of aromatic amines and heteroaromatics via action of nitroxides, 4201
- reversible 2-aza-Cope rearrangement in cyclisations of N-acyliminium ions derived from 1'- and 2'-vinyl-N-(3'-butenyl)-5-hydroxy-2-pyrrolidinones, 5105
- substituent effect on reverse Menschutkin reaction of 1-methylpyridinium cations with iodide anion, 5065
- surfactant vesicles, charge type and trans-membrane transport of fluorescent probes, 4827
- tetra(1-adamantyl)cyclobutadiene radical cation, ESR, 4121
- tetrakis(dimethylamino)-p-benzoquinone, stable radical cation, 5115
- thienium cation, formation from  $\beta$ -ethylthionitroolefin and AlCl<sub>3</sub>, 779
- triphenylphosphine radical cation, reaction with cycloalkenes, electro prep of 1-cycloalkenyl-triphenylphosphonium salts, 2199
- Carbonylation**
- (+)-2-carene, induced by iron-pentacarbonyl, 1213
- allylic alcohols, Pd-catalysed oxidative cyclisation and carbonylation to 5-membered ring lactones, 5639
- cis 3-hydroxytetrahydrofuran acetic acid lactones, stereoselective synthesis via Pd-catalysed oxycarbonylation of 4-penten-1,3-diols, 3207
- cobalt carbonyl conversion of disulphides to thioesters and desulphurisation to sulphides, 2609
- $\gamma,\delta$ -unsaturated carboxylic acid derivs, synthesis by Ni(CO)<sub>2</sub>-induced ring opening carbonylation, 5795
- halides and ethers, Rh-catalysed, 5743
- of benzyl chloride-borate ester, iodide ion promotion, 2273
- organo-Al compds, ketone synthesis via Pd-catalysis, 4819
- silylamine or silylsulphide in Ni(CO)<sub>2</sub>-induced carbonylation of gem-dibromocyclopropanes, 5061
- Carbonyl compounds**
- 1,2-dicarbonyl compds, reaction with dimethyl 3-keto glutarate, steric and electronic effects, 2163
- 1,5-dicarbonyl compds, prep from enol ethers, methyl vinyl ketone and BF<sub>3</sub> etherate in presence of an alcohol, 6201
- 1-ethoxy-3-trimethylsilyl-1-propyne regio- and stereoselective reaction with saturated and ethylenic carbonyl derivs giving new  $\alpha$ -functional allylic, conjugated dienic or tlenic silanes, 1861
- $\alpha,\beta$ -unsaturated-, reaction with ethyl isocyanacetate promoted by ZnCl<sub>2</sub> and CuCl, 5781
- $\alpha,\beta$ -unsaturated nitroalkenes reduction by Cr(II)chloride, route to carbonyl compds, 3777
- $\alpha$ -hydroxylation of dicarbonyl compds as their silyl enol ethers by MCPBA, 3563
- addition of 3-bromo-1,1,1-trichloroalkanes to give 3,3-dichlorotetrahydrofurans, 4899
- $\beta$ -dicarbonyl compds, novel method for isoprenylation, 6337
- $\beta$ -substituted, new synthesis, 657
- $\beta$ -trimethylsilyl- $\alpha,\beta$ -unsaturated carbonyl compds, new synthesis using 1-methoxy-3-phenylthio-3-trimethylsilyl-1-propene, 2677
- benzynes-induced fragmentation of 1,3-oxathiolanes, deprotection of CO groups, prep of phenyl vinyl sulphides and 1,2-carbonyl transposition, 2195
- carbonyl oxides, rearrangement to esters using <sup>18</sup>O, 3723
- carbonyl participation in solvolysis of  $\alpha$ -keto mesylates, 811
- cleavage of  $\pi$ -bonds with 4-t-butyl iodoxybenzene, 4955
- conjugated-, addition of organocuprate-chlorotrimethylsilane reagents, 6019
- methylenecyclopentanes and cyclohexanes, 2-substituted, via reaction of carbonyl compds and alkoxyacetylenes with 1-(dialkyl-boryl-methyl)-cyclopentene and -cyclohexene, 4551
- mono- and di-compds prep by fluoride ion induced reactions of  $\beta$ -ketosilanes, 787
- monocyclopentadienyl titanium alkyls thermal stability in reaction with carbonyl groups, 1371
- ozonation of dimethyl ester of endo,cis-bicyclo[2.2.1]hept-5-en-2,3-dicarboxylic acid, intramolecular interaction of zwitterion and methoxycarbonyl group, 5843
- reaction with  $\beta$ -phenylthioalkyl-titanium reagent, 5313
- regiospecific nucleophile-induced fragmentation of  $\alpha,\alpha$ -dichloro- $\beta$ -iminocarbonyl compds, 2709
- selective reduction with diphenylstibine, 5171
- selective transformation of N-t-butoxycarbonyl group into N-alkoxycarbonyl group via N-carboxylate ion equivalent, 5543
- stereochemistry of addition to  $\gamma$ -alkoxy- $\alpha,\beta$ -unsaturated carbonyl systems, 6313
- thiocarbonyls, conversion to carbonyls by clay-supported ferric nitrate, 2327
- unsaturated-, and butenolide via isomerisation of 1,3-diene monooxide and  $\alpha$ -alkylidene- $\gamma$ -butyrolactone, regio- and stereocontrol, 1527

**Carboxylation**

electro, of organic halides and CO<sub>2</sub>, 1509  
 homologation of ketones to  $\alpha,\beta$ -unsaturated carboxylic esters or amides via Pd-catalysed enol triflates, 1109  
 reductive-, of sec amines, synthesis of tertiary N-methylated amines, 5367

**Carboxylic acids anhydrides**

11-deoxyanthracyclinones via cycloaddition of substituted tetrahydrohomophthalic anhydride, regioselective synthesis, 1549  
 2-alkylated-3-deuterated-1-amino-cyclopropane-1-carboxylic acids, regioselective synthesis, 481  
 2-butanolic acid dienolate, addition to 1,3-diphenylpropenone, almost exclusive formation of R,R(S,R)-3,5-diphenyl-2-ethenyl-5-oxopentanoic acid, 2485  
 3,4-epoxy-2-methylenealkanoic acid derivs synthesis using dianion of N-phenyl-2-(phenylsulphonylmethyl)propanamide and aldehydes, 4751  
 3-(3,3-dimethyltriazen-1-yl)-pyridine-4-carboxylic acid, precursor of 3,4-didehydropyridine, prep, 2123  
 3-substituted coumarins via sequential Claisen-ene reactions of  $\alpha$ -aryloxymethylacrylic acids and enophiles, 4393  
 (+)-pederin, total synthesis, stereocontrolled synthesis of (+)-benzoylselenopederic acid, 6465  
 (+)-thienamycin from 3(R)-hydroxybutyric acid, stereocontrolled synthesis, 1523  
 $\alpha,\beta$ -unsaturated acylsilanes as reactive carboxylic acid equivs, 2509  
 $\alpha$ -hydroxy acids by alkylation of chiral N-(benzyloxyacetyl)-trans-2,5-bis(methoxymethoxymethyl)-pyrrolidine, 1343  
 $\alpha$ -hydroxy carboxylic acids, asymmetric synthesis, direct oxidation of chiral amide enolates using 2-sulphonyloxaziridines, 3539  
 acids, reaction with 2-chloro-4,6-disubstituted 1,3,5-triazines, useful acylating reagents in prep of esters, amides, acid anhydrides and peptides, 2901  
 activated carboxylic acids intramolecular lactone annulation onto olefins by Mn(III) yields bicyclo[3.3.0] and [4.3.0]lactones, 3761  
 adducts of 2,3-bis(bromomethyl)-1,3-butadiene with propiolic acids, precursors of 2H-isoindoles and 2,3-dithianaphthalenes, 4093  
 allenic acids, cyclisation, synthesis of  $\beta$ -substituted  $\alpha,\beta$ -unsaturated butenolides, 4811  
 and 1,2-amino alcohols, stereochemistry of Ph<sub>2</sub>P-CCl<sub>2</sub> mediated cyclisation to oxazolines with inversion of carbonyl center, 4687

chiral (S)-glutamic acid use as template to construct 7-carbon subunits with alternating OH groups with stereochemical control, prep of enantiomeric and/or diastereomeric 3,5-dideoxy-heptitols, 5631  
 crystalline stable phosphathyne derivs via acid chlorides and tris(trimethylsilyl)phosphine, 5507  
 different product distributions in reactions of cyclopentyl- and isopropylmagnesiumbromides with cyclohexane-, cyclohex-4-ene and cyclobutane-1,2-dicarboxylic anhydrides, 1297  
 dihydroxy-, stereospecific synthesis via E-2-(phenylsulphonyl)vinyl ethers of 2,3-epoxyalcohols, 6301  
E and Z C-4 deuterated 3-methyl-2-butenolic acid, stereoselective synthesis and regioselective deprotonation syn to acid function, 1939  
 enantiomeric 3,6-hexanoic acid-4-carboxylic acid and [6]para-cyclophan-8-carboxylic acid, absolute configurations, 721  
 enzyme prep from E.coli in formation of o-succinylbenzoic acid from iso-chorismic acid, key in vitamin K<sub>2</sub> biosynthesis, 1487  
 esters and amides from aziridine 2-carboxylic acid salts, 4439  
 Y, $\delta$ -unsaturated carboxylic acid derivs, synthesis by Ni(CO)<sub>4</sub>-induced ring opening carbonylation, 5795  
 gem-dimethyl cyclopropane carboxylic acids, 2-lithio-2-phenylsulphonyl propane as precursor, 6115  
 large ring lactone, synthesis by acid-catalysed cyclisation of (Z)-ene-diyne hydroxy acid precursor, 3811  
 Li dianion of 4-oxo-2-phenylthio-butanolic acid ethylene acetal addition to aldehydes and cyclisation to 2-alkyl-3-furoic acids, 3635  
 lithium trienolate of sorbic acid as d<sup>4</sup> synthon, prep of 7-hydroxy dienolic acids from ketones, 3625  
 methylbenzoic acids and acrylic acids, 2-substituted, oxidation by S<sub>2</sub>O<sub>8</sub><sup>2-</sup>-Ag(I), conversion to phthalides and butenolides via rearrangement of acyloxyl radicals, 1209  
 new chiral acid for resolution of racemic bases, (S)-(-)-(2-phenylcarbamoyloxy)propionic acid, 4451  
 new juvenile hormone analogs, synthesis of alkenolic acid derivs with cyclopropane ring, 4261  
 new stable analogs of prostacyclins, ( $\pm$ )-6 $\alpha$ -oxo-6,9-methano-15-hydroxyprosta-5,13-dienic acids, 4101  
 novel synthesis of 3-cyanoindoles, new route to indole-3-carboxylic acid derivs, 1827  
o-substituted benzoic acids enantioselective conversion to chiral cyclohexane derivs, 4575  
 olefins, conversion to  $\gamma$ -lactones

platelet activating factor, synthesis from (S)-(-)-malic acid, 5195  
 regioselective openings of 2,3-epoxy acids with organocuprates, 4683  
 regioselectivity in halo-lactonisation of  $\gamma,\delta$ -unsaturated acids, 5497  
 resolution of  $\beta$ -hydroxycarboxylic acid derivs on chiral stationary phase derived from (R,R)-tetramide, 4217  
 ring opening and ring enlargement of 3,3-dimethyl-2-phenylcyclopropane carboxylic acid, 4911  
 sepiomelanin, treatment with NaBH<sub>4</sub>, isolation of 5,6-dihydroxyindole-2-carboxylic acid, 2801  
 series of 2,6-disubstituted unsaturated pimelic acids, synthesis, 3115  
 spiro hydrindandione ring system of Fredericamycin A via condensation of 1,4-dimethoxybenzene with 1,1-cyclopentane dicarboxylic acid or 1,1-indan dicarboxylic acid deriv, 4723  
 stereoselective annelation of trimethylsilyloxyacetic acids and imines into 3-hydroxy- $\beta$ -lactams, 4239  
 stereoselectivity, reaction of sec alkylMg compds with bicyclo-[2.2.1]hept-5-ene-2,3-dicarboxylic anhydride and lactones, formation of trans diastereomeric lactones and erythro diols, 4719  
 symmetrical anhydrides via action of tetracyanoethylene on carboxylic acids, 1503  
threo- or erythro- $\alpha$ -methyl- $\beta$ -hydroxy acids via chiral propionate enolate equivs, stereoselective synthesis, 2125  
 two carboxylic functions, chemo-differentiation by selective lactonisation, 473  
 vinylketenes stereo- and regio-specific prep from  $\alpha,\beta$ -unsaturated acid chlorides and their intramolecular [2+2] cycloadditions, 5619

**Carbynes**

phenols from metal-carbynes and diynes, 2159

**Carcinogens**

carcinogenic aza-arene dihydro diols and diol epoxides, novel synthesis of trans-tetrahydro diol diacetates as precursors, 6417  
 sugar as component of embryonic and tumor antigens, 2439  
 synthesis of riboside analog of pyrimidine adduct from N-hydroxy-N-2-acetylaminofluorene and DNA, 2659

**Carotenoids**

ophioxanthin, new carotenoid sulphate from Ophioderma longicaudum, 1871

**Catalysis**

alkylation of aromatic compds, silica-alumina supported transition metal oxide catalyst,

acid or malonic acid derivs in presence of Mn(III), 4291  
 oxidative removal of 2,6-dimethoxybenzyl and phenyl ester derivs as protecting groups, 2027  
 ester and prop-2-enylidene acetal protecting groups, relative stability towards Ir, Rh and Pd catalysts, 5045  
 BF<sub>3</sub>-etherate on alumina catalysis in improved synthesis of cannabidiol, 1083

acid or malonic acid derivs in presence of Mn(III), 4291  
 oxidative removal of 2,6-dimethoxybenzyl and phenyl ester derivs as protecting groups, 2027

ester and prop-2-enylidene acetal protecting groups, relative stability towards Ir, Rh and Pd catalysts, 5045  
 BF<sub>3</sub>-etherate on alumina catalysis in improved synthesis of cannabidiol, 1083

- bovine serum albumin, Darsens condensation of aromatic aldehydes with phenacyl halides, 2471
- HLAD-oxidation of alcohols with acetaldehyde as coenzyme recycling substrate, 4527
- hydroxylation of saturated hydrocarbons, oxone as oxygen donor, 4459
- Knoevenagel condensation, catalysis, 4453
- macropolycyclic molecules with extended basket-shaped skeleton including benzene ring, synthesis; THF retained in hydrochloridecavay and accelerated guest-selective H/D exchange in aromatic diols, 1483
- Michael reaction, catalysis, 2645
- Michael reactions promoted by solid-liquid phase transfer catalysis without solvent, application to addition of acetylacetone, methylacetoacetate and fluorene anions on hindered acceptors, 4601
- Montmorillonite clay, unsymmetrical pyromethanes via coupling of  $\alpha$ -acetoxyethylpyrroles with  $\alpha$ -free pyrroles, 793
- nickel boride and NaBH<sub>4</sub>, reduction of aliphatic nitro compounds, 6413
- rearranged cholest-13(17)-enes catalysed by montmorillonite clay, synthesis, 2135
- reduction of aryl ketones with Zn powder, viologen as electron transfer catalyst, 4525
- sec alcohols, new Cr(VI) reagent for catalytic oxidation to ketones, 5855
- stable 2-acinitro-1,3-propanediol, prep from nitromethane and paraformaldehyde with fluoride ion catalysis, 1423
- use of Yb(fod)<sub>3</sub> in Diels-Alder reactions of acrolein with dienes, stereoselectivity, 2507
- Cephalosporins**
- 7 $\alpha$ -amino-1-oxacephems epimerisation to 7 $\beta$ -amino epimers, 339
- benzyl 6- $\beta$ -aminopenicillinate conversion into crystalline 6- $\alpha$ -formido deriv without chromatography, 377
- carbocephalosporin nucleus, enantioselective synthesis, 3787
- Cerium and compounds**
- 4-methylcoumarins, 5-substituted and 5,6-disubstituted, synthesis using organo-Ce reagents, 6477
- alkylbenzenes, photo-oxidation catalysed by cerium(IV)ammonium nitrate, 3353
- new halogenated marine prostanoids, antitumour chlorovulones from *Clavularia viridis*, 5787
- nitrate free radicals, role in photo side-chain nitroxylation of alkylbenzenes by cerium(IV) ammonium nitrate, 541
- tertiary alcohols via CeCl<sub>4</sub>-promoted addition of Grignard reagents to ketones, 4763
- Cesium and compounds**
- depsiptides with D- $\alpha$ -hydroxy carboxylic acids, synthesis via L- $\alpha$ -halo-carboxylic esters and cesium salts of N-protected amino acids, 5257
- Chain reactions**
- chiral 4-hydroxymethyl butenolide use as template for stereocontrolled conjugate addition of C-Me group leading to 7-carbon chain with predictable 1,3-C-Me substitution, 5627
- construction of acyclic chains of 7 carbons (or more) with predisposed, alternating and/or remote C-Me substitution of 1,5-type with or without intervening OH groups, 5623
- enolate derived from chiral butyrolactone deriv use as template for stereocontrolled introduction of OH groups, 2-carbon chain extension to give diastereomeric or enantiomeric lactones, 5631
- Chalcones**
- photolysis of phenyl cinnamates, synthesis of 2'-hydroxy-chalcones, 4125
- Charge transfer absorptions**
- oligooxa[n.n.]paracyclophane quinhydrones, cation-induced CT absorptions, 6175
- Chelation**
- new structural units for prep of chelating and macrocyclic host molecules, 5749
- synthesis of bicyclo[2.1.1]hexenes-5-d by transmetalation, regio- and stereocontrol by chelation of a neighboring OH function? 1141
- Chemiluminescence**
- decomposition of 1,3-dihydroperoxy-1,1,3,3-tetraphenyl-2-propanone, 173
- of intermediate in photoxygenation of 1,1,3,3-tetramethyl-2-indanone triphenylphosphazene, 843
- Chiral compounds**
- 3-,5-,6- and 7-membered carbocyclic compds with extracyclic chiral center by stereoselective synthesis intramolecular alkylation, 1723
- (+)(S)-3-trichloromethylbutyric acid via stereoselective conjugate addition of Cl<sub>2</sub>CmGCl to crotonate of chiral auxiliary with sulphonylamino substituent, 6047
- $\alpha$ -aminonitriles from new N-cyanomethyl-1,3-oxazolidine synthon, 3567
- $\alpha$ -siloxyketone, effect of cation on diastereofacial selectivity in aldol reactions, 6009
- $\alpha,\beta$ -unsaturated iron acyls, useful chiral enoate synthons, 3075
- aldehydes, reaction with preformed lithium enolate of methyl 2-methylpropanoate, 973
- aldehydes, stereoselective aldol condensation of protected glycine and 3-butyryl thiazolidine-2-thiones to give  $\beta$ -hydroxyesters, intermediates for  $\beta$ -lactam antibiotics, 977
- alkoxy-allenes via reaction of chiral acetylenic acetals with Grignard reagents in presence of Cu salt; diastereoselective  $\beta$ -elimination, 4197
- asymmetric alkylation and sulphenylation of chiral O-silylated imide enolates, 5339
- asymmetric synthesis of (R) or (S)-4,4-dialkyl-2-cyclopentanes, 2047
- asymmetric synthesis of  $\alpha$ -hydroxy carboxylic acids, direct oxidation of chiral amide enolates using 2-sulphonyloxaziridines, 3539
- bifunctional chiral synthons via biochemical methods, C, isoprenoid units, 961
- bisazetidines via hydroalane reduction of bis- $\beta$ -lactams, 2035
- building block (3S,4R)-3-[(R)-1-hydroxyethyl]-4-acetoxyazetid-2-one, stereocontrolled total synthesis, 937
- chirality transfer in [2.3] sigmatropic rearrangement of anions derived from trialkylstannylmethyl allylic ethers, stereospecific synthesis of (2R)-3-benzyloxy-2-methylpropanol, 5013
- cryptocaryone, revised structure, 5491
- cyclohexane derivs, by enantioselective conversion of  $\alpha$ -substituted benzoic acids, 4575
- DEF-ring system of nogalmycin, chiral synthesis, 2693
- diastereoface selectivity, aldol condensation of ethyl 1,3-dithiolane and 1,3-dithiane-2-carboxylates with chiral aldehydes, 2977
- diastereofaceselection, condensation of aldehydes with Zr enolate of chiral N-propionyl-trans-2,5-disubstituted pyrrolidine, 5807
- diastereomers of chiral  $\beta,\beta'$ -dimethyl-bis-homoallylic alcohol with 3 contiguous chiral centers, stereoselective prep via diastereoselective addition of nucleophiles to  $\alpha$ -methyl- $\beta,\gamma$ -unsaturated carbonyl compds, 3707
- enantiocomplimentary route to PGA, and PGE, synthons, inversion of chirality of 2,5-dihydroxycyclopent-3-enyl-acetic acid lactone derivs, 3141
- enantioselective syntheses of (+)-dityopterenes A and C' by chirality transfer of optically active allylic benzoate with Pd(O) catalyst, 2779
- intermediates for prostanoids, asymmetric synthesis of cis-4-t-butylidimethylsiloxy-2-cyclopenten-1-ol and cis-4-tetrahydropyranyloxy-2-cyclopenten-1-ol, 5803
- key intermediate for mevinolin and compactin, prep of ethyl 5(S),6-epoxy-3(R)-(methoxymethoxy)hexanoate, 1185
- measurement of enantiomeric excesses of phosphine oxides, use of chiral shift reagent, 2649
- methyl esters of N(3,5-dinitrobenzoyl)amino acids, chiral solvating agents for NMR determination of enantiomeric purity, 2989
- new chiral acid for resolution of racemic bases, (S)-(-)-(2-phenylcarbamoyloxy)propionic acid, 4451
- new flavin with axial chirality and redox-dependent racemisation, synthesis and resolution, 5183
- new route to chiral  $\beta$ -hydroxy- $\alpha$ -amino acids, cleavage of oxirane with hydrazoic acid, 5309
- novel (4+1)fragment combination approach to chiral cyclopentanoids from tartaric acid, 3121
- P-chiral O-isopropyl oligonucleotide triesters, synthesis and absolute configuration, 2191

- polypropionate units, intermediates for construction, 263
- porcine liver esterase, simple, effective, covalent immobilisation and application in prep of chiral building blocks, 407
- prochiral C centers, diastereotopic selectivity, stereodivergent synthesis of talaromycins, 17
- resolution of  $\beta$ -hydroxycarboxylic acid derivs on chiral stationary phase derived from (R,R)-tetramide, 4217
- stereoselective additions to symmetrical ketones via chiral propionate enolate equivs, 2129
- stereoselective synthesis of threo- or erythro- $\alpha$ -methyl- $\beta$ -hydroxy acids via chiral propionate enolate equivs, 2125
- stereospecific displacement of S from chiral centers, activation via thiophosphonium salts, 4867
- tetracyclo[6.6.0<sup>1,5</sup>.0<sup>8,12</sup>]tetradecane-3,6,10,13-tetraene, via Weiss reaction, 2275
- Troger's base analogs, new units for prep of chiral hosts and metal ligands, 5749
- Chlorophyll**
- chlorophyll b, synthesis and properties of 3-vinyl-3-desmethyl chlorophyll a, 4875
- model compd for photosynthetic electron transfer, synthesis, 5207
- Chromones**
- 2-substituted chroman-4-ones rearrangement to 3,4-alkenyl-chromones, 1879
- Chromium and compounds**
- $\alpha,\beta$ -unsaturated nitroalkenes reduction by Cr(II)chloride, route to carbonyl compds, 3777
- alkynyl-Cr compds, selective addition to aldehyde moiety without affecting CO group of substrate, 5585
- cross aldolisation of  $\alpha$ -bromo-ketones with aldehydes in presence of chromium(II)-chloride, 4371
- high asymmetric induction during reduction of pyruvate and phenylglyoxylate esters of chromium complexed carbinol, 429
- pyrrole- and phenyl-carbene Cr-complexes, reaction with alkoxalkyne, dimer formation via  $o$ -quinonemethide and subsequent dimerisation, 1159
- regioselective aromatic substitution on diaryloxide-tricarbonyl-Cr complex, 3989
- sec alcohols, new Cr(VI) reagent for catalytic oxidation to ketones, 5855
- stereoselective alkylation of benzylic acetates and free alcohols of ( $\eta^6$ -arene)tricarbonyl-Cr complexes to *exo*-alkyl Cr-complexes, 767
- Circular dichroism**
- absolute configuration of (-)-solanapyrone, 2453
- absolute stereochemistry of panaxynol by exciton chirality method, 5775
- $\beta$ -cyclodextrin with amino moiety, binding ability for ferrocene-carboxylic acid in DMSO, 899
- CD homallylic benzoate method, tool for determination of absolute configuration, 2213
- exciton coupling, excimer emission and unique binding of  $\gamma$ -cyclo-dextrin substituted by two naphthyl residues, 3339
- optically active  $\alpha$ -pyridyl substituted diazocenes, Cu(I) selective chiral ligands, CD and cyclic voltammetry, 2077
- spectra of chiral  $\alpha$ -hydroxy-phosphonates and phosphoric acids, 493
- stereostructures of halenaquinol and halenaquinol sulphate from *Xeatospongia sapra* via calculations of CD spectra, 3833
- tridecadeoxynucleotide, synthesis, conformation, NMR, IR and CD studies, 2085
- Cleavage reactions**
- [1,2,4]-triazole[1,5-*a*]pyrimidine N-ylides, new ring cleavage of triazole moiety to pyrimidine deriv, 1321
- (3-chloro-2-methylenecycloalkyl)-palladium chloride dimers, synthesis of ( $\pm$ )-13-methyltridecanolide, 4163
- activated vinylcyclopropanes, conjugate nucleophilic ring opening by Pd catalysis, 3049
- allylic functional groups, reductive removal by nickel boride, 2581
- allylic trimethylsilyl ethers with nickel boride, 371
- anodic oxidation of polycyclic cyclopropanes followed by hydrolysis, regio- and stereoselective formation of homo-allylic alcohols, 4513
- axially disymmetric tertiary amines and quaternary ammonium salts, synthesis of new 1,1'-binaphthyl substit amines, 421
- benzyl-Si and aryl-Si rupture in reaction of alcohols with benzo-silacyclobutenes, formation of (dialkyl)alkoxy- $o$ -tolylsilanes and (dialkyl)alkoxybenzylsilanes, 4761
- bicyclic ketals of 6,8-dioxabicyclo[3.2.1]octane series to  $\delta,\epsilon$ -unsaturated ketones by treatment with acetyl iodide, 3895
- biphenyl-fused 1,2-diphenylcyclobutanes, orientation of bond cleavage initiated by electron transfer, 3579
- bromine in acetone ring opening of 2,5-disubstituted furan ring, 3039
- ether, ester and carbamate protecting groups with catechol boron halides, 1411
- hydroquinone dimethyl ethers oxidative demethylation with nitric acid impregnated MnO<sub>2</sub>, 819
- Li enolate opening of *cis* and *trans*-but-2-ene oxides in presence of BF<sub>3</sub>·OEt<sub>2</sub> by S<sub>N</sub>2 mechanism, 4815
- N- and S-substituted dioxetanes, activation parameters and rates of decomposition, 3183
- new route to chiral  $\beta$ -hydroxy- $\alpha$ -amino acids, cleavage of oxirane with hydrazoic acid, 5309
- nucleophilic ring of crown ethers for building up crown ether rings, 2705
- nucleophilic, of esters and ethers with phenyltellurotrimethylsilane, 453
- peptides from benzhydrylamine resins, cleavage using trifluoromethanesulphonic acid, 4583
- peptides, solid phase synthesis of signal sequence fragments using transesterification cleavage, 4257
- photolysis of acyclic monothioimides to  $\beta$ -lactams and thioamides, involving Y-H abstraction by thiocarbonyl group, 4475
- photosensitised oxygenation of cyclic sulphides, selective C-S bond cleavage, 4609
- polypeptides, Edman degradation using new basic cleavage conditions, 4375
- protected oligonucleotides, removal of internucleotide phenylthio group by bis(tri-butyltin) oxide, 4621
- $\pi$ -bonds of carbonyl compds, with 4-*t*-butyl iodoxybenzene, 4955
- regioselective openings of 2,3-epoxy acids with organocuprates, 4683
- regioselective ring opening of epoxides with alcohols catalysed by organotin phosphate condensates, 3219
- regiospecific opening of oxetanes with trimethylsilyl cyanide-zinc iodide, approach to  $\gamma$ -amino alcohols, 4971
- reversible Claisen rearrangement of 3-(3,3-dimethylallyl)-4-(3,3-dimethylallyloxy)quinolin-2-one to buchapsine and loss of its 1,1-dimethylallyl group, 4253
- S-N bond, by irradiation of N-tosyl diarylsulphilimines and *p*-toluenethiolate anion, 775
- sodium hydrogentelluride cleavage of epoxides and quaternary ammonium salts, 6197
- thioether protection via selectively cleavable sulphonium salts, 6143
- Cobalt and compounds**
- alkylation of  $\beta$ -diketones with 1-bromoadamantane to  $\alpha$ -(1-adamantyl)- $\beta$ -diketones via Co(II), Co(III) and Zn(II) complexes, 3735
- bicyclo[3.3.0]octenones, substituted, synthesis via dicobaltoctacarbonyl mediated alkene-alkyne cyclisations, 4851
- carboxylation of organic halides electro-catalysed by Co-salen complex, 2633
- Co(II)TPP-catalysed isomerisation of electronegative substituted quadricyclanes to norbornadiene, 3487
- desulphurisation of mercaptans to hydrocarbons by CO and water in presence of CO<sub>2</sub>(CO)<sub>8</sub>, 1935
- direct entry to perhydro-triquinacene skeleton by Co-mediated intramolecular cyclisation, 2475
- enol silyl ethers via cobalt carbonyl catalysed reaction of tetrahydrofurans with hydro-silane and CO, 2683
- reduction of aromatic nitriles with a hydrosilane leading to N,N-disilylamines, cobalt carbonyl catalysis, 5145
- trialkylsilane controlled CO<sub>2</sub>(CO)<sub>8</sub> catalysed silyl-hydroformylation of oxetanes, 5753
- trialkylsilanes, reaction with styrene oxide, Co<sub>2</sub>(CO)<sub>8</sub> catalysed, 5415
- Coenzymes**
- HLAD-catalysed oxidation of alcohols with acetaldehyde as coenzyme recycling substrate, 4527
- intramolecular linkage of flavin-porphyrin, rate enhancing effect