

Subject Index of Volume 339

Ab initio

Evaluation of carbohydrate molecular mechanical force fields by quantum mechanical calculations 937

Role of CH/π interactions in substrate binding by *Escherichia coli* β -galactosidase 2275

Use of ¹³C chemical shift surfaces in the study of carbohydrate conformation. Application to cyclomaltooligosaccharides (cyclodextrins) in the solid state and in solution 87

Ab initio conformational map

Ab initio conformational maps for disaccharides in gas phase and aqueous solution 113

Absolute configuration

Crystal and molecular structure and absolute configuration of lincomycin hydrochloride monohydrate 2111

Acacia senegal

Acacia senegal and Prosopis chilensis-nodulating rhizobia Sinorhizobium arboris HAMBI 2361 and S. kostiense HAMBI 2362 produce tetra- and pentameric LCOs that are N-methylated, O-6-carbamoylated and partially sulfated 1061

Acanthophora spicifera

The structure of the agaran sulfate from *Acanthophora* spicifera (Rhodomelaceae, Ceramiales) and its antiviral activity. Relation between structure and antiviral activity in agarans 335

Acanthus ebracteatus

Bioactive polysaccharides from the stems of the Thai medicinal plant *Acanthus ebracteatus*: their chemical and physical features 753 carbose

Two potent competitive inhibitors discriminating α -glucosidase family I from family II 1035

Acarviosine-glucose

Two potent competitive inhibitors discriminating α -glucosidase family I from family II 1035

Acetal-linked N-acetylgalactosamine

Characterisation of a tetrasaccharide released on mild acid hydrolysis of LPS from two rough strains of *Shewanella* species representing different DNA homology groups 1185

2-Acetamido-2-deoxy-D-glucopyranose

Synthesis of *cis*-(1→3)-glycosides of allyl 2-acetamido-4,6-*O*-benzy-lidene-2-deoxy-α-**D**-glucopyranoside 1293

2-Acetamido-2-deoxygalactosyl phosphate

Structure of the O-polysaccharide of *Proteus* serogroup O34 containing 2-acetamido-2-deoxy-α-D-galactosyl phosphate 2145

4-Acetamido-4,6-dideoxy-D-mannose

Structures of two O-polysaccharides of the lipopolysaccharide of Citrobacter youngae PCM 1538 (serogroup O9) 881

Acetyl migration kinetics

Lipase-catalysed preparation of acetates of 4-nitrophenyl β -D-xylopyranoside and their use in kinetic studies of acetyl migration 1353

Acetylation

Succinyl and acetyl starch derivatives of a hybrid maize: physicochemical characteristics and retrogradation properties monitored by differential scanning calorimetry 2673

Acetylated

Structure elucidation by NMR spectroscopy of a new acetylated saponin from Centratherum anthelminticum 2871

Acetylesterase assay

Lipase-catalysed preparation of acetates of 4-nitrophenyl β-D-xylopyranoside and their use in kinetic studies of acetyl migration 1353 Acetylxylan esterase specificity

Deoxy and deoxyfluoro analogues of acetylated methyl β -D-xylopyranoside—substrates for acetylxylan esterases 2101

α₁-Acid glycoprotein

Tertiary structure of human α_1 -acid glycoprotein (orosomucoid). Straightforward fluorescence experiments revealing the presence of a binding pocket 607

Acrotylaceae

A nearly idealized 6'-O-methylated 1-carrageenan from the Australian red alga *Claviclonium ovatum* (Acrotylaceae, Gigartinales) 1450

Acrylamidomethylation

Synthesis and antimicrobial activity of a water-soluble chitosan derivative with a fiber-reactive group 313

Actinobacillus pleuropneumoniae

Structural analysis of the lipopolysaccharide derived core oligosaccharides of *Actinobacillus pleuropneumoniae* serotypes 1, 2, 5a and the genome strain 5b 1973

Actinobacillus pleuropneumoniae O:14

Structural characterization of the antigenic O-polysaccharide in the lipopolysaccharide produced by *Actinobacillus pleuropneumoniae* serotype 14 1399

Active site

Pectin methylesterases: sequence-structural features and phylogenetic relationships 2281

Advanced glycation end product (AGE)

Carbohydrate carbonyl mobility—the key process in the formation of α -dicarbonyl intermediates 1609

Characterization and detection of lysine-arginine cross-links derived from dehydroascorbic acid 483

Aeromonas gum

Chemical structure of aeromonas gum—extracellular polysaccharide from *Aeromonas nichidenii* 5797 1631

Aeromonas hydrophila

Structural studies on the R-type lipopolysaccharide of Aeromonas hydrophila 787

Aeromonas nichidenii

Chemical structure of aeromonas gum—extracellular polysaccharide from *Aeromonas nichidenii* 5797 1631

AFM

Preparation and antibacterial activity of chitosan nanoparticles 2693

Rod-like architecture and helicity of the poly(C)/schizophyllan complex observed by AFM and SEM 251

Agarans

Desulfation of sulfated galactans with chlorotrimethylsilane. Characterization of β -carrageenan by 1H NMR spectroscopy 1619 The system of galactans of the red seaweed, *Kappaphycus alvarezii*, with emphasis on its minor constituents 2575

Aggregation

Surface and aggregate properties of an amphiphilic derivative of carboxymethylchitosan 1113

Aglycone

Synthesis of L-arabinose-containing fragments of the oat root saponin Avenacin A-1 1285

Agrobacterium tumefaciens

Elucidation of two O-chain structures from the lipopolysaccharide fraction of *Agrobacterium tumefaciens* F/1 2451

Alanine

Structural elucidation of the extracellular and cell-wall teichoic acids of *Staphylococcus epidermidis* RP62A, a reference biofilm-positive strain 1467

Alaninolysine

Structure of an acidic O-specific polysaccharide from marine bacterium *Shewanella fidelis* KMM $3582^{\rm T}$ containing $N^{\rm c}$ -[(S)-1-carboxyethyl]- $N^{\rm c}$ -(D-galacturonoyl)-L-lysine 1655

Alcohole

Practical de-O-acylation reactions promoted by molecular sieves 729

Alditols

Orientated growth of crystalline anhydrous maltitol (4-O- α -D-glucopyranosyl-D-glucitol) 1225

Aldol reaction

Intramolecular aldol cyclization of *C*-4-ulopyranosyl-2'-oxoalkanes controlled by steric effects. Asymmetric synthesis of substituted 8-oxabicyclo[3.2.1]octanones and -octenones and cyclopentenones 2475

Aldol reactions

Formation of 3-hexuloses in aldol reactions, analysis of the products as their *O*-isopropylidene derivatives by GC–MS 2171

Accessibility of N-acyl-D-mannosamines to N-acetyl-D-neuraminic acid aldolase 2091

Aldose

An optimized CZE method for analysis of mono- and oligomeric aldose mixtures 2037

Aldoses

Kinetic and chemical studies on the isomerization of monosaccharides in *N*-methylmorpholine-*N*-oxide (NMMO) under Lyocell conditions 1899

Alginate

Preparation and structure elucidation of alginate oligosaccharides degraded by alginate lyase from *Vibro* sp. 510 1475

Alginate lyase

Preparation and structure elucidation of alginate oligosaccharides degraded by alginate lyase from *Vibro* sp. 510 1475

Algorithm

Data mining the protein data bank: automatic detection and assignment of carbohydrate structures 1015

Aliphatic alcohol

Inclusion complexes of V-amylose with undecanoic acid and dodecanol at atomic resolution: X-ray structures with cycloamylose containing 26 p-glucoses (cyclohexaicosaose) as host 1427

Alkali-freezing treatment

Influence of alkali-freezing treatment on the solid state structure of chitin 2321

Alkenylation

Syntheses of alkenylated carbohydrate derivatives toward the preparation of monolayers on silicon surfaces 2599

Allelopathic substance

A convenient synthesis of lepidimoide from okra mucilage and its growth-promoting activity in hypocotyls 9

allo-Inosito

Crystal structure of 1L-1,2:4,5-di-*O*-isopropylidene-*allo*-inositol; A comparison of its conformation in solid and solution states 1551

Alpine-Borane®

Stereoselective synthesis of chirally deuterated (S)-D- $(6^{-2}H_1)$ glucose 1173

Alteromonas

Structural studies of the main exopolysaccharide produced by the deep-sea bacterium *Alteromonas infernus* 2371

Amadori rearrangement

Synthesis and intramolecular reactions of Tyr-Gly and Tyr-Gly-Gly related 6-*O*-glucopyranose esters 67

4-Aminobenzoic acid ethyl ester

An optimized CZE method for analysis of mono- and oligomeric aldose mixtures 2037

Amino carbohydrates

Binuclear copper(II) complexes of 5-N-(β -ketoen)amino-5-deoxy-1,2-O-isopropylidene- α -D-glucofuranoses: synthesis, structure, and catecholoxidase activity 1941

Aminodeoxycyclodextrin

Synthesis of 6^{I} -amino- 6^{I} -deoxy- 2^{I-VII} , 3^{I-VII} -tetradeca-O-methyl-cyclomaltoheptaose 1361

2-Amino-2-deoxy-L-guluronic acid

Structure of the O-polysaccharide of *Idiomarina zobellii* KMM 231^T containing two unusual amino sugars with the free amino group, 4-amino-4,6-dideoxy-**D**-glucose and 2-amino-2-deoxy-**L**-guluronic acid 477

4-Amino-4,6-dideoxy-D-glucose

Structure of the O-polysaccharide of *Idiomarina zobellii* KMM 231^T containing two unusual amino sugars with the free amino group, 4-amino-4,6-dideoxy-p-glucose and 2-amino-2-deoxy-L-guluronic acid 477

Aminoguanidine

Pyridinium-carbaldehyde: active Maillard reaction product from the reaction of hexoses with lysine residues 705

8-Amino-Kdo

The structure of the core region of the lipopolysaccharide from *Shewanella algae* BrY, containing 8-amino-3,8-dideoxy-**D**-*manno*-oct-2-ulosonic acid 737

2-Aminopyridyl-tethered oligosaccharide

Synthesis of 2-[(2-pyridyl)amino]ethyl β -D-lactosaminide and evaluation of its acceptor ability for sialyltransferase: a comparison with 4-methylumbelliferyl and dansyl β -D-lactosaminide 1545

Ammonium ions

Synthesis of novel ammonium and selenonium ions and their evaluation as inhibitors of UDP-galactopyranose mutase 2205

Amphiphile

Preparation of gemini-type amphiphiles bearing cyclitol head groups and their application as high-performance modifiers for lipases 493

Amphiphilic derivative of carboxymethylchitosan

Surface and aggregate properties of an amphiphilic derivative of carboxymethylchitosan 1113

α-Amylase inhibitors

Synthesis and characterisation of novel chromogenic substrates for human pancreatic α -amylase 1727

Amylopectin clusters

Structural parameters of amylopectin clusters and semi-crystalline growth rings in wheat starches with different amylose content 2683 Amylose

Effect of methylation on the stability and solvation free energy of amylose and cellulose fragments: a molecular dynamics study 1697

Amylose content

Structural parameters of amylopectin clusters and semi-crystalline growth rings in wheat starches with different amylose content 2683

A_ND_NA_HD_H mechanism

Molecular modeling insights into the catalytic mechanism of the retaining galactosyltransferase LgtC $\,$ 1007

Angiogenesis

Synthesis of a glucuronic acid and glucose conjugate library and evaluation of effects on endothelial cell growth 1873

Synthesis of disaccharides derived from heparin and evaluation of effects on endothelial cell growth and on binding of heparin to FGF-2 2343

1,5-Anhydro-D-fructose

Synthesis and co-polymerization of an unsaturated 1,5-anhydro-D-fructose derivative 2077

1,4-Anhydro-D,L-ribitol

Synthesis and structure of selected quaternary N-(1,4-anhydro-5-deoxy-2,3-O-isopropylidene-p,L-ribitol-5-yl)ammonium salts 2355

2,3-Anhydropyranosides

An efficient chemoenzymatic route to methyl 4-O-benzyl-2,3-anhydro- β -D-lyxopyranoside from methyl β -D-xylopyranoside 425 Deoxy and deoxyfluoro analogues of acetylated methyl β -D-xylopyranoside—substrates for acetylxylan esterases 2101

2,3-Anhydro sugars

An efficient route to thioglycosides with the 2,3-anhydro-D-ribo stereochemistry 2895

Anhydrosucrose

A facile approach to anhydrogalactosucrose derivatives from chlorinated sucrose 2651

Anhydrous lactulose

Transformation of lactulose trihydrate into anhydrous lactulose by fluidized bed drying and its characterization 1069

1,5-Anhydroxylitol

1,5-Anhydroxylitol from leaves of Olea europaea 2731

Anionic polysaccharide

The extracellular polysaccharide of *Porphyridium* sp.: an NMR study of lithium-resistant oligosaccharidic fragments 97

Annealing

Effects of annealing on the polymorphic structure of starches from sweet potatoes (*Ayamurasaki* and *Sunnyred* cultivars) grown at various soil temperatures 1093

Anomeric configuration

Complexation of vanadium(V) oxyanions with hexopyranose- and mannopyranoseuronic acid-containing polysaccharides: stereochemical considerations 771

Anomeric esters

Improved anomeric selectivity for the aroylation of sugars 1373 Anthranilic acid

Neutral, acidic, and basic derivatives of anthranilamide that confer different formal charge to reducing oligosaccharides 221

Anti-angiogenic

Synthesis of a 6^{V} -sulfated mannopentasaccharide analogue related to PI-88 1155

Antibacterial activity

Preparation and antibacterial activity of chitosan nanoparticles 2693

Antibacterial drug

Synthesis and evaluation of a mechanism-based inhibitor of KDO8P synthase 385

Antigen

Synthesis of oligogalacturonates conjugated to BSA 2159

Antimicrobial activity

Synthesis and antimicrobial activity of a water-soluble chitosan derivative with a fiber-reactive group 313

Antimicrobials

Effect of carbohydrate fatty acid esters on *Streptococcus sobrinus* and glucosyltransferase activity 1029

Antioxidant activity

Preparation of low-molecular-weight and high-sulfate-content chitosans under microwave radiation and their potential antioxidant activity in vitro 2515

Antitumor activity

Correlation of structure to antitumor activities of five derivatives of a β-glucan from *Poria cocos* sclerotium 2567

Synthesis and biological activities of octyl 2,3,4-tri-O-sulfo- α -L-fucopyranosyl- $(1\rightarrow 3)$ -2,4-di-O-sulfo- α -L-fucopyranosyl- $(1\rightarrow 3)$ -2,4-di-O-sulfo- β -L-fucopyranosyl- $(1\rightarrow 3)$ -2,4-di-O-sulfo- $(1\rightarrow 3)$ -2,4-di-O-sulfo- $(1\rightarrow 3)$ -2,4-di- $(1\rightarrow 3)$ -3,4-di- $(1\rightarrow 3)$ -3,4-di-(

Synthesis and biological activities of octyl 2,3-di-O-sulfo- α -L-fucopyranosyl-(1 \rightarrow 3)-2-O-sulfo- α -L-fucopyranosyl-(1 \rightarrow 4)-2,3-di-O-sulfo- α -L-fucopyranosyl-(1 \rightarrow 3)-2-O-sulfo- α -L-fucopyranosyl-(1 \rightarrow 4)-2,3-di-O-sulfo- β -L-fucopyranoside 2083

Anti-viral activities

Evaluation of sulfated fungal β -glucans from the sclerotium of *Pleurotus tuber-regium* as a potential water-soluble anti-viral agent 2297

Antiviral activity

The structure of the agaran sulfate from *Acanthophora spici-fera* (Rhodomelaceae, Ceramiales) and its antiviral activity. Relation between structure and antiviral activity in agarans 335

Apiose

Synthesis of a disaccharide fragment of rhamnogalacturonan II 2507

Aqueous H₂SO₄

Reinvestigation of the mercuration–demercuration reaction on alkylated glycals: an improved method for the preparation of 2,3-dideoxy- α , β -unsaturated carbohydrate enals 2031

Aqueous media

Environmentally friendly C-glycosylation of phloroacetophenone with unprotected p-glucose using scandium(III) trifluoromethanesulfonate in aqueous media: key compounds for the syntheses of mono- and di-C-glucosylflavonoids 2611

Aqueous solubility

Crystal structure of ammonium isosaccharate and aqueous solubility of ammonium and sodium isosaccharates 2811

Aqueous solutions

Vibrational circular dichroism of carbohydrate films formed from aqueous solutions 2713

Arabinan

Arabinan-cellulose composite in *Opuntia ficus-indica* prickly pear spines 123

Purification, structure and immunobiological activity of an arabinan-rich pectic polysaccharide from the cell walls of *Prunus dulcis* seeds 2555

Structural features of pectic polysaccharides from the skin of *Opuntia ficus-indica* prickly pear fruits 1119

Arabinofuranosides

Synthesis of pentose-containing disaccharides using a thermostable α -L-arabinofuranosidase 2019

Arabinogalactan

An arabinogalactan from the skin of *Opuntia ficus-indica* prickly pear fruits 1201

An effective synthesis of an arabinogalactan with a β -(1 \rightarrow 6)-linked galactopyranose backbone and α -(1 \rightarrow 2) arabinofuranose side chains 673

Syntheses of arabinogalactans consisting of β -(1 \rightarrow 6)-linked D-galactopyranosyl backbone and α -(1 \rightarrow 3)-linked L-arabinofuranosyl side chains 1847

Arabino-3,6-galactan

Structure of oligosaccharide side chains of an intestinal immune system modulating arabinogalactan isolated from rhizomes of *Atractylodes lancea* DC 763

Arabinose

Facile synthesis of arabinomannose penta- and decasaccharide fragments of the lipoarabinomannan of the equine pathogen, *Rhodococcus equi* 1761

Syntheses of arabinogalactans consisting of β -(1 \rightarrow 6)-linked p-galactopyranosyl backbone and α -(1 \rightarrow 3)-linked L-arabinofuranosyl side chains 1847

Arabinoxylan

The gel-forming polysaccharide of psyllium husk (*Plantago ovata* Forsk) 2009

Arabinoxylans

Impact and efficiency of GH10 and GH11 thermostable endoxylanases on wheat bran and alkali-extractable arabinoxylans 2529 Inactivated enzymes as probes of the structure of arabinoxylans as observed by atomic force microscopy 579

Structural analysis of arabinoxylans isolated from native and malted finger millet (*Eleusine coracana*, ragi) 2457

Argania spinosa

Structural investigation of hemicellulosic polysaccharides from *Argania spinosa*: characterisation of a novel xyloglucan motif 201 croylation

Improved anomeric selectivity for the aroylation of sugars 1373 Aryl sialosides, 1H and 13C NMR

Synthesis of aryl sialosides using Mitsunobu conditions 2835 Aspartyl esterase

Pectin methylesterases: sequence-structural features and phylogenetic relationships 2281

Astraeus hygrometricus

Structural investigation of a water-soluble glucan from an edible mushroom, *Astraeus hygrometricus* 2249

Asymbiotic diazotroph

Structure of the O-polysaccharide of the lipopolysaccharide of Azospirilhum irakense KBC1 1813

Asymmetric synthesis

Intramolecular aldol cyclization of *C*-4-ulopyranosyl-2'-oxoalkanes controlled by steric effects. Asymmetric synthesis of substituted 8-oxabicyclo[3.2.1]octanones and -octenones and cyclopentenones 2475

Atomic force microscopy

Inactivated enzymes as probes of the structure of arabinoxylans as observed by atomic force microscopy 579

Australia

A nearly idealized 6'-O-methylated 1-carrageenan from the Australian red alga *Claviclonium ovatum* (Acrotylaceae, Gigartinales) 1459 Auxins

Structure of the inclusion complexes of heptakis(2,3,6-tri-O-methyl)- β -cyclodextrin with indole-3-butyric acid and 2,4-dichlorophenoxyacetic acid 233

Average DS value

Determination of the degree of substitution and its distribution of carboxymethylcelluloses by capillary zone electrophoresis 1917

Axial hydroxy group

Preparation of gemini-type amphiphiles bearing cyclitol head groups and their application as high-performance modifiers for lipases 493

Aza-C-nucleoside

Facile route for the synthesis of the iminosugar nucleoside (3*R*,4*R*)-1-(pyren-1-yl)-4-(hydroxymethyl)pyrrolidin-3-ol 1565

Azidonitration

Solution and solid-state structure of *N*-acetamido-3,4,6-tri-*O*-acetyl-2-azido-2-deoxy-α-D-galactopyranosylamine 1447

Azospirillum irakense

Structure of the O-polysaccharide of the lipopolysaccharide of *Azospirillum irakense* KBC1 1813

B. cereus

Glycoconjugates for the recognition of Bacillus spores 2859

Bacillus macerans cyclomaltodextrin glucanyltransferase

Enzymatic synthesis of two salicin analogues by reaction of salicyl alcohol with *Bacillus macerans* cyclomaltodextrin glucanyltransferase and *Leuconostoc mesenteroides* B-742CB dextransucrase 1517

B. pumilus

Glycoconjugates for the recognition of *Bacillus* spores 2859

B. subtilis spores

Glycoconjugates for the recognition of Bacillus spores 2859

B. thuringiensis

Glycoconjugates for the recognition of *Bacillus* spores 2859 *Bacillus* sp. NRRL B-21195

Purification and characterization of an intracellular cycloalternandegrading enzyme from *Bacillus* sp. NRRL B-21195 1179

Bacterial polysaccharide

Structural studies of the main exopolysaccharide produced by the deep-sea bacterium *Alteromonas infernus* 2371

Structure of an acidic O-specific polysaccharide from marine bacterium *Shewanella fidelis* KMM $3582^{\rm T}$ containing $N^{\rm e}$ -[(S)-1-carboxyethyl]- $N^{\rm c}$ -(D-galacturonoyl)-L-lysine 1655

Structure of the O-polysaccharide of the lipopolysaccharide of *Azospirillum irakense* KBC1 1813

Synergistic interactions between the genetically modified bacterial polysaccharide P2 and carob or konjac mannan 2233

Bacterial amount

Effect of carbohydrates on fructosyltransferase expression and distribution in *Streptococcus mutans* GS-5 biofilms 2883

Bacterial polysaccharide structure

Structure and cross-reactivity of the O-antigen of *Providencia stuartii* O18 containing 3-acetamido-3,6-dideoxy-D-glucose 409

Structure of the O-polysaccharide from the lipopolysaccharide of *Hafnia alvei* strain PCM 1529 723

Structure of the O-polysaccharide of *Citrobacter youngae* O1 containing an α-p-ribofuranosyl group 321

Structure of the O-polysaccharide of *Idiomarina zobellii* KMM 231^T containing two unusual amino sugars with the free amino group, 4-amino-4,6-dideoxy-p-glucose and 2-amino-2-deoxy-L-guluronic acid 477

Structure of the O-polysaccharide of *Proteus* serogroup O34 containing 2-acetamido-2-deoxy-α-p-galactosyl phosphate 2145

Structure of the O-polysaccharide of *Providencia alcalifaciens* O19 415

Structure of the O-polysaccharide of *Providencia stuartii* O4 containing 4-(*N*-acetyl-L-aspart-4-yl)amino-4,6-dideoxy-D-glucose 195

Structure of the O-polysaccharide of *Providencia stuartii* O49 1557 Structure of the O-polysaccharide of the lipopolysaccharide of *Rahnella aquatilis* 1-95 1809

The O-polysaccharide of *Pseudomonas syringae* pv. mori NCPPB 1656 is a β -(1 \rightarrow 2)-linked homopolymer of L-rhamnose 733

Basicity constants

Proton-acceptor properties and capability for mutarotation of some glucosylamines in methanol 1439

Basidiomycetes

The structure of the glucuronoxylomannan produced by culinary-medicinal yellow brain mushroom (*Tremella mesenterica* Ritz.:Fr., Heterobasidiomycetes) grown as one cell biomass in submerged culture 1483

Benzoxazole

Comparative evaluation of D-glucosyl thiouronium, glucosylthio heterocycles, Daonil, and insulin as inhibitors for hepatic glycosidases 469

Benzoyl ceramide

Synthetic studies on glycosphingolipids from Protostomia phyla: total syntheses of glycosphingolipids from the parasite, *Echinococcus multilocularis* 2749

Benzylation

Unexpected reductions of glycosyl spacer-armed phthalimides 1497

Benzylidene oxazolone

Cyclosophoraose as a catalytic carbohydrate for methanolysis 461 Beta vulgaris

Isolation of diferulic bridges ester-linked to arabinan in sugar beet cell walls 2315

Biantennary complex-type oligosaccharide

High efficiency of transferring a native sugar chain from a glycopeptide by a microbial endoglycosidase in organic solvents 719

Binding

Blocking nonspecific adsorption of native food-borne microorganisms by immunomagnetic beads with t-carrageenan 613

Binding studies

Glycoconjugates for the recognition of Bacillus spores 2859

Bioactive conformations

NMR spectroscopic and molecular modeling studies of proteincarbohydrate and protein-peptide interactions 907

Bioactivity studies

Sugar bislactones by one-step oxidative dimerisation with pyridinium chlorochromate versus regioselective oxidation of vicinal diols 1889

Biofilm

Structural elucidation of the extracellular and cell-wall teichoic acids of *Staphylococcus epidermidis* RP62A, a reference biofilm-positive strain 1467

The influence of mutanase and dextranase on the production and structure of glucans synthesized by streptococcal glucosyltransferases 2127

Effect of carbohydrates on fructosyltransferase expression and distribution in *Streptococcus mutans* GS-5 biofilms 2883

Bioinformatics

Data mining the protein data bank: automatic detection and assignment of carbohydrate structures 1015

Web resources for the carbohydrate chemist 929

Biological signal transduction

First derivatives of myo-inositol 1,4,6-trisphosphate modified at positions 2 and 3: structural analogues of p-myo-inositol 1,4,5-trisphosphate 51

Biosensors

Syntheses of alkenylated carbohydrate derivatives toward the preparation of monolayers on silicon surfaces 2599

Bisecting hybrid-type oligosaccharide

Mucor hiemalis endo-β-N-acetylglucosaminidase can transglycosylate a bisecting hybrid-type oligosaccharide from an ovalbumin glycopeptide 2633

Blood serum

Structure of the neutral O-polysaccharide and biological activities of the lipopolysaccharide of *Proteus mirabilis* O20 623

B3LYP/6-311++G**

B3LYP/6-311++ G^{**} study of monohydrates of α - and β -D-glucopyranose: hydrogen bonding, stress energies, and effect of hydration on internal coordinates 553

B3LYP/6-311++ G^{**} study of α- and β-D-glucopyranose and 1,5-anhydro-D-glucitol: 4C_1 and 1C_4 chairs, ${}^{3,O}B$ and $B_{3,O}$ boats, and skew-boat conformations 537

Boat

B3LYP/6-311++ G^{**} study of α- and β-D-glucopyranose and 1,5-anhydro-D-glucitol: 4C_1 and 1C_4 chairs, ${}^{3,O}B$ and $B_{3,O}$ boats, and skew-boat conformations 537

Bolaform

Synthesis and properties of new bolaform and macrocyclic galactose-based surfactants obtained by olefin metathesis 1243

Branched cyclodextrin

¹H NMR spectra of branched-chain cyclomaltohexaoses (α-cyclodextrins) 777

Bromobenzene

Palladium-catalyzed oxidation of benzylated aldose hemiacetals to lactones 1377

Brown algae

A highly regular fraction of a fucoidan from the brown seaweed *Fucus distichus* L. 511

Bucherer-Bergs reaction

Synthesis and structure determination of some nonanomerically C–C-linked serine glycoconjugates structurally related to mannojirimycin 2187

Ca coordination

Crystal structures of dihydroxyacetone and its derivatives 1995 Cactus spine

Arabinan–cellulose composite in *Opuntia ficus-indica* prickly pear spines 123

CADE

Purification and characterization of an intracellular cycloalternandegrading enzyme from *Bacillus* sp. NRRL B-21195 1179

Calcium interaction

The heparin– Ca^{2+} interaction: the influence of the O-sulfation pattern on binding 975

Ca(OCl)₂

A facile preparation of uronates via selective oxidation with TEMPO/KBr/Ca(OCl)₂ under aqueous conditions 1219

Capillary electrophoresis

An optimized CZE method for analysis of mono- and oligomeric aldose mixtures 2037

Complementary exploration of the action pattern of hyaluronate lyase from *Streptococcus agalactiae* using capillary electrophoresis, gel-permeation chromatography and viscosimetric measurements 2541

Evaluation of newly synthesized and commercially available charged cyclomaltooligosaccharides (cyclodextrins) for capillary electrokinetic chromatography 241

Kinetic and chemical studies on the isomerization of monosaccharides in *N*-methylmorpholine-*N*-oxide (NMMO) under Lyocell conditions 1899

On the separation, detection and quantification of pectin derived oligosaccharides by capillary electrophoresis 1711

Capillary zone electrophoresis

Determination of the degree of substitution and its distribution of carboxymethylcelluloses by capillary zone electrophoresis 1917

Ca²⁺–polysaccharide interactions

The system of galactans of the red seaweed, *Kappaphycus alvarezii*, with emphasis on its minor constituents 2575

Capsule

Structural studies of the capsular polysaccharide of a non-neoformans Cryptococcus species identified as C. laurentii, which was reclassified as Cryptococcus flavescens, from a patient with AIDS 503

Carbohydrate

Crystal structure of N-(benzyloxycarbonyl)aminoethyl-2,3,4,6-tetra-O-benzoyl- α -D-mannopyranoside: stabilization of the crystal lattice by a tandem network of N-H···O, C-H···O, and C-H··· π interactions 1087

Neutral, acidic, and basic derivatives of anthranilamide that confer different formal charge to reducing oligosaccharides 221 Role of CH/ π interactions in substrate binding by *Escherichia coli* β-galactosidase 2275

A selective Sc(OTf)₃-catalyzed trialkylsilyl ether to acetyl ester exchange reaction with β-L-idopyranoside and 3,4-*O*-isopropylidene-β-D-galactopyranoside derivatives 2841

Carbohydrate analysis

A nearly idealized 6'-O-methylated t-carrageenan from the Australian red alga *Claviclonium ovatum* (Acrotylaceae, Gigartinales) 1450

Carbohydrate-1-carbamates

Synthesis of *N*-unsubstituted, mono- and disubstituted carbohydrate-1-*O*-carbamates and their behaviour in glycoside syntheses 2821

Carbohydrate conformation

Use of ¹³C chemical shift surfaces in the study of carbohydrate conformation. Application to cyclomaltooligosaccharides (cyclodextrins) in the solid state and in solution 87

Carbohydrate esterase family 8

Pectin methylesterases: sequence-structural features and phylogenetic relationships 2281

Carbohydrate esterification

Improved anomeric selectivity for the aroylation of sugars 1373 Carbohydrate libraries

Synthesis of a glucuronic acid and glucose conjugate library and evaluation of effects on endothelial cell growth 1873

Carbohydrates

A convergent strategy for the preparation of N-glycan core di-, tri-, and pentasaccharide thioaldoses for the site-specific glycosylation of peptides and proteins bearing free cysteines 181

A Fourier-transform infrared spectroscopy study of sugar glasses 1077

A synthetic strategy for novel nonsymmetrical bola amphiphiles based on carbohydrates 1147

Carbohydrates from Cynanchum otophyllum 1967

Catalytic ceric ammonium nitrate mediated synthesis of 2-deoxy-1-thioglycosides 2197

Gram-scale syntheses of the $(1\rightarrow 3)$ -linked and $(1\rightarrow 4)$ -linked hyaluronan disaccharides 1255

Solution and solid-state structure of *N*-acetamido-3,4,6-tri-*O*-acetyl-2-azido-2-deoxy-α-p-galactopyranosylamine 1447

The influence of small oligosaccharides on the immune system 1673 Vibrational circular dichroism of carbohydrate films formed from aqueous solutions 2713

Carbonyl groups

Crystal and molecular structure of methyl 4-*O*-methyl-β-D-*ribo*-hex-3-ulopyranoside 795

Carboxymethylated cyclosophoraoses

Synthesis and characterization of carboxymethylated cyclosophoraose, and its inclusion complexation behavior 519

Carboxymethylation

Correlation of structure to antitumor activities of five derivatives of a β -glucan from *Poria cocos* sclerotium 2567

Carboxypeptidase Y

Indiscriminate glycosylation of procarboxypeptidase Y expressed in *Pichia pastoris* 1041

Carob

Synergistic interactions between the genetically modified bacterial polysaccharide P2 and carob or konjac mannan 2233

Carrageenan

The revised NMR chemical shift data of carrageenans 2309

β -Carrageenan

Desulfation of sulfated galactans with chlorotrimethylsilane. Characterization of β -carrageenan by 1H NMR spectroscopy 1619

1-Carrageenan

Blocking nonspecific adsorption of native food-borne microorganisms by immunomagnetic beads with 1-carrageenan 613

A nearly idealized 6'-O-methylated η -carrageenan from the Australian red alga *Claviclonium ovatum* (Acrotylaceae, Gigartinales) 1459

κ-Carrageenan

Blocking nonspecific adsorption of native food-borne microorganisms by immunomagnetic beads with t-carrageenan 613

Desulfation of sulfated galactans with chlorotrimethylsilane. Characterization of β -carrageenan by 1H NMR spectroscopy 1619

Isolation of κ -carrageenan oligosaccharides using ion-pair liquid chromatography—characterisation by electrospray ionisation mass spectrometry in positive-ion mode 1301

Carrageenans

The system of galactans of the red seaweed, *Kappaphycus alvarezii*, with emphasis on its minor constituents 2575

Castanospermine

The chemistry of castanospermine. Direct oxidation of the tetraacetate to the corresponding γ -lactam 1747

Catalysis

Cyclosophoraose as a catalytic carbohydrate for methanolysis 461 Palladium-catalyzed oxidation of benzylated aldose hemiacetals to lactones 1377

Catalytic mechanism

Molecular modeling insights into the catalytic mechanism of the retaining galactosyltransferase LgtC 1007

Catecholoxidase activity

Binuclear copper(II) complexes of 5-N-(β -ketoen)amino-5-deoxy-1,2-O-isopropylidene- α -D-glucofuranoses: synthesis, structure, and catecholoxidase activity 1941

Cationic starch derivatives

Enzymatic degradation and electrospray tandem mass spectrometry as tools for determining the structure of cationic starches prepared by wet and dry methods 637

C-branched sugars

Indium-promoted Barbier-type allylations in aqueous media: a convenient approach to 4-C-branched monosaccharides and (1 \rightarrow 4)-C-disaccharides 2737

¹³C CP-MAS NMR

Arabinan-cellulose composite in *Opuntia ficus-indica* prickly pear spines 123

C-disaccharides

Indium-promoted Barbier-type allylations in aqueous media: a convenient approach to 4-C-branched monosaccharides and (1 \rightarrow 4)-C-disaccharides 2737

Ce-p-ribose complex

Metal-ion interactions with sugars. Crystal structures and FT-IR studies of the LaCl $_3$ -ribopyranose and CeCl $_3$ -ribopyranose complexes 1689

Cell wall

FT-IR study of the *Chara corallina* cell wall under deformation 629 Impact and efficiency of GH10 and GH11 thermostable endoxylanases on wheat bran and alkali-extractable arabinoxylans 2529

Isolation of diferulic bridges ester-linked to arabinan in sugar beet cell walls 2315

Cell-wall glucan

Refinement of the structures of cell-wall glucans of *Schizosacchar-omyces pombe* by chemical modification and NMR spectroscopy 2255

Cell walls

Synthesis of an apiose-containing disaccharide fragment of rhamnogalacturonan-II and some analogues 21

Cellodextrins

An optimized CZE method for analysis of mono- and oligomeric aldose mixtures 2037

Cellulase

Quantitative estimate of the effect of cellulase components during degradation of cotton fibers 819

Cellulose

Arabinan-cellulose composite in *Opuntia ficus-indica* prickly pear spines 123

Crystal and molecular structure of methyl 4-O-methyl- β -D-ribo-hex-3-ulopyranoside 795

Effect of methylation on the stability and solvation free energy of amylose and cellulose fragments: a molecular dynamics study 1697

Cellulose I

Variations in the fibre repeat between samples of cellulose I from different sources 2889

Cellulose acetate

Synthesis and characterization of camphorsulfonyl acetate of cellulose 1925

Cellulose allomorphs

Characterization of the crystalline structure of cellulose using static and dynamic FT-IR spectroscopy 569

Cellulose degradation

Quantitative estimate of the effect of cellulase components during degradation of cotton fibers 819

Centratherum anthelminticum

Structure elucidation by NMR spectroscopy of a new acetylated saponin from *Centratherum anthelminticum* 2871

Cerium(III) chloride

Preparation of polyhydroxyalkyl- and C-glycosylfuran derivatives from free sugars catalyzed by cerium(III) chloride in aqueous solution: an improvement of the Garcia González reaction 1381

C-glycolipids

One-step synthesis of β -C-glycolipid derivatives from unprotected sugars 741

C-glucosyl derivative

Transglycosylation reaction of *Mucor hiemalis* endo-β-*N*-acetylglucosaminidase using sugar derivatives modified at C-1 or C-2 as oligosaccharide acceptors 1403

C-glycoside derivatives

One-step synthesis of β -C-glycolipid derivatives from unprotected sugars 741

Preparation of polyhydroxyalkyl- and C-glycosylfuran derivatives from free sugars catalyzed by cerium(III) chloride in aqueous solution: an improvement of the Garcia González reaction 1381

C-Glycosylflavonoid

Environmentally friendly C-glycosylation of phloroacetophenone with unprotected p-glucose using scandium(III) trifluoromethane-sulfonate in aqueous media: key compounds for the syntheses of mono- and di-C-glucosylflavonoids 2611

Chacotriose analogues

Synthesis of chacotriose analogues 1511

Chaetoceros mülleri

Characterization of a β -D-(1 \rightarrow 3)-glucan from the marine diatom *Chaetoceros mülleri* by high-resolution magic-angle spinning NMR spectroscopy on whole algal cells 421

Channel

Neutral, acidic, and basic derivatives of anthranilamide that confer different formal charge to reducing oligosaccharides 221

Chara corallina

FT-IR study of the *Chara corallina* cell wall under deformation 629 Characterization

Evaluation of newly synthesized and commercially available charged cyclomaltooligosaccharides (cyclodextrins) for capillary electrokinetic chromatography 241

Chemical component

Chemical components and molecular mass of six polysaccharides isolated from the sclerotium of *Poria cocos* 327

Chemical modification

Synthesis and characterization of carboxymethylated cyclosophoraose, and its inclusion complexation behavior 519

Chemical pulps

Characterization of the crystalline structure of cellulose using static and dynamic FT-IR spectroscopy 569

Chemical shift

¹H NMR spectra of branched-chain cyclomaltohexaoses (α-cyclodextrins) 777

Chemical shift data

The revised NMR chemical shift data of carrageenans 2309

Chemical shift surfaces

Use of ¹³C chemical shift surfaces in the study of carbohydrate conformation. Application to cyclomaltooligosaccharides (cyclodextrins) in the solid state and in solution 87

Chemical structure

Structural investigation of a novel rhamnoglucogalactan isolated from the fruiting bodies of the fungus *Hericium erinaceus* 2667

The structure of a sulfated galactan from *Porphyra haitanensis* and its in vivo antioxidant activity 105

The structure of the agaran sulfate from *Acanthophora spicifera* (Rhodomelaceae, Ceramiales) and its antiviral activity. Relation between structure and antiviral activity in agarans 335

Chemical synthesis

Synthetic studies on glycosphingolipids from Protostomia phyla: total syntheses of glycosphingolipids from the parasite, *Echinococcus multilocularis* 2749

Chemoenzymatic

Concise chemoenzymatic synthesis of epi-inositol 1773

Large-scale chemical and chemo-enzymatic synthesis of a spacer-containing Pk-trisaccharide 1141

Chemo-enzymatic synthesis

Enzymatic supported synthesis of lacto-N-neotetraose using dendrimeric polyethylene glycol 693

Chemometric

Oligosaccharide identification and mixture quantification using Raman spectroscopy and chemometric analysis 141

Chenopodiaceae

Isolation of diferulic bridges ester-linked to arabinan in sugar beet cell walls 2315

CH/π interactions

Role of CH/ π interactions in substrate binding by *Escherichia coli* β -galactosidase 2275

Chiral discrimination

Molecular dynamics (MD) simulations for the prediction of chiral discrimination of N-acetylphenylalanine enantiomers by cyclomal-toheptaose (β -cyclodextrin, β -CD) based on the MM–PBSA (molecular mechanics–Poisson–Boltzmann surface area) approach 1961

Chiral separations

Evaluation of newly synthesized and commercially available charged cyclomaltooligosaccharides (cyclodextrins) for capillary electrokinetic chromatography 241

Chirally deuterated glucose

Stereoselective synthesis of chirally deuterated (S)-D-(6-²H₁)glucose 1173

chiro-Inositol

Solid and solution state conformation of 1L-1-O-acetyl-2,3:5,6-di-O-isopropylidene-chiro-inositol 1803

Chitin

Depolymerization of β -chitin to mono- and disaccharides by the serum fraction from the *para* rubber tree, *Hevea brasiliensis* 2799

Influence of alkali-freezing treatment on the solid state structure of chitin 2321

Chitin film

Flexible chitin films: structural studies 2701

Chitin synthase

Chemical synthesis of UDP-4-O-methyl-GlcNAc, a potential chain terminator of chitin synthesis 1531

Chitinase from Bacillus sp.

Enzymatic glycosidation of sugar oxazolines having a carboxylate group catalyzed by chitinase 2769

Chitosan

Pectin-chitosan interactions and gel formation 1933

Synthesis and characterization of a brush-like copolymer of polylactide grafted onto chitosan 845

Chitosan iodide salt

Molecular and crystal structures of chitosan/HI type I salt determined by X-ray fiber diffraction 825

Plausible molecular and crystal structures of chitosan/HI type II salt 835

Chitosan nanoparticles

Preparation and antibacterial activity of chitosan nanoparticles 2693

Chitosan structure

Molecular and crystal structures of chitosan/HI type I salt determined by X-ray fiber diffraction 825

Plausible molecular and crystal structures of chitosan/HI type II salt 835

Chitosan type I salt

Molecular and crystal structures of chitosan/HI type I salt determined by X-ray fiber diffraction 825

Chitosan type II salt

Plausible molecular and crystal structures of chitosan/HI type II salt 835

Chitosans, low-molecular-weight and high-sulfate-content

Preparation of low-molecular-weight and high-sulfate-content chitosans under microwave radiation and their potential antioxidant activity in vitro 2515

Chloramine-T

Chloramine-T-mediated chemoselective hydrolysis of thioglycosides into glycosyl hemiacetals under neutral conditions 885

Chlorinated sucrose

A facile approach to anhydrogalactosucrose derivatives from chlorinated sucrose 2651

C-H···O, C-H···Cl interactions

Crystal structures of dihydroxyacetone and its derivatives 1995 Chondroitin

The synthesis of a novel thio-linked disaccharide of chondroitin as a potential inhibitor of polysaccharide lyases 699

Chondroitin AC

The synthesis of a novel thio-linked disaccharide of chondroitin as a potential inhibitor of polysaccharide lyases 699

Chromogenic substrates

Synthesis and characterisation of novel chromogenic substrates for human pancreatic α -amylase 1727

Circular dichroism

Vibrational circular dichroism of carbohydrate films formed from aqueous solutions 2713

cis-Inositol

Concise chemoenzymatic synthesis of epi-inositol 1773

Citrobacter youngae

Structure of the O-polysaccharide of *Citrobacter youngae* O1 containing an α-p-ribofuranosyl group 321

Structures of two O-polysaccharides of the lipopolysaccharide of Citrobacter youngae PCM 1538 (serogroup O9) 881

Clades

Pectin methylesterases: sequence-structural features and phylogenetic relationships 2281

Classification

The O-polysaccharide of *Pseudomonas syringae* pv. mori NCPPB 1656 is a β -(1 \rightarrow 2)-linked homopolymer of L-rhamnose 733

CLEC

Crosslinked enzyme crystals of glucoamylase as a potent catalyst for biotransformations 1099

Cluster mannoside

Synthesis of cluster mannosides via a Ugi four-component reaction and their inhibition against the binding of yeast mannan to concanavalin A 873

CMC

Determination of the degree of substitution and its distribution of carboxymethylcelluloses by capillary zone electrophoresis 1917

¹³C NMR

1,5-Anhydroxylitol from leaves of Olea europaea 2731

Chemical components and molecular mass of six polysaccharides isolated from the sclerotium of *Poria cocos* 327

Use of ¹³C chemical shift surfaces in the study of carbohydrate conformation. Application to cyclomaltooligosaccharides (cyclodextrins) in the solid state and in solution 87

¹³C NMR spectroscopy

Two-dimensional rotating-frame Overhauser spectroscopy (ROESY) and ¹³C NMR study of the interactions between maltodextrin and an anionic surfactant 1105

Commensal

Structural analysis of the lipooligosaccharide from the commensal *Haemophilus somnus* genome strain 129Pt 529

Complement fixing activity

Bioactive polysaccharides from the stems of the Thai medicinal plant *Acanthus ebracteatus*: their chemical and physical features 753

Complex

Rod-like architecture and helicity of the poly(C)/schizophyllan complex observed by AFM and SEM 251

Complex formation

Cu(II) complex formation with xylitol in alkaline solutions 599 Complexation

Complexation of trivalent lanthanide cations by erythritol in the solid state. The crystal structure and FT-IR study of $2EuCl_3$ · $2C_4H_{10}O_4$:7H₂O 1679

Complexes

Multinuclear NMR study of the complexes of 6-phospho-D-gluconic acid with W(VI) and $Mo(VI)\ 2225$

Composition in solution

The composition of 2-keto aldoses in organic solvents as determined by NMR spectroscopy 217

Computer simulation

Effect of methylation on the stability and solvation free energy of amylose and cellulose fragments: a molecular dynamics study 1697

Concanavalin A

Synthesis of cluster mannosides via a Ugi four-component reaction and their inhibition against the binding of yeast mannan to concanavalin A 873

Conduritol B

Synthesis of (+)-(2R,3S,4R)-2,3,4-trihydroxycyclohexanone from D-glucose 361

Confocal microscopy

Effect of carbohydrates on fructosyltransferase expression and distribution in *Streptococcus mutans* GS-5 biofilms 2883

Conformation

Crystal structure of 1L-1,2:4,5-di-*O*-isopropylidene-*allo*-inositol; A comparison of its conformation in solid and solution states 1551 Crystal structure, solid state and solution conformation of 1D-1,4-di-*O*-[(*S*)-*O*-acetylmandeloyl]-2,3:5,6-di-*O*-isopropylidene-*myo*-inositol 807

Metal-ion environment in solid Mn(II), Co(II) and Ni(II) hyaluronates 2549

NMR study on the hydroxy protons of the Lewis X and Lewis Y oligosaccharides 2465

Solid and solution state conformation of 1L-1-*O*-acetyl-2,3:5,6-di-*O*-isopropylidene-*chiro*-inositol 1803

Synthesis and structure determination of some nonanomerically C–C-linked serine glycoconjugates structurally related to mannojirimycin 2187

The conformations of the O-specific polysaccharides of *Shigella dysenteriae* type 4 and *Escherichia coli* O159 studied with molecular mechanics (MM3) filtered systematic search 961

Two-dimensional rotating-frame Overhauser spectroscopy (ROESY) and ¹³C NMR study of the interactions between maltodextrin and an anionic surfactant 1105

Conformational analysis

Conformational analysis and dynamics of mannobiosides and mannotriosides using Monte Carlo/stochastic dynamics simulations 967

MM3 Potential energy surfaces of α -3-linked L-fucobiose and fucotriose and their sulfated counterparts 2381

Conformational map

Ab initio conformational maps for disaccharides in gas phase and aqueous solution 113

Copper(II)

Cu(II) complex formation with xylitol in alkaline solutions 599 Copper(II) complexes

Binuclear copper(II) complexes of 5-N-(β -ketoen)amino-5-deoxy-1,2-O-isopropylidene- α -D-glucofuranoses: synthesis, structure, and catecholoxidase activity 1941

Copper-loaded nanoparticles

Preparation and antibacterial activity of chitosan nanoparticles 2693

CORCEMA-STD

Saturation transfer difference NMR and computational modeling of a sialoadhesin–sialyl lactose complex 259

Core

Characterisation of a tetrasaccharide released on mild acid hydrolysis of LPS from two rough strains of *Shewanella* species representing different DNA homology groups 1185

The structure of the carbohydrate backbone of the lipopolysaccharide of *Pectinatus frisingensis* strain VTT E-79104 1637

The structure of the core region of the lipopolysaccharide from *Shewanella algae* BrY, containing 8-amino-3,8-dideoxy-D-*manno*-oct-2-ulosonic acid 737

The structure of the core region of the lipopolysaccharide from *Geobacter sulfurreducens* 2901

Core 2 branched O-glycans

Conformational analysis of complex oligosaccharides: the CICA-DA approach to the uromodulin O-glycans 949

Core oligosaccharide

Structural analysis of the lipopolysaccharide derived core oligosaccharides of *Actinobacillus pleuropneumoniae* serotypes 1, 2, 5a and the genome strain 5b 1973

Core structure

Characterisation of the core part of the lipopolysaccharide Oantigen of Francisella novicida (U112) 1643

Structural studies on the R-type lipopolysaccharide of Aeromonas hydrophila 787

Crosslinked enzyme crystal

Crosslinked enzyme crystals of glucoamylase as a potent catalyst for biotransformations 1099

Cross-links

Characterization and detection of lysine-arginine cross-links derived from dehydroascorbic acid 483

Cryptococcus flavescens

Structural studies of the capsular polysaccharide of a non-neoformans Cryptococcus species identified as C. laurentii, which was reclassified as Cryptococcus flavescens, from a patient with AIDS 503

Cryptococcus laurentii

Structural studies of the capsular polysaccharide of a non-neoformans Cryptococcus species identified as C. laurentii, which was reclassified as Cryptococcus flavescens, from a patient with AIDS 503

Crystal habit

Orientated growth of crystalline anhydrous maltitol (4-*O*-α-D-glucopyranosyl-D-glucitol) 1225

Crystal structure

Complexation of trivalent lanthanide cations by erythritol in the solid state. The crystal structure and FT-IR study of $2EuCl_3$ · $2C_4H_{10}O_4$ 7 H_2O 1679

Crystal and molecular structure and absolute configuration of lincomycin hydrochloride monohydrate 2111

Crystal and molecular structure of methyl 4-*O*-methyl-β-D-*ribo*-hex-3-ulopyranoside 795

Crystal structure of ammonium isosaccharate and aqueous solubility of ammonium and sodium isosaccharates 2811

Crystal structure of 1L-1,2:4,5-di-O-isopropylidene-*allo*-inositol; A comparison of its conformation in solid and solution states 1551 Crystal structure of N-(benzyloxycarbonyl)aminoethyl-2,3,4,6-tetra-O-benzoyl- α -D-mannopyranoside: stabilization of the crystal lattice by a tandem network of N-H···O, C-H···O, and C-H··· π interactions 1087

Crystal structure of sodium isosaccharate, $NaC_6H_{11}O_6\cdot H_2O$ 801 Interaction between β -cyclodextrin and 1,10-phenanthroline: uncommon 2:3 inclusion complex in the solid state 1649

Metal-ion interactions with sugars. Crystal structures and FT-IR studies of the LaCl₃-ribopyranose and CeCl₃-ribopyranose complexes 1689

Metal-N-saccharide chemistry: synthesis and structure determination of two Cu(II) complexes containing glycosylamines 2139

Solid and solution state conformation of 1L-1-*O*-acetyl-2,3:5,6-di-*O*-isopropylidene-*chiro*-inositol 1803

Solution and solid-state structure of *N*-acetamido-3,4,6-tri-*O*-acetyl-2-azido-2-deoxy-α-p-galactopyranosylamine 1447

X-ray and conformational analysis of methyl 3-amino-2,3-dideoxy-α-p-*arabino*-hexopyranoside 1195

Crystal structures

Structure of the inclusion complexes of heptakis(2,3,6-tri-*O*-methyl)-β-cyclodextrin with indole-3-butyric acid and 2,4-dichlor-ophenoxyacetic acid 233

Crystalline lamellae

Effects of annealing on the polymorphic structure of starches from sweet potatoes (*Ayamurasaki* and *Sumnyred* cultivars) grown at various soil temperatures 1093

Crystalline polymorphs

Effects of annealing on the polymorphic structure of starches from sweet potatoes (*Ayamurasaki* and *Sunnyred* cultivars) grown at various soil temperatures 1093

Crystallinity

Characterization of the crystalline structure of cellulose using static and dynamic FT-IR spectroscopy 569

Influence of alkali-freezing treatment on the solid state structure of chitin 2321

Cu(II)-N-glycosylamine complexes

 $\label{eq:metal-N-saccharide} Metal-N-saccharide chemistry: synthesis and structure determination of two Cu(II) complexes containing glycosylamines 2139$

Curdlar

Low $M_{\rm w}$ sulfated curdlan with improved water solubility forms macromolecular complexes with polycytidylic acid 161

Cyclic sulfate

Synthesis of novel ammonium and selenonium ions and their evaluation as inhibitors of UDP-galactopyranose mutase 2205

Cyclic tetrasaccharide

Enzymatic synthesis of a β -D-galactopyranosyl cyclic tetrasaccharide by β -galactosidases 1603

Cyclife

Crystal structure of 1L-1,2:4,5-di-O-isopropylidene-allo-inositol; A comparison of its conformation in solid and solution states 1551

Solid and solution state conformation of 1L-1-*O*-acetyl-2,3:5,6-di-*O*-isopropylidene-*chiro*-inositol 1803

Cyclitols

Determination of the structures of four new isomeric cyclitols 2027 First derivatives of *myo*-inositol 1,4,6-trisphosphate modified at positions 2 and 3: structural analogues of **D**-*myo*-inositol 1,4,5-trisphosphate 51

Cyclization

Intramolecular aldol cyclization of C-4-ulopyranosyl-2'-oxoalkanes controlled by steric effects. Asymmetric synthesis of substituted 8oxabicyclo[3.2.1]octanones and -octenones and cyclopentenones 2475

Cyclizations

Reactions of Diels-Alder adducts of a sugar-derived dihydropyranone leading to fused polycyclic compounds 1207

Cycloadducts

Reactions of Diels-Alder adducts of a sugar-derived dihydropyranone leading to fused polycyclic compounds 1207

Cycloalternan

Purification and characterization of an intracellular cycloalternandegrading enzyme from Bacillus sp. NRRL B-21195 1179

Cycloalternan-degrading enzyme

Purification and characterization of an intracellular cycloalternandegrading enzyme from Bacillus sp. NRRL B-21195 1179

Cycloalternan isomaltosylhydrolase

Purification and characterization of an intracellular cycloalternandegrading enzyme from Bacillus sp. NRRL B-21195 1179

Cycloamylose

Inclusion complexes of V-amylose with undecanoic acid and dodecanol at atomic resolution: X-ray structures with cycloamylose containing 26 D-glucoses (cyclohexaicosaose) as host 1427

Interaction between β-cyclodextrin and 1,10-phenanthroline: uncommon 2:3 inclusion complex in the solid state 1649

Molecular dynamics (MD) simulations for the prediction of chiral discrimination of N-acetylphenylalanine enantiomers by cyclomaltoheptaose (β-cyclodextrin, β-CD) based on the MM-PBSA (molecular mechanics-Poisson-Boltzmann surface area) approach 1961

α-Cyclodextrin

¹H NMR spectra of branched-chain cyclomaltohexaoses (αcyclodextrins) 777

Structure and stability of columnar cyclomaltohexaose (α-cyclodextrin) hydrate 2805

β-Cyclodextrin

Crystal architecture and conformational properties of the inclusion complex, neohesperidin dihydrochalcone-cyclomaltoheptaose (βcyclodextrin), by X-ray diffraction 2117

Cyclodextrins

Use of ¹³C chemical shift surfaces in the study of carbohydrate conformation. Application to cyclomaltooligosaccharides (cyclodextrins) in the solid state and in solution 87

Cyclohexaicosaose

Inclusion complexes of V-amylose with undecanoic acid and dodecanol at atomic resolution: X-ray structures with cycloamylose containing 26 p-glucoses (cyclohexaicosaose) as host 1427

Cyclomaltoheptaose

Crystal architecture and conformational properties of the inclusion complex, neohesperidin dihydrochalcone-cyclomaltoheptaose (βcyclodextrin), by X-ray diffraction 2117

Cyclomaltoheptaose (β-CD)

Regioselective monoacylation of cyclomaltoheptaose at the C-2 secondary hydroxyl groups by the alkaline protease from Bacillus subtilis in nonaqueous media 1279

Cyclomaltohexaose

Enzymatic synthesis of two salicin analogues by reaction of salicyl alcohol with Bacillus macerans cyclomaltodextrin glucanyltransferase and Leuconostoc mesenteroides B-742CB dextransucrase 1517 Structure and stability of columnar cyclomaltohexaose (α-cyclodextrin) hydrate 2805

Cyclopentenones

Intramolecular aldol cyclization of C-4-ulopyranosyl-2'-oxoalkanes controlled by steric effects. Asymmetric synthesis of substituted 8oxabicyclo[3.2.1]octanones and -octenones and cyclopentenones 2475

Cyclopropanation

Synthesis of 2,3,4,6-tetra-O-benzyl-D-glucal on the gram scale. A convenient method for its facile synthesis and subsequent stereoselective cyclopropanation 897

Cyclosophoraoses

Cyclosophoraose as a catalytic carbohydrate for methanolysis 461 Cynanchum otophyllum

Carbohydrates from Cynanchum otophyllum 1967

DAST

Fluorinated cyclitols as useful biological probes of phosphatidylinositol metabolism 1585

Data analysis

Data mining the protein data bank: automatic detection and assignment of carbohydrate structures 1015

Database

Web resources for the carbohydrate chemist 929

Deacetylation

A convenient preparation of 1,2,3-tri-O-acetyl-β-D-ribofuranose by enzymatic regioselective 5-O-deacetylation of the peracetylated ribofuranose 1215

Practical de-O-acylation reactions promoted by molecular sieves 729

Degradation

Kinetic and chemical studies on the isomerization of monosaccharides in N-methylmorpholine-N-oxide (NMMO) under Lyocell conditions 1899

Dehydration

Transformation of lactulose trihydrate into anhydrous lactulose by fluidized bed drying and its characterization 1069

Dehydroascorbic acid

Characterization and detection of lysine-arginine cross-links derived from dehydroascorbic acid 483

Dehydrodiferulate

Isolation of diferulic bridges ester-linked to arabinan in sugar beet cell walls 2315

Dendrimer

Synthesis of divalent β -(1 \rightarrow 6)-branched (1 \rightarrow 3)-glucohexaose and trivalent β -(1 \rightarrow 6)-branched (1 \rightarrow 3)-glucotriose 2761

Dendrimeric support

Enzymatic supported synthesis of lacto-N-neotetraose using dendrimeric polyethylene glycol 693

Dendrobium officinale Kimura and Migo

Structural characterization of a 2-O-acetylglucomannan from Dendrobium officinale stem 2219

Dental caries

Effect of carbohydrate fatty acid esters on Streptococcus sobrinus and glucosyltransferase activity 1029

Deoxy and deoxyfluoro sugars

Deoxy and deoxyfluoro analogues of acetylated methyl β-Dxylopyranoside—substrates for acetylxylan esterases 2101

Deoxyfluoro cyclitols

Fluorinated cyclitols as useful biological probes of phosphatidylinositol metabolism 1585

Deoxy-sugar analogues of 1-D-6-O-(2-amino-2-deoxy-α-D-glucopyranosyl)-myo-inositol 1-(1,2-di-O-hexadecanoyl-sn-glycerol 3-phosphate) The synthesis of some deoxygenated analogues of early intermediates in the biosynthesis of glycosylphosphatidylinositol (GPI) membrane anchors 1263

Deoxysugars

Catalytic ceric ammonium nitrate mediated synthesis of 2-deoxy-1thioglycosides 2197

Deprotection

A convenient preparation of 1,2,3-tri-O-acetyl-β-D-ribofuranose by enzymatic regioselective 5-O-deacetylation of the peracetylated ribofuranose 1215

Deprotonation

Cu(II) complex formation with xylitol in alkaline solutions 599

Desiccation tolerance

A Fourier-transform infrared spectroscopy study of sugar glasses 1077 Desulfation method

Desulfation of sulfated galactans with chlorotrimethylsilane. Characterization of β-carrageenan by ¹H NMR spectroscopy 1619

The influence of mutanase and dextranase on the production and structure of glucans synthesized by streptococcal glucosyltransferases 2127

Dextransucrase

Effect of carbohydrate fatty acid esters on *Streptococcus sobrinus* and glucosyltransferase activity 1029

Enzymatic synthesis of two salicin analogues by reaction of salicyl alcohol with *Bacillus macerans* cyclomaltodextrin glucanyltransferase and *Leuconostoc mesenteroides* B-742CB dextransucrase 1517

D-Fructose

Kinetics and mechanism of the oxidation of D-fructose by vanadium(V) in H₂SO₄ medium 133

Melting behaviour of D-sucrose, D-glucose and D-fructose 2267 DFT

Evaluation of carbohydrate molecular mechanical force fields by quantum mechanical calculations 937

2D FT-IR

Characterization of the crystalline structure of cellulose using static and dynamic FT-IR spectroscopy 569

β-D-(1 \rightarrow 6)-Galactooligosaccharides

Structure of oligosaccharide side chains of an intestinal immune system modulating arabinogalactan isolated from rhizomes of *Atractylodes lancea* DC 763

β-D-Galactopyranosyl derivatives

Glycosylation of 1,4:3,6-dianhydro-p-glucitol (isosorbide) 2433 p-Glucal

Synthesis of 2,3,4,6-tetra-*O*-benzyl-p-glucal on the gram scale. A convenient method for its facile synthesis and subsequent stereoselective cyclopropanation 897

β-D-Glucan

Characterization of a β -D-(1 \rightarrow 3)-glucan from the marine diatom *Chaetoceros mülleri* by high-resolution magic-angle spinning NMR spectroscopy on whole algal cells 421

$(1\rightarrow 3)$ -β-D-Glucanase-binding ability

Synthesis, $(1\rightarrow 3)$ - β - \mathbf{D} -glucanase-binding ability, and phytoalexinelicitor activity of a mixture of 3,4-epoxybutyl $(1\rightarrow 3)$ - β - \mathbf{D} -oligoglucosides 1453

α -D-Glucopyranose monohydrate

Evaluation of carbohydrate molecular mechanical force fields by quantum mechanical calculations 937

α -D-Glucopyranosyl-(1 \rightarrow 3)-1-deoxymannojirimycin

Golgi endomannosidase inhibitor, α -D-glucopyranosyl- $(1\rightarrow 3)$ -1-deoxymannojirimycin: a five-step synthesis from maltulose and examples of *N*-modified derivatives 1823

D-Glucosamine

Depolymerization of β -chitin to mono- and disaccharides by the serum fraction from the *para* rubber tree, *Hevea brasiliensis* 2799

D-Glucose

Melting behaviour of D-sucrose, D-glucose and D-fructose 2267 Synthesis and intramolecular reactions of Tyr-Gly and Tyr-Gly-Gly related 6-O-glucopyranose esters 67

α -D-Glucopyranosyl-(1 \rightarrow 4)-1-deoxynojirimycin

Simple syntheses of 4-O-glucosylated 1-deoxynojirimycins from maltose and cellobiose 2615

β -D-Glucopyranosyl-(1 \rightarrow 4)-1-deoxynojirimycin

Simple syntheses of 4-O-glucosylated 1-deoxynojirimycins from maltose and cellobiose 2615

D-Glucuronic acid derivatives

Synthesis of 2,5-anhydro-(β -D-glucopyranosyluronate)- and (α -L-idopyranosyluronate)-D-mannitol hexa-O-sulfonate hepta sodium salt 1569

DHA

Crystal structures of dihydroxyacetone and its derivatives 1995

Diacetyl-C-(β-D-glucopyranosyl)phloroglucinol

Conversion of diacetyl-C-(β -D-glucopyranosyl)phloroglucinol to spiroketal compounds 429

Di- and tri-saccharides

Synthesis of L-arabinose-containing fragments of the oat root saponin Avenacin A-1 1285

Diatom

Characterization of a β -D-(1 \rightarrow 3)-glucan from the marine diatom *Chaetoceros mülleri* by high-resolution magic-angle spinning NMR spectroscopy on whole algal cells 421

Dibutylstannylene

Syntheses of monohydroxy benzyl ethers of polyols: tri-O-benzylpentaerythritol and other highly benzylated derivatives of symmetrical polyols 2607

2',7'-Dichlorodihydrofluorescein diacetate

The influence of small oligosaccharides on the immune system 1673

2,4-Dichlorophenoxyacetic acid

Structure of the inclusion complexes of heptakis(2,3,6-tri-*O*-methyl)-β-cyclodextrin with indole-3-butyric acid and 2,4-dichlor-ophenoxyacetic acid 233

Dichroic difference

FT-IR study of the *Chara corallina* cell wall under deformation 629 Dideoxyosone

Carbohydrate carbonyl mobility—the key process in the formation of α -dicarbonyl intermediates 1609

Pyridinium-carbaldehyde: active Maillard reaction product from the reaction of hexoses with lysine residues 705

D-Idoseptanoside

Synthesis, crystal structure, and reactivity of a D-xylose based oxepine 1163

Diels-Alder

Reactions of Diels-Alder adducts of a sugar-derived dihydropyranone leading to fused polycyclic compounds 1207

Differential thermal analysis

Transformation of lactulose trihydrate into anhydrous lactulose by fluidized bed drying and its characterization 1069

2β,3β-difluorosialic acid derivative

2β,3β-Difluorosialic acid derivatives structurally modified at the C-4 position: synthesis and biological evaluation as inhibitors of human parainfluenza virus type 1 1367

Digalactoside

An expeditious preparation of various sulfoforms of the disaccharide β -D-Galp-(1 \rightarrow 3)-D-Galp, a partial structure of the linkage region of proteoglycans, as their 4-methoxyphenyl β -D-glycosides 349

Dihydropyranones

Reactions of Diels-Alder adducts of a sugar-derived dihydropyranone leading to fused polycyclic compounds 1207

Dihydroxyacetone

Crystal structures of dihydroxyacetone and its derivatives 1995 Dihydroxyacetone dimer

Crystal structures of dihydroxyacetone and its derivatives 1995 9-[(6,6-Dimethylbicyclo[3.1.1]hept-2-yl)methyl]-9-borabicyclo[3.3.1]-nonane

Stereoselective synthesis of chirally deuterated (S)-D-(6-²H₁)glucose

2,5-Di-O-,2-O-, and 5-O-β-D-glucopyranosyl derivatives

Glycosylation of 1,4:3,6-dianhydro-D-glucitol (isosorbide) 2433

1,4-Dioxane

Reinvestigation of the mercuration–demercuration reaction on alkylated glycals: an improved method for the preparation of 2,3-dideoxy- α , β -unsaturated carbohydrate enals 2031

Dioxygenase

Concise chemoenzymatic synthesis of epi-inositol 1773

Dipalmitoylphosphatidylcholine

Cyclosophoraose as a catalytic carbohydrate for methanolysis 461 Dipentaerythritol

Syntheses of monohydroxy benzyl ethers of polyols: tri-Obenzylpentaerythritol and other highly benzylated derivatives of symmetrical polyols 2607

Direct C-glycosylation

Environmentally friendly C-glycosylation of phloroacetophenone with unprotected p-glucose using scandium(III) trifluoromethane-sulfonate in aqueous media: key compounds for the syntheses of mono- and di-C-glucosylflavonoids 2611

Disaccharide

Regiospecific alkaline protease-catalyzed divinyl acyl transesterifications of primary hydroxyl groups of mono- and di-saccharides in pyridine 2059

Simple preparations of alkyl and cycloalkyl $\alpha\text{-glycosides}$ of maltose, cellobiose, and lactose $\ 2415$

Synthesis of mannopyranose disaccharides as photoaffinity probes for mannosyltransferases in *Mycobacterium tuberculosis* 683

Disaccharide repeating unit

A highly regular fraction of a fucoidan from the brown seaweed $\it Fucus distichus L. 511$

Disaccharide structure

Ab initio conformational maps for disaccharides in gas phase and aqueous solution 113

Disaccharides

QSPR models for various physical properties of carbohydrates based on molecular mechanics and quantum chemical calculations 269

Two approaches to the synthesis of 3.8-p-glucopyranosyl-p-

Two approaches to the synthesis of 3-β-D-glucopyranosyl-D-glucitol 2407

Synthesis of N-unsubstituted, mono- and disubstituted carbohydrate-1-O-carbamates and their behaviour in glycoside syntheses 2821

Disulfide

Novel approaches to the syntheses of N-substituted S-glycosyl-sulfenamides 1561

$\textbf{\textit{D-}myo-} Inositol \textbf{-} 1, 4, 5\textbf{-}trisp hosphate$

First derivatives of *myo*-inositol 1,4,6-trisphosphate modified at positions 2 and 3: structural analogues of D-*myo*-inositol 1,4,5-trisphosphate 51

2D NMR

Determination of the structures of four new isomeric cyclitols 2027 Donor substrate

Synthesis of unnatural sugar nucleotides and their evaluation as donor substrates in glycosyltransferase-catalyzed reactions 2641

NMR characterization of the polysaccharidic fraction from *Lentinula edodes* grown on olive mill waste waters 1129

$(1\rightarrow 2)$ - α -D-Rhamnodisaccharide derivative

 $\alpha\textsc{-Mannosidase-catalyzed}$ synthesis of a (1 \rightarrow 2)- $\alpha\textsc{-D}$ -rhamnodisaccharide derivative 1389

D-Rhamnose

Synthesis of a D-rhamnose branched tetrasaccharide, repeating unit of the *O*-chain from *Pseudomonas syringae* pv. *Syringae* (cerasi) 435 1907

α-D-Rhamnosidase activity

 $\alpha\textsc{-Mannosidase-catalyzed}$ synthesis of a (1 \rightarrow 2)- $\alpha\textsc{-D}$ -rhamnodisaccharide derivative 1389

α-D-Ribofuranose

Structure of the O-polysaccharide of *Citrobacter youngae* O1 containing an α-p-ribofuranosyl group 321

DSC

A Fourier-transform infrared spectroscopy study of sugar glasses 1077

DS distribution

Determination of the degree of substitution and its distribution of carboxymethylcelluloses by capillary zone electrophoresis 1917

3D structure database

Data mining the protein data bank: automatic detection and assignment of carbohydrate structures 1015

D-Sucrose

Melting behaviour of D-sucrose, D-glucose and D-fructose 2267 D-3,4,6-Tri-*O*-acetylglucal

Electrochemical synthesis and X-ray crystal structures of β -D-2-phenylselenyl-1,3,4,6-tetra-O-acetylglucopyranose and α -D-2-phenylselenyl-1,3,4,6-tetra-O-acetylmannopyranose 37

β-D-Xylopyranosyl derivatives

Glycosylation of l,4:3,6-dianhydro-D-glucitol (isosorbide) 2433 Dynamics

A conformational study of α -D-Manp-(1 \rightarrow 2)- α -D-Manp-(1 \rightarrow 0)-L-Ser by NMR 1 H, 1 H T-ROESY experiments and molecular-dynamics simulations 1331

Echinococcus multilocularis

Synthetic studies on glycosphingolipids from Protostomia phyla: total syntheses of glycosphingolipids from the parasite, *Echinococcus multilocularis* 2749

Ectomycorrhiza

Structural investigation of a water-soluble glucan from an edible mushroom, *Astraeus hygrometricus* 2249

EIMS

1,5-Anhydroxylitol from leaves of Olea europaea 2731

Electrochemical acetoxyphenylselenation

Electrochemical synthesis and X-ray crystal structures of β -D-2-phenylselenyl-1,3,4,6-tetra-O-acetylglucopyranose and α -D-2-phenylselenyl-1,3,4,6-tetra-O-acetylmannopyranose 37

Electronic spectroscopy

The complexation of metal cations by D-galacturonic acid: a spectroscopic study 2391

Electrospray ionisation mass spectrometry

Enzymatic degradation and electrospray tandem mass spectrometry as tools for determining the structure of cationic starches prepared by wet and dry methods 637

Isolation of κ -carrageenan oligosaccharides using ion-pair liquid chromatography—characterisation by electrospray ionisation mass spectrometry in positive-ion mode 1301

Elimination

Synthesis of 2,3,4,6-tetra-*O*-benzyl-p-glucal on the gram scale. A convenient method for its facile synthesis and subsequent stereoselective cyclopropanation 897

β-Elimination

Intramolecular aldol cyclization of C-4-ulopyranosyl-2'-oxoalkanes controlled by steric effects. Asymmetric synthesis of substituted 8-oxabicyclo[3.2.1]octanones and -octenones and cyclopentenones 2475

ELLA

Synthesis of cluster mannosides via a Ugi four-component reaction and their inhibition against the binding of yeast mannan to concanavalin A 873

Enantioselectivity

Synthesis and characterization of camphorsulfonyl acetate of cellulose 1925

End functionalization

Enzymatic glycosidation of sugar oxazolines having a carboxylate group catalyzed by chitinase 2769

endo-Glycosidase

Enzymatic liberation of lycotetraose from the Solanum glycoalkaloid α -tomatine 2325

$Endo-\beta-\textit{N-}acetylglucosaminidase$

High efficiency of transferring a native sugar chain from a glycopeptide by a microbial endoglycosidase in organic solvents 719 Transglycosylation reaction of *Mucor hiemalis* endo-β-*N*-acetylglucosaminidase using sugar derivatives modified at C-1 or C-2 as oligosaccharide acceptors 1403

endo-D-Mannosidase inhibitor

Golgi endomannosidase inhibitor, α -D-glucopyranosyl- $(1\rightarrow 3)$ -1-deoxymannojirimycin: a five-step synthesis from maltulose and examples of N-modified derivatives 1823

Endoglucosidase inhibitor

Simple syntheses of 4-O-glucosylated 1-deoxynojirimycins from maltose and cellobiose 2615

Endo-M

Mucor hiemalis endo-β-N-acetylglucosaminidase can transglycosylate a bisecting hybrid-type oligosaccharide from an ovalbumin glycopeptide 2633

High efficiency of transferring a native sugar chain from a glycopeptide by a microbial endoglycosidase in organic solvents 719

Transglycosylation reaction of *Mucor hiemalis* endo-β-*N*-acetylglucosaminidase using sugar derivatives modified at C-1 or C-2 as oligosaccharide acceptors 1403

endo-β-N-Acetylglucosaminidase

Mucor hiemalis endo-β-N-acetylglucosaminidase can transglycosylate a bisecting hybrid-type oligosaccharide from an ovalbumin glycopeptide 2633

Endoprotease

Human serum IgA1 is substituted with up to six O-glycans as shown by matrix assisted laser desorption ionisation time-of-flight mass spectrometry 2329

Endothelial cell growth

Synthesis of a glucuronic acid and glucose conjugate library and evaluation of effects on endothelial cell growth 1873

Synthesis of disaccharides derived from heparin and evaluation of effects on endothelial cell growth and on binding of heparin to FGF-2 2343

Enoses

Catalytic ceric ammonium nitrate mediated synthesis of 2-deoxy-1-thioglycosides 2197

Enteroaggregative

Structural and immunochemical relationship between the Oantigenic polysaccharides from the enteroaggregative *Escherichia* coli strain 396/C-1 and *Escherichia coli* O126 1491

Enterobacteria

Structure of the O-polysaccharide of *Citrobacter youngae* O1 containing an α-p-ribofuranosyl group 321

Enthalpy

B3LYP/6-311++ G^{**} study of monohydrates of α - and β -D-glucopyranose: hydrogen bonding, stress energies, and effect of hydration on internal coordinates 553

Entropy

B3LYP/6-311++ G^{**} study of monohydrates of α - and β -D-glucopyranose: hydrogen bonding, stress energies, and effect of hydration on internal coordinates 553

Enzymatic cleavage

Enzymatic liberation of lycotetraose from the Solanum glycoalkaloid α -tomatine 2325

Enzymatic degradation

Enzymatic degradation and electrospray tandem mass spectrometry as tools for determining the structure of cationic starches prepared by wet and dry methods 637

Enzymatic glycosidation

Enzymatic glycosidation of sugar oxazolines having a carboxylate group catalyzed by chitinase 2769

Enzymatic synthesis

Regiospecific alkaline protease-catalyzed divinyl acyl transesterifications of primary hydroxyl groups of mono- and di-saccharides in pyridine 2059

Enzyme assay

Synthesis of 2-[(2-pyridyl)amino]ethyl β -D-lactosaminide and evaluation of its acceptor ability for sialyltransferase: a comparison with 4-methylumbelliferyl and dansyl β -D-lactosaminide 1545

Enzyme-catalyzed hydrolysis

Synthesis and enzyme-catalyzed hydrolysis of a radical-masked glycosylated spin-label reagent 2425

Enzyme inhibitor

Two potent competitive inhibitors discriminating α -glucosidase family I from family II 1035

Enzyme inhibitors

Synthesis and evaluation of a mechanism-based inhibitor of KDO8P synthase 385

epi-Inositol

Concise chemoenzymatic synthesis of epi-inositol 1773

epi-Lepidimoide

A convenient synthesis of lepidimoide from okra mucilage and its growth-promoting activity in hypocotyls 9

Epitope

The conformations of the O-specific polysaccharides of *Shigella dysenteriae* type 4 and *Escherichia coli* O159 studied with molecular mechanics (MM3) filtered systematic search 961

Epitope mapping

NMR spectroscopic and molecular modeling studies of protein–carbohydrate and protein–peptide interactions 907

3,4-Epoxybutyl (1 \rightarrow 3)- β -D-oligoglucosides

Synthesis, $(1\rightarrow 3)$ - β -D-glucanase-binding ability, and phytoalexinelicitor activity of a mixture of 3,4-epoxybutyl $(1\rightarrow 3)$ - β -D-oligoglucosides 1453

Erwinia spp.

Structure and hydrodynamic properties of the extracellular polysaccharide from a mutant strain (RA3W) of *Erwinia chrysanthemi* RA3 2049

Erythritol

Complexation of trivalent lanthanide cations by erythritol in the solid state. The crystal structure and FT-IR study of $2EuCl_3$ · $2C_4H_{10}O_4$:7H₂O 1679

Escherichia coli

Blocking nonspecific adsorption of native food-borne microorganisms by immunomagnetic beads with 1-carrageenan 613

Structural and immunochemical relationship between the Oantigenic polysaccharides from the enteroaggregative *Escherichia* coli strain 396/C-1 and *Escherichia coli* O126 1491

Esterase

Synthesis and enzyme-catalyzed hydrolysis of a radical-masked glycosylated spin-label reagent 2425

Ethanolamine phosphate

Structure of a highly phosphorylated *O*-polysaccharide of *Proteus mirabilis* O41 1347

Euphorbia ebracteolata

Two new flavonol glycosides from *Gymnema sylvestre* and *Euphorbia ebracteolata* 891

Evaporative light scattering detector

Isolation of κ-carrageenan oligosaccharides using ion-pair liquid chromatography—characterisation by electrospray ionisation mass spectrometry in positive-ion mode 1301

Evolutionary relationships

Pectin methylesterases: sequence-structural features and phylogenetic relationships 2281

EXAFS

Metal-ion environment in solid Mn(II), Co(II) and Ni(II) hyaluronates 2549

Exoglycosidase

Human serum IgA1 is substituted with up to six O-glycans as shown by matrix assisted laser desorption ionisation time-of-flight mass spectrometry 2329

Extracellular polysaccharide

Structure and hydrodynamic properties of the extracellular polysaccharide from a mutant strain (RA3W) of *Erwinia chrysanthemi* RA3 2049

The extracellular polysaccharide of *Porphyridium* sp.: an NMR study of lithium-resistant oligosaccharidic fragments 97

The structure of the glucuronoxylomannan produced by culinary-medicinal yellow brain mushroom (*Tremella mesenterica* Ritz.:Fr., Heterobasidiomycetes) grown as one cell biomass in submerged culture 1483

Extraction

Fractional and physico-chemical characterization of hemicelluloses from ultrasonic irradiated sugarcane bagasse 291

FACE

Glycoconjugates for the recognition of *Bacillus* spores 2859 Fatty acid

Inclusion complexes of V-amylose with undecanoic acid and dodecanol at atomic resolution: X-ray structures with cycloamylose containing 26 p-glucoses (cyclohexaicosaose) as host 1427

Ferulic acid

Isolation of diferulic bridges ester-linked to arabinan in sugar beet cell walls 2315

Fiber diffraction

Molecular and crystal structures of chitosan/HI type I salt determined by X-ray fiber diffraction 825

Plausible molecular and crystal structures of chitosan/HI type II salt 835 Fiber-reactive chitosan derivative

Synthesis and antimicrobial activity of a water-soluble chitosan derivative with a fiber-reactive group 313

Fibre repeat

Variations in the fibre repeat between samples of cellulose I from different sources 2889

Fibroblast growth factor

Synthesis of disaccharides derived from heparin and evaluation of effects on endothelial cell growth and on binding of heparin to FGF-2 2343

Film-forming

Material properties of concentrated pectin networks 1317 Films

Vibrational circular dichroism of carbohydrate films formed from aqueous solutions 2713

Finger millet

Structural analysis of arabinoxylans isolated from native and malted finger millet (*Eleusine coracana*, ragi) 2457

Flavobacterium heparinum

The synthesis of a novel thio-linked disaccharide of chondroitin as a potential inhibitor of polysaccharide lyases 699

Flavonoids

Crystal architecture and conformational properties of the inclusion complex, neohesperidin dihydrochalcone–cyclomaltoheptaose (β -cyclodextrin), by X-ray diffraction 2117

Flavonol glycoside

Two new flavonol glycosides from *Gymnema sylvestre* and *Euphorbia ebracteolata* 891

Flexibility

A conformational study of α -D-Manp-(1 \rightarrow 2)- α -D-Manp-(1 \rightarrow 0)-L-Ser by NMR 1 H, 1 H T-ROESY experiments and molecular-dynamics simulations 1331

Flexible

Flexible chitin films: structural studies 2701

FlexiDock

Saturation transfer difference NMR and computational modeling of a sialoadhesin–sialyl lactose complex 259

Flow cytometry

Expression of glycosphingolipids in lymph nodes of mice lacking TNF receptor 1: biochemical and flow cytometry analysis 77

Fluorescence assay

Synthesis of 2-[(2-pyridyl)amino]ethyl β -D-lactosaminide and evaluation of its acceptor ability for sialyltransferase: a comparison with 4-methylumbelliferyl and dansyl β -D-lactosaminide 1545

Fluorescence intensity quenching

Tertiary structure of human α_1 -acid glycoprotein (orosomucoid). Straightforward fluorescence experiments revealing the presence of a binding pocket 607

Fluorinated surfactants

Novel perfluoroalkylated derivatives of p-galactopyranose and xylitol for biomedical uses. Hemocompatibility and effect on perfluorocarbon emulsions 2177

Fluorine

The synthesis of a series of modified mannotrisaccharides as probes of the enzymes involved in the early stages of mammalian complex *N*-glycan formation 2487

Food microstructure

Development of a digital video-microscopy technique to study lactose crystallisation kinetics in situ 2721

Force field

Evaluation of carbohydrate molecular mechanical force fields by quantum mechanical calculations 937

Formaldehyde

Formation of 3-hexuloses in aldol reactions, analysis of the products as their *O*-isopropylidene derivatives by GC–MS 2171

Förster energy transfer

Tertiary structure of human α_1 -acid glycoprotein (orosomucoid). Straightforward fluorescence experiments revealing the presence of a binding pocket 607

Fourfold conformation

Plausible molecular and crystal structures of chitosan/HI type II salt 835

Francisella

Characterisation of the core part of the lipopolysaccharide O-antigen of Francisella novicida (U112) 1643

Francisella novicida

Characterisation of the core part of the lipopolysaccharide O-antigen of Francisella novicida (U112) 1643

Free energy

Effect of methylation on the stability and solvation free energy of amylose and cellulose fragments: a molecular dynamics study 1697

Tuctans

NMR characterisation of inulin-type fructooligosaccharides as the major water-soluble carbohydrates from $Matricaria\ maritima\ (L.)$ 2445

Fructosyltransferase

Effect of carbohydrates on fructosyltransferase expression and distribution in $Streptococcus\ mutans\ GS-5\ biofilms\ 2883$

FTIR

A Fourier-transform infrared spectroscopy study of sugar glasses 1077

Metal-ion interactions with sugars. The crystal structure and FTIR study of an $SrCl_2$ -fructose complex 1421

Metal-ion environment in solid Mn(II), Co(II) and Ni(II) hyaluronates 2549

FT-IR

Complexation of trivalent lanthanide cations by erythritol in the solid state. The crystal structure and FT-IR study of $2EuCl_3$ · $2C_4H_{10}O_4$ ·7 H_2O 1679

Metal-ion interactions with sugars. Crystal structures and FT-IR studies of the LaCl₃-ribopyranose and CeCl₃-ribopyranose complexes 1689

FT-IR and Raman spectroscopy

The complexation of metal cations by D-galacturonic acid: a spectroscopic study 2391

FT-IR microspectroscopy

FT-IR study of the *Chara corallina* cell wall under deformation 629

Fucan

Synthesis and biological activities of octyl 2,3,4-tri-O-sulfo- α -L-fucopyranosyl- $(1 \rightarrow 3)$ -2,4-di-O-sulfo- α -L-fucopyranosyl- $(1 \rightarrow 3)$ -2,4-

di-O-sulfo- α -L-fucopyranosyl-(1 \rightarrow 3)-2,4-di-O-sulfo- β -L-fucopyranoside 867

Synthesis and biological activities of octyl 2,3-di-O-sulfo- α -L-fucopyranosyl-(1 \rightarrow 3)-2-O-sulfo- α -L-fucopyranosyl-(1 \rightarrow 4)-2,3-di-O-sulfo- α -L-fucopyranosyl-(1 \rightarrow 4)-2,3-di-O-sulfo- β -L-fucopyranoside 2083

Fucan sulfate

Isolation and partial characterization of fucan sulfates from the body wall of sea cucumber *Stichopus japonicus* and their ability to inhibit osteoclastogenesis 1339

Fucoidan

A highly regular fraction of a fucoidan from the brown seaweed Fucus distichus L. 511

Fucoidans

MM3 Potential energy surfaces of α -3-linked L-fucobiose and fucotriose and their sulfated counterparts 2381

Fucose

MM3 Potential energy surfaces of α -3-linked L-fucobiose and fucotriose and their sulfated counterparts 2381

Fucus distichus

A highly regular fraction of a fucoidan from the brown seaweed Fucus distichus L. 511

Functionalized sugar oxazolines

Enzymatic glycosidation of sugar oxazolines having a carboxylate group catalyzed by chitinase 2769

Fungi

The structure of the glucuronoxylomannan produced by culinary-medicinal yellow brain mushroom (*Tremella mesenterica* Ritz.:Fr., Heterobasidiomycetes) grown as one cell biomass in submerged culture 1483

Furan

Preparation of polyhydroxyalkyl- and C-glycosylfuran derivatives from free sugars catalyzed by cerium(III) chloride in aqueous solution: an improvement of the Garcia González reaction 1381

Furanoses

Synthesis of pentose-containing disaccharides using a thermostable α -L-arabinofuranosidase 2019

Furostan saponin

Synthesis of bidesmosidic dihydrodiosgenin saponins bearing a 3-*O*-β-chacotriosyl moiety 1753

Galactan

Structural characterization of the antigenic O-polysaccharide in the lipopolysaccharide produced by *Actinobacillus pleuropneumoniae* serotype 14 1399

Structural features of pectic polysaccharides from the skin of *Opuntia ficus-indica* prickly pear fruits 1119

Galactans

NMR structural determination of dissolved O-acetylated galacto-glucomannan isolated from spruce thermomechanical pulp 301 $2\text{-}O\text{-}\alpha\text{-}\text{Galactobiosyl-}\alpha\text{-}\text{cyclodextrin}$ Isolation and characterization of two positional isomers of novel heterogeneous branched cyclomaltohexaoses ($\alpha\text{-}\text{cyclodextrins}$) having a D-galactobiosyl residue on the side chain 2875

Galactofuranose

Synthesis of a novel class of sulfonium ions as potential inhibitors of UDP-galactopyranose mutase 401

Synthesis of novel ammonium and selenonium ions and their evaluation as inhibitors of UDP-galactopyranose mutase 2205

Galact of uran osyl transfer as e

Synthesis of novel ammonium and selenonium ions and their evaluation as inhibitors of UDP-galactopyranose mutase 2205

Galactoglucomannans

NMR structural determination of dissolved O-acetylated galactoglucomannan isolated from spruce thermomechanical pulp 301

Galactose

Syntheses of arabinogalactans consisting of β -(1 \rightarrow 6)-linked D-galactopyranosyl backbone and α -(1 \rightarrow 3)-linked L-arabinofuranosyl side chains 1847

Synthesis of oligogalacturonates conjugated to BSA 2159

B-Galactosidase

Enzymatic synthesis of a β -D-galactopyranosyl cyclic tetrasaccharide by β -galactosidases 1603

Role of CH/ π interactions in substrate binding by *Escherichia coli* β -galactosidase 2275

α-Galactosyl

Facile preparation of the α -Gal-recognizing *Griffonia simplicifolia* I-B₄ isolectin 153

Galactosyltransferase

Molecular dynamics simulations of glycosyltransferase LgtC 995 Galacturonic acid

Synthesis of a disaccharide fragment of rhamnogalacturonan II 2507

The complexation of metal cations by D-galacturonic acid: a spectroscopic study 2391

Galloylation

Improved anomeric selectivity for the aroylation of sugars 1373 Gangliosides

Expression of glycosphingolipids in lymph nodes of mice lacking TNF receptor 1: biochemical and flow cytometry analysis 77

Gas chromatography

Differentiation of isomeric oligosaccharide structures by ESI tandem MS and GC-MS 655

GDP-heptose

A convenient synthesis of GDP D-glycero-α-D-manno-heptopyranose 147

Gelation

Pectin-chitosan interactions and gel formation 1933

Physicochemical studies of pectin/poly-L-lysine gelation 209

Geobacter

The structure of the core region of the lipopolysaccharide from *Geobacter sulfurreducens* 2901

GIA

Use of 13 C chemical shift surfaces in the study of carbohydrate conformation. Application to cyclomaltooligosaccharides (cyclodextrins) in the solid state and in solution 87

Gigartinales

A nearly idealized 6'-O-methylated 1-carrageenan from the Australian red alga *Claviclonium ovatum* (Acrotylaceae, Gigartinales) 1459

Glasses

A Fourier-transform infrared spectroscopy study of sugar glasses 1077

Glucan

Synthesis of an α -linked dimer of the trisaccharide repeating unit of the exopolysaccharide produced by *Pediococcus damnosus* 2.6 2499

β-(1→3)-Glucan

Low $M_{\rm w}$ sulfated curdlan with improved water solubility forms macromolecular complexes with polycytidylic acid 161

Glucan (1→3)-β-glucosidase

Kinetics of substrate transglycosylation by glycoside hydrolase family 3 glucan $(1\rightarrow 3)$ - β -glucosidase from the white-rot fungus *Phanerochaete chrysosporium* 2851

Glucans

The influence of mutanase and dextranase on the production and structure of glucans synthesized by streptococcal glucosyltransferases 2127

β-Glucans

Evaluation of sulfated fungal β -glucans from the sclerotium of *Pleurotus tuber-regium* as a potential water-soluble anti-viral agent 2297

Glucoamylase

Crosslinked enzyme crystals of glucoamylase as a potent catalyst for biotransformations 1099

Glucomannan

Structural characterization of a 2-O-acetylglucomannan from Dendrobium officinale stem 2219

Glucopyranosylthio

Comparative evaluation of D-glucosyl thiouronium, glucosylthio heterocycles, Daonil, and insulin as inhibitors for hepatic glycosidases 469

Glucosamine

A concise synthesis of two isomeric pentasaccharides, the O repeat units from the lipopolysaccharides of *P. syringae* pv. porri NCPPB 3364^T and NCPPB 3365 43

Chemical synthesis of UDP-4-O-methyl-GlcNAc, a potential chain terminator of chitin synthesis 1531

Synthesis of two oligosaccharides, the GPI anchor glycans from *S. cerevesiae* and *A. fumigatus* 29

Glucose

B3LYP/6-311++ G^{**} study of monohydrates of α - and β -D-glucopyranose: hydrogen bonding, stress energies, and effect of hydration on internal coordinates 553

B3LYP/6-311++ G^{**} study of α- and β-D-glucopyranose and 1,5-anhydro-D-glucitol: 4C_1 and 1C_4 chairs, ${}^{3,O}B$ and $B_{3,O}$ boats, and skew-boat conformations 537

Hydrothermal upgrading of biomass to biofuel; studies on some monosaccharide model compounds 1717

Synthesis of divalent β -(1 \rightarrow 6)-branched (1 \rightarrow 3)-glucohexaose and trivalent β -(1 \rightarrow 6)-branched (1 \rightarrow 3)-glucotriose 2761

Synthesis of mannose-containing analogues of $(1\rightarrow 6)$ -branched $(1\rightarrow 3)$ -glucohexaose 377

α-Glucosidase

Comparative evaluation of D-glucosyl thiouronium, glucosylthio heterocycles, Daonil, and insulin as inhibitors for hepatic glycosidases 469

β-Glucosidase

Comparative evaluation of \mathbf{p} -glucosyl thiouronium, glucosylthio heterocycles, Daonil, and insulin as inhibitors for hepatic glycosidases 469

α-Glucosidase family

Two potent competitive inhibitors discriminating α -glucosidase family I from family II 1035

α-Glucosidase inhibitor

A novel α-glucosidase inhibitor from pine bark 715

Glucoside

Synthesis, self-assembly and characterization of a new glucoside-type hydrogel having a Schiff base on the aglycon 1311

Glucosylamines

Proton-acceptor properties and capability for mutarotation of some glucosylamines in methanol 1439

Glucosyltransferases

The influence of mutanase and dextranase on the production and structure of glucans synthesized by streptococcal glucosyltransferases 2127

Glucuronic acid

Synthesis of a hexasaccharide fragment of the O-deacetylated GXM of *C. neoformans* serotype B 1779

Glucuronoxylomannan

The structure of the glucuronoxylomannan produced by culinary-medicinal yellow brain mushroom (*Tremella mesenterica* Ritz.:Fr., Heterobasidiomycetes) grown as one cell biomass in submerged culture 1483

Glycals

Reinvestigation of the mercuration–demercuration reaction on alkylated glycals: an improved method for the preparation of 2,3-dideoxy- α , β -unsaturated carbohydrate enals 2031

Synthesis of 2,3- or 1,2-unsaturated derivatives of 2-deoxy-2-trifluoromethylhexopyranoses 1833

Synthesis of aryl sialosides using Mitsunobu conditions 2835 Glycation

Pyridinium-carbaldehyde: active Maillard reaction product from the reaction of hexoses with lysine residues 705

glycero-Tetrulose

Formation of 3-hexuloses in aldol reactions, analysis of the products as their O-isopropylidene derivatives by GC-MS 2171

Glycobiology

Web resources for the carbohydrate chemist 929

Glycoconjugate

Neutral, acidic, and basic derivatives of anthranilamide that confer different formal charge to reducing oligosaccharides 221 Glycoconjugates for the recognition of *Bacillus* spores 2859

Glycoconjugates

Crystal architecture and conformational properties of the inclusion complex, neohesperidin dihydrochalcone–cyclomaltoheptaose (β-cyclodextrin), by X-ray diffraction 2117

Synthesis of a glucuronic acid and glucose conjugate library and evaluation of effects on endothelial cell growth 1873

Glycodendrimers

Synthesis of lactoside glycodendrons using photoaddition and reductive amination methodologies 2069

Glycolaldehyde

Formation of 3-hexuloses in aldol reactions, analysis of the products as their *O*-isopropylidene derivatives by GC-MS 2171

Glycomics

Web resources for the carbohydrate chemist 929

Glycopeptide

A convergent strategy for the preparation of N-glycan core di-, tri-, and pentasaccharide thioaldoses for the site-specific glycosylation of peptides and proteins bearing free cysteines 181

Glycoproteir

A convergent strategy for the preparation of N-glycan core di-, tri-, and pentasaccharide thioaldoses for the site-specific glycosylation of peptides and proteins bearing free cysteines 181

Human serum IgA1 is substituted with up to six O-glycans as shown by matrix assisted laser desorption ionisation time-of-flight mass spectrometry 2329

Glycosaminoglycan

The synthesis of a novel thio-linked disaccharide of chondroitin as a potential inhibitor of polysaccharide lyases 699

Glycosaminoglycans

A selective Sc(OTf)₃-catalyzed trialkylsilyl ether to acetyl ester exchange reaction with β -L-idopyranoside and 3,4-O-isopropylidene- β -D-galactopyranoside derivatives 2841

Glycosidase

Synthesis and characterisation of novel chromogenic substrates for human pancreatic α -amylase 1727

Glycosidases

Enzyme-catalysed synthesis of galactosylated 1D- and 1L-chiro-inositol, 1D-pinitol, myo-inositol and selected derivatives using the β -galactosidase from the thermophile *Thermoanaerobacter* sp. strain TP6-B1 1857

Glycosidation

Two approaches to the synthesis of $3-\beta-D$ -glucopyranosyl-D-glucitol 2407

Synthesis of *N*-unsubstituted, mono- and disubstituted carbohydrate-1-*O*-carbamates and their behaviour in glycoside syntheses 2821

α-Glycosidation

Simple preparations of alkyl and cycloalkyl α -glycosides of maltose, cellobiose, and lactose 2415

Glycoside hydrolase family

Kinetics of substrate transglycosylation by glycoside hydrolase family 3 glucan $(1\rightarrow 3)$ - β -glucosidase from the white-rot fungus *Phanerochaete chrysosporium* 2851

Glycosphingolipids

Expression of glycosphingolipids in lymph nodes of mice lacking TNF receptor 1: biochemical and flow cytometry analysis 77

Synthetic studies on glycosphingolipids from Protostomia phyla: total syntheses of glycosphingolipids from the parasite, *Echinococcus multilocularis* 2749

Glycosylation

A conformational study of α -D-Manp-(1 \rightarrow 2)- α -D-Manp-(1 \rightarrow 0)-L-Ser by NMR 1 H, 1 H T-ROESY experiments and molecular-dynamics simulations 1331

A convergent strategy for the preparation of N-glycan core di-, tri-, and pentasaccharide thioaldoses for the site-specific glycosylation of peptides and proteins bearing free cysteines 181

Data mining the protein data bank: automatic detection and assignment of carbohydrate structures 1015

Synthesis and biological activities of octyl 2,3,4-tri-O-sulfo- α -L-fucopyranosyl-(1 \rightarrow 3)-2,4-di-O-sulfo- α -L-fucopyranosyl-(1 \rightarrow 3)-2,4-di-O-sulfo- α -L-fucopyranosyl-(1 \rightarrow 3)-2,4-di-O-sulfo- β -L-fucopyranoside 867

Synthesis and biological activities of octyl 2,3-di-O-sulfo- α -L-fucopyranosyl-(1 \rightarrow 3)-2-O-sulfo- α -L-fucopyranosyl-(1 \rightarrow 4)-2,3-di-O-sulfo- α -L-fucopyranosyl-(1 \rightarrow 4)-2,3-di-O-sulfo- β -L-fucopyranoside 2083

Synthesis and enzyme-catalyzed hydrolysis of a radical-masked glycosylated spin-label reagent 2425

Synthesis of 2-iodo-2-deoxy septanosides from a \mathbf{p} -xylose-based oxepine: intramolecular cyclization in the absence of a glycosyl acceptor 2363

Synthesis of a 6^{V} -sulfated mannopentasaccharide analogue related to PI-88 1155

Synthesis of the pentasaccharide repeating unit of the major *O*-antigen component from *Pseudomonas syringae* pv. *ribicola* NVPPB 1010 393

Synthesis, crystal structure, and reactivity of a D-xylose based oxepine 1163

Tricyclic furanoid dichloroacetyl orthoesters of D-mannose from 1,2-O-trichloroethylidene-β-D-mannofuranose 1739

Web resources for the carbohydrate chemist 929

Glycosylations

Enzyme-catalysed synthesis of galactosylated 1D- and 1L-chiro-inositol, 1D-pinitol, myo-inositol and selected derivatives using the β -galactosidase from the thermophile *Thermoanaerobacter* sp. strain TP6-B1 1857

Glycosyl bromide

Simple preparations of alkyl and cycloalkyl $\alpha\text{-glycosides}$ of maltose, cellobiose, and lactose $\,$ 2415

Glycosyl carbamates

Synthesis of N-unsubstituted, mono- and disubstituted carbohy-drate-1-O-carbamates and their behaviour in glycoside syntheses 2821

Glycosyl inositols

Synthesis of fagopyritols A1 and B1 from D-chiro-inositol 2303 Glycosylphosphatidylinositol (GPI) membrane anchors

The synthesis of some deoxygenated analogues of early intermediates in the biosynthesis of glycosylphosphatidylinositol (GPI) membrane anchors 1263

Glycosyltransferase

Enzymatic supported synthesis of lacto-N-neotetraose using dendrimeric polyethylene glycol 693

Glycosyltransferases

Effect of carbohydrate fatty acid esters on *Streptococcus sobrinus* and glucosyltransferase activity 1029

Synthesis of unnatural sugar nucleotides and their evaluation as donor substrates in glycosyltransferase-catalyzed reactions 2641

Glycotoxin

Pyridinium-carbaldehyde: active Maillard reaction product from the reaction of hexoses with lysine residues 705

Golgi endo-α-mannosidase

Golgi endomannosidase inhibitor, α -D-glucopyranosyl- $(1\rightarrow 3)$ -1-deoxymannojirimycin: a five-step synthesis from maltulose and examples of N-modified derivatives 1823

GPC

Complementary exploration of the action pattern of hyaluronate lyase from *Streptococcus agalactiae* using capillary electrophoresis, gelpermeation chromatography and viscosimetric measurements 2541

GPI biosynthesis in *Trypanosoma brucei* and HeLa (human) cell-free systems

The synthesis of some deoxygenated analogues of early intermediates in the biosynthesis of glycosylphosphatidylinositol (GPI) membrane anchors 1263

Graft copolymer

Synthesis and characterization of a brush-like copolymer of polylactide grafted onto chitosan 845

Gram-negative bacteria

Blocking nonspecific adsorption of native food-borne microorganisms by immunomagnetic beads with 1-carrageenan 613

'Green' method

Synthesis of polysaccharide-stabilized gold and silver nanoparticles: a green method 2627

Griffonia simplicifolia I-B₄

Facile preparation of the α -Gal-recognizing *Griffonia simplicifolia* I-B₄ isolectin 153

GROMACS

Molecular dynamics simulation of a decasaccharide fragment of heparin in aqueous solution 281

Growth promoter

A convenient synthesis of lepidimoide from okra mucilage and its growth-promoting activity in hypocotyls 9

Growth rings

Structural parameters of amylopectin clusters and semi-crystalline growth rings in wheat starches with different amylose content 2683 Guluronic acid

Preparation and structure elucidation of alginate oligosaccharides degraded by alginate lyase from *Vibro* sp. 510 1475

Gymnema sylvestre

Two new flavonol glycosides from *Gymnema sylvestre* and *Euphorbia ebracteolata* 891

¹H and ¹³C NMR spectroscopy

The complexation of metal cations by D-galacturonic acid: a spectroscopic study 2391

Haemophilus somnus

Structural analysis of the lipooligosaccharide from the commensal *Haemophilus somnus* genome strain 129Pt 529

Hafnia alvei

Structure of the O-polysaccharide from the lipopolysaccharide of *Hafnia alvei* strain PCM 1529 723

Hafnia alvei: lipopolysaccharide

The O-acetylation patterns in the O-antigens of *Hafnia alvei* strains PCM 1200 and 1203, serologically closely related to PCM 1205 2521 Haloepoxide

Concise chemoenzymatic synthesis of epi-inositol 1773

¹H NMR

¹H NMR spectra of branched-chain cyclomaltohexaoses (α-cyclodextrins) 777

¹H and ¹³C NMR

Structural features of pectic polysaccharides from the skin of *Opuntia ficus-indica* prickly pear fruits 1119

¹H and ¹³C NMR spectroscopy

Synthesis of cis-(1 \rightarrow 3)-glycosides of allyl 2-acetamido-4,6-O-benzy-lidene-2-deoxy- α -D-glucopyranoside 1293

¹H, ¹³C NMR spectroscopy

New class of quaternary ammonium salts, derivatives of methyl D-glucopyranosides 1537

Synthesis and structure of selected quaternary N-(1,4-anhydro-5-deoxy-2,3-O-isopropylidene-D,L-ribitol-5-yl)ammonium salts 2355

Hederagenin

Structure elucidation by NMR spectroscopy of a new acetylated saponin from *Centratherum anthelminticum* 2871

Helical structure

Two-dimensional rotating-frame Overhauser spectroscopy (ROESY) and ¹³C NMR study of the interactions between maltodextrin and an anionic surfactant 1105

Helicity

Rod-like architecture and helicity of the poly(C)/schizophyllan complex observed by AFM and SEM 251

Hemiacetal

Chloramine-T-mediated chemoselective hydrolysis of thioglycosides into glycosyl hemiacetals under neutral conditions 885

Hemicelluloses

Fractional and physico-chemical characterization of hemicelluloses from ultrasonic irradiated sugarcane bagasse 291

Hemin

Tertiary structure of human α_1 -acid glycoprotein (orosomucoid). Straightforward fluorescence experiments revealing the presence of a binding pocket 607

Hemocompatibility

Novel perfluoroalkylated derivatives of D-galactopyranose and xylitol for biomedical uses. Hemocompatibility and effect on perfluorocarbon emulsions 2177

Heparin

Molecular dynamics simulation of a decasaccharide fragment of heparin in aqueous solution 281

Synthesis of disaccharides derived from heparin and evaluation of effects on endothelial cell growth and on binding of heparin to FGF-2 2343

The heparin-Ca²⁺ interaction: the influence of the O-sulfation pattern on binding 975

Heptakis(2,3,6-tri-O-methyl)-β-cyclodextrin

Structure of the inclusion complexes of heptakis(2,3,6-tri-O-methyl)- β -cyclodextrin with indole-3-butyric acid and 2,4-dichlor-ophenoxyacetic acid 233

Heptakis(2,3-di-O-acetyl-6-bromo-6-deoxy)cyclomaltoheptaose

X-ray crystallography and solution NMR spectroscopy characterization of heptakis(2,3-di-*O*-acetyl-6-bromo-6-deoxy)cyclomaltoheptaose 1189

$Heptakis (6-{\it O}\hbox{-}carboxymethyl-2, 3-di-{\it O}\hbox{-}methyl) cyclomal to heptaose$

Evaluation of newly synthesized and commercially available charged cyclomaltooligosaccharides (cyclodextrins) for capillary electrokinetic chromatography 241

Heptose

A convenient synthesis of GDP D-glycero-α-D-manno-heptopyranose 147

Heptulopyranosuronamide

Studies for the transformation of carbocycles into carbohydrates: approach toward the synthesis of higher sugar derivatives 665

Hericium erinaceus

Structural investigation of a novel rhamnoglucogalactan isolated from the fruiting bodies of the fungus *Hericium erinaceus* 2667

Herpes simplex virus

The structure of the agaran sulfate from *Acanthophora spicifera* (Rhodomelaceae, Ceramiales) and its antiviral activity. Relation between structure and antiviral activity in agarans 335

Hevamine

Depolymerization of β -chitin to mono- and disaccharides by the serum fraction from the *para* rubber tree, *Hevea brasiliensis* 2799

Hevea brasiliensis

Depolymerization of β -chitin to mono- and disaccharides by the serum fraction from the *para* rubber tree, *Hevea brasiliensis* 2799

Hevein

Toward the understanding of the structure and dynamics of protein-carbohydrate interactions: molecular dynamics studies of the complexes between hevein and oligosaccharidic ligands 985

Hexopyranans

Complexation of vanadium(V) oxyanions with hexopyranose- and mannopyranoseuronic acid-containing polysaccharides: stereochemical considerations 771

3-Hexuloses

Formation of 3-hexuloses in aldol reactions, analysis of the products as their *O*-isopropylidene derivatives by GC–MS 2171

HgSO₄

Reinvestigation of the mercuration–demercuration reaction on alkylated glycals: an improved method for the preparation of 2,3-dideoxy- α , β -unsaturated carbohydrate enals 2031

Higher plants

Synthesis of an apiose-containing disaccharide fragment of rhamnogalacturonan-II and some analogues 21

Higher sugars

Studies for the transformation of carbocycles into carbohydrates: approach toward the synthesis of higher sugar derivatives 665

High-resolution magic angle spinning

The O-acetylation patterns in the O-antigens of *Hafnia alvei* strains PCM 1200 and 1203, serologically closely related to PCM 1205 2521

Hinge glycopeptide

Human serum IgA1 is substituted with up to six O-glycans as shown by matrix assisted laser desorption ionisation time-of-flight mass spectrometry 2329

HMBC

Determination of the structures of four new isomeric cyclitols 2027

1,5-Anhydroxylitol from leaves of Olea europaea 2731

HPTLC immunostaining

Expression of glycosphingolipids in lymph nodes of mice lacking TNF receptor 1: biochemical and flow cytometry analysis 77

HR-MAS

The O-acetylation patterns in the O-antigens of *Hafnia alvei* strains PCM 1200 and 1203, serologically closely related to PCM 1205 2521

Hr-MAS NMR

Characterization of a β -D-(1 \rightarrow 3)-glucan from the marine diatom *Chaetoceros mülleri* by high-resolution magic-angle spinning NMR spectroscopy on whole algal cells 421

H₂SO₄

Kinetics and mechanism of the oxidation of D-fructose by vanadium(V) in H_2SO_4 medium 133

Human pancreatic α-amylase

Synthesis and characterisation of novel chromogenic substrates for human pancreatic α -amylase 1727

Human parainfluenza virus type 1

2β,3β-Difluorosialic acid derivatives structurally modified at the C-4 position: synthesis and biological evaluation as inhibitors of human parainfluenza virus type 1 1367

Hyaluronan

Gram-scale syntheses of the $(1\rightarrow 3)$ -linked and $(1\rightarrow 4)$ -linked hyaluronan disaccharides 1255

Hyaluronate lyase

Complementary exploration of the action pattern of hyaluronate lyase from *Streptococcus agalactiae* using capillary electrophoresis, gel-permeation chromatography and viscosimetric measurements 2541

Hyaluronic acid

Complementary exploration of the action pattern of hyaluronate lyase from Streptococcus agalactiae using capillary electrophoresis, gel-permeation chromatography and viscosimetric measurements 2541

Hybrids

The revised NMR chemical shift data of carrageenans 2309

Synthesis and structure determination of some nonanomerically C-C-linked serine glycoconjugates structurally related to mannojirimycin 2187

Hydration

Material properties of concentrated pectin networks 1317 NMR study on the hydroxy protons of the Lewis X and Lewis Y oligosaccharides 2465

Hydration energy

Evaluation of carbohydrate molecular mechanical force fields by quantum mechanical calculations 937

Hydrobenzoin

Synthesis and characterization of carboxymethylated cyclosophoraose, and its inclusion complexation behavior 519

Hydrodynamic properties

Structure and hydrodynamic properties of the extracellular polysaccharide from a mutant strain (RA3W) of Erwinia chrysanthemi

Hydrogel

Synthesis, self-assembly and characterization of a new glucosidetype hydrogel having a Schiff base on the aglycon 1311

Hydrogen bond

Influence of alkali-freezing treatment on the solid state structure of chitin 2321

Hydrogen bonding

B3LYP/6-311++G** study of monohydrates of α - and β -Dglucopyranose: hydrogen bonding, stress energies, and effect of hydration on internal coordinates 553

Crystal structure of N-(benzyloxycarbonyl)aminoethyl-2,3,4,6tetra-O-benzoyl-α-D-mannopyranoside: stabilization of the crystal lattice by a tandem network of N-H···O, C-H···O, and C-H·· π interactions 1087

Solution and solid-state structure of N-acetamido-3,4,6-tri-Oacetyl-2-azido-2-deoxy-α-D-galactopyranosylamine 1447

Hydrogen bonds

X-ray and conformational analysis of methyl 3-amino-2,3-dideoxyα-D-arabino-hexopyranoside 1195

Hydrogenation

Unexpected reductions of glycosyl spacer-armed phthalimides 1497 Hydrogenolysis

Synthesis and enzyme-catalyzed hydrolysis of a radical-masked glycosylated spin-label reagent 2425

Hydrolysate

Carbohydrates from Cynanchum otophyllum 1967

Hydrolysis

Hydrolysis of Nothogenia erinacea xylan by xylanases from families 10 and 11 1047

Hydrophobic channel

Inclusion complexes of V-amylose with undecanoic acid and dodecanol at atomic resolution: X-ray structures with cycloamylose containing 26 p-glucoses (cyclohexaicosaose) as host 1427

Hydrosilylation

Syntheses of alkenylated carbohydrate derivatives toward the preparation of monolayers on silicon surfaces 2599

Hydrothermal vent

Structural studies of the main exopolysaccharide produced by the deep-sea bacterium Alteromonas infernus 2371

 $(2-Hydroxyl-3-butoxyl) propylcarboxymethyl chitosans \ (HBP-CMCHS)\\$ Surface and aggregate properties of an amphiphilic derivative of carboxymethylchitosan 1113

Hydroxy protons

NMR study on the hydroxy protons of the Lewis X and Lewis Y oligosaccharides 2465

Hydroxycinnamic acids

Impact and efficiency of GH10 and GH11 thermostable endoxylanases on wheat bran and alkali-extractable arabinoxylans 2529

Hydroxyethylation

Correlation of structure to antitumor activities of five derivatives of a β-glucan from *Poria cocos* sclerotium 2567

Hydroxyl radical

Preparation of low-molecular-weight and high-sulfate-content chitosans under microwave radiation and their potential antioxidant activity in vitro 2515

Hydroxylamine, acyl-protected

Synthesis and enzyme-catalyzed hydrolysis of a radical-masked glycosylated spin-label reagent 2425

Hydroxypropylation

Correlation of structure to antitumor activities of five derivatives of a β-glucan from Poria cocos sclerotium 2567

Idiomarina zobellii

Structure of the O-polysaccharide of *Idiomarina zobellii* KMM 231^T containing two unusual amino sugars with the free amino group, 4-amino-4,6-dideoxy-D-glucose and 2-amino-2-deoxy-L-guluronic acid 477

β-L-Idopyranoside

A selective Sc(OTf)₃-catalyzed trialkylsilyl ether to acetyl ester exchange reaction with β-L-idopyranoside and 3,4-O-isopropylidene-β-D-galactopyranoside derivatives 2841

Image analysis

Development of a digital video-microscopy technique to study lactose crystallisation kinetics in situ 2721

Blocking nonspecific adsorption of native food-borne microorganisms by immunomagnetic beads with 1-carrageenan 613

Synthesis and enzyme-catalyzed hydrolysis of a radical-masked glycosylated spin-label reagent 2425 Iminosugar

Facile route for the synthesis of the iminosugar nucleoside (3R,4R)-1-(pyren-1-yl)-4-(hydroxymethyl)pyrrolidin-3-ol 1565

Immunobiological activity

Purification, structure and immunobiological activity of an arabinan-rich pectic polysaccharide from the cell walls of Prunus dulcis seeds 2555

Immunofluorescence

Effect of carbohydrates on fructosyltransferase expression and distribution in Streptococcus mutans GS-5 biofilms 2883

Immunoglobulin A1

Human serum IgA1 is substituted with up to six O-glycans as shown by matrix assisted laser desorption ionisation time-of-flight mass spectrometry 2329

Immunomagnetic beads

Blocking nonspecific adsorption of native food-borne microorganisms by immunomagnetic beads with 1-carrageenan 613

Immunomodulation

The influence of small oligosaccharides on the immune system

Inclusion complex

Inclusion complexes of V-amylose with undecanoic acid and dodecanol at atomic resolution: X-ray structures with cycloamylose containing 26 D-glucoses (cyclohexaicosaose) as host 1427

Interaction between β-cyclodextrin and 1,10-phenanthroline: uncommon 2:3 inclusion complex in the solid state 1649

Synthesis and characterization of carboxymethylated cyclosophoraose, and its inclusion complexation behavior 519

Inclusion complexes

Crystal architecture and conformational properties of the inclusion complex, neohesperidin dihydrochalcone–cyclomaltoheptaose (β-cyclodextrin), by X-ray diffraction 2117

Inclusion compounds

Structure of the inclusion complexes of heptakis(2,3,6-tri-*O*-methyl)-β-cyclodextrin with indole-3-butyric acid and 2,4-dichlor-ophenoxyacetic acid 233

Indium-mediated allylations

Indium-promoted Barbier-type allylations in aqueous media: a convenient approach to 4-C-branched monosaccharides and $(1\rightarrow 4)$ -C-disaccharides 2737

Indole-3-butyric acid

Structure of the inclusion complexes of heptakis(2,3,6-tri-*O*-methyl)-β-cyclodextrin with indole-3-butyric acid and 2,4-dichlorophenoxyacetic acid 233

Infrared spectroscopy

Characterization of the crystalline structure of cellulose using static and dynamic FT-IR spectroscopy 569

Inhibitors

Synthesis of novel ammonium and selenonium ions and their evaluation as inhibitors of UDP-galactopyranose mutase 2205

The synthesis of a series of modified mannotrisaccharides as probes of the enzymes involved in the early stages of mammalian complex *N*-glycan formation 2487

Inositol

Crystal structure of 1L-1,2:4,5-di-*O*-isopropylidene-*allo*-inositol; A comparison of its conformation in solid and solution states 1551 Crystal structure, solid state and solution conformation of 1D-1,4-di-*O*-[(*S*)-*O*-acetylmandeloyl]-2,3:5,6-di-*O*-isopropylidene-*myo*-inositol 807

Solid and solution state conformation of 1L-1-*O*-acetyl-2,3:5,6-di-*O*-isopropylidene-*chiro*-inositol 1803

Inositol oligosaccharides

Enzyme-catalysed synthesis of galactosylated 1D- and 1L-chiro-inositol, 1D-pinitol, myo-inositol and selected derivatives using the β -galactosidase from the thermophile *Thermoanaerobacter* sp. strain TP6-B1 1857

Insulin mimetics

Synthesis of fagopyritols A1 and B1 from D-chiro-inositol 2303

Intermolecular interactions

Crystal architecture and conformational properties of the inclusion complex, neohesperidin dihydrochalcone–cyclomaltoheptaose (β-cyclodextrin), by X-ray diffraction 2117

Intramolecular reductive amination

Simple syntheses of 4-O-glucosylated 1-deoxynojirimycins from maltose and cellobiose 2615

Inulin

NMR characterisation of inulin-type fructooligosaccharides as the major water-soluble carbohydrates from *Matricaria maritima* (L.) 2445

In vivo antioxidant activity

The structure of a sulfated galactan from *Porphyra haitanensis* and its in vivo antioxidant activity 105

Ion-pair liquid chromatography

Isolation of κ-carrageenan oligosaccharides using ion-pair liquid chromatography—characterisation by electrospray ionisation mass spectrometry in positive-ion mode 1301

Ions

Material properties of concentrated pectin networks 1317 Iron(III) chloride

Simple preparations of alkyl and cycloalkyl $\alpha\text{-glycosides}$ of maltose, cellobiose, and lactose $\,2415\,$

Isoacarbose

Two potent competitive inhibitors discriminating α -glucosidase family I from family II 1035

Isoflavone

In vitro enzymatic modification of puerarin to puerarin glycosides by maltogenic amylase 2789

Isolectin

Facile preparation of the α -Gal-recognizing *Griffonia simplicifolia* I-B₄ isolectin 153

Isomeric forms

The composition of 2-keto aldoses in organic solvents as determined by NMR spectroscopy 217

Isomeric structures

Differentiation of isomeric oligosaccharide structures by ESI tandem MS and GC-MS 655

Isomerization

Kinetic and chemical studies on the isomerization of monosaccharides in *N*-methylmorpholine-*N*-oxide (NMMO) under Lyocell conditions 1899

Isopropylidene derivatives

Formation of 3-hexuloses in aldol reactions, analysis of the products as their *O*-isopropylidene derivatives by GC-MS 2171

Isosaccharate

Crystal structure of ammonium isosaccharate and aqueous solubility of ammonium and sodium isosaccharates $\ 2811$

Isosaccharinic acid

Crystal structure of ammonium isosaccharate and aqueous solubility of ammonium and sodium isosaccharates 2811

Crystal structure of sodium isosaccharate, $NaC_6H_{11}O_6\cdot H_2O$ 801 α -Isosalicin

Enzymatic synthesis of two salicin analogues by reaction of salicyl alcohol with *Bacillus macerans* cyclomaltodextrin glucanyltransferase and *Leuconostoc mesenteroides* B-742CB dextransucrase 1517 Isosteric phosphonate

Synthesis and evaluation of a mechanism-based inhibitor of KDO8P synthase 385

Jack bean α-mannosidase

 $\alpha\textsc{-Mannosidase-catalyzed}$ synthesis of a (1->2)- $\alpha\textsc{-d}$ -rhamnodisac-charide derivative 1389

Jones oxidation

Synthesis of cis-(1 \rightarrow 3)-glycosides of allyl 2-acetamido-4,6-O-benzy-lidene-2-deoxy- α - \mathbf{D} -glucopyranoside 1293

Kaempferol 3-O- β -D-glucopyranosyl- $(1\rightarrow 4)$ - α -L-rhamnopyranosyl- $(1\rightarrow 6)$ - β -D-galactopyranoside

Two new flavonol glycosides from *Gymnema sylvestre* and *Euphorbia ebracteolata* 891

Kappaphycus alvarezii

The system of galactans of the red seaweed, *Kappaphycus alvarezii*, with emphasis on its minor constituents 2575

Kdo

The structure of the core region of the lipopolysaccharide from *Shewanella algae* BrY, containing 8-amino-3,8-dideoxy-D-*manno*-oct-2-ulosonic acid 737

KDO8P synthase

Synthesis and evaluation of a mechanism-based inhibitor of KDO8P synthase 385

2-Keto aldoses

The composition of 2-keto aldoses in organic solvents as determined by NMR spectroscopy 217

Keto sugars

Sugar bislactones by one-step oxidative dimerisation with pyridinium chlorochromate versus regioselective oxidation of vicinal diols 1889 Synthesis of aryl sialosides using Mitsunobu conditions 2835

Ketotriose

Crystal structures of dihydroxyacetone and its derivatives 1995 Kinetics

Kinetics and mechanism of the oxidation of D-fructose by vanadium(V) in H₂SO₄ medium 133

Knockout mice

Expression of glycosphingolipids in lymph nodes of mice lacking TNF receptor 1: biochemical and flow cytometry analysis 77

Knoevenagel condensation

One-step synthesis of β -C-glycolipid derivatives from unprotected sugars 741

Konjac mannan

Synergistic interactions between the genetically modified bacterial polysaccharide P2 and carob or konjac mannan 2233

Lactam

The chemistry of castanospermine. Direct oxidation of the tetraacetate to the corresponding γ -lactam 1747

B-Lactose

Ab initio conformational maps for disaccharides in gas phase and aqueous solution 113

β-Lactose conformers

Ab initio conformational maps for disaccharides in gas phase and aqueous solution 113

Lactose crystallisation

Development of a digital video-microscopy technique to study lactose crystallisation kinetics in situ 2721

Lactulose trihydrate

Transformation of lactulose trihydrate into anhydrous lactulose by fluidized bed drying and its characterization 1069

La-p-ribose complex

Metal-ion interactions with sugars. Crystal structures and FT-IR studies of the LaCl₃-ribopyranose and CeCl₃-ribopyranose complexes 1689

Lamellar structure

Structural parameters of amylopectin clusters and semicrystalline growth rings in wheat starches with different amylose content 2683

Laminaribiose

Kinetics of substrate transglycosylation by glycoside hydrolase family 3 glucan $(1\rightarrow 3)$ - β -glucosidase from the white-rot fungus *Phanerochaete chrysosporium* 2851

Lanthanide ion

Complexation of trivalent lanthanide cations by erythritol in the solid state. The crystal structure and FT-IR study of $2EuCl_3$ · $2C_4H_{10}O_4$ ·7H₂O 1679

α-L-Arabinofuranosidase

Synthesis of pentose-containing disaccharides using a thermostable $\alpha\text{-L-arabinofuranosidase}$ 2019

Large-scale synthesis

Gram-scale syntheses of the $(1\rightarrow 3)$ -linked and $(1\rightarrow 4)$ -linked hyaluronan disaccharides 1255

Lectin

Facile preparation of the α -Gal-recognizing *Griffonia simplicifolia* I-B₄ isolectin 153

Lectins

Toward the understanding of the structure and dynamics of protein–carbohydrate interactions: molecular dynamics studies of the complexes between hevein and oligosaccharidic ligands 985

Lentinan

NMR characterization of the polysaccharidic fraction from *Lentinula edodes* grown on olive mill waste waters 1129

Lentinula edodes

NMR characterization of the polysaccharidic fraction from Lentinula edodes grown on olive mill waste waters 1129

Lepidimoide

A convenient synthesis of lepidimoide from okra mucilage and its growth-promoting activity in hypocotyls 9

L-Erythrulose

Characterization and detection of lysine-arginine cross-links derived from dehydroascorbic acid 483

Lewis X

NMR study on the hydroxy protons of the Lewis X and Lewis Y oligosaccharides 2465

Lewis Y

NMR study on the hydroxy protons of the Lewis X and Lewis Y oligosaccharides 2465

LgtC

Molecular modeling insights into the catalytic mechanism of the retaining galactosyltransferase LgtC 1007

Library synthesis

Sulfatase-catalyzed assembly of regioselectively O-sulfonated p-nitrophenyl α -D-gluco- and α -D-mannopyranosides 1597

L-Iduronic acid derivatives

Synthesis of 2,5-anhydro-(β -D-glucopyranosyluronate)- and (α -L-idopyranosyluronate)-D-mannitol hexa-O-sulfonate hepta sodium salt 1569

Ligation

A convergent strategy for the preparation of N-glycan core di-, tri-, and pentasaccharide thioaldoses for the site-specific glycosylation of peptides and proteins bearing free cysteines 181

Light scattering

Chemical components and molecular mass of six polysaccharides isolated from the sclerotium of *Poria cocos* 327

Correlation of structure to antitumor activities of five derivatives of a β-glucan from *Poria cocos* sclerotium 2567

Lincomycin

Crystal and molecular structure and absolute configuration of lincomycin hydrochloride monohydrate 2111

Linkage region

An expeditious preparation of various sulfoforms of the disaccharide β -D-Galp-(1 \rightarrow 3)-D-Galp, a partial structure of the linkage region of proteoglycans, as their 4-methoxyphenyl β -D-glycosides 349

Linase

A convenient preparation of 1,2,3-tri-*O*-acetyl-β-D-ribofuranose by enzymatic regioselective 5-O-deacetylation of the peracetylated ribofuranose 1215

Lipase PS

An efficient chemoenzymatic route to methyl 4-O-benzyl-2,3-anhydro- β -D-lyxopyranoside from methyl β -D-xylopyranoside 425 Lipase PS-30

Lipase-catalysed preparation of acetates of 4-nitrophenyl β -D-xylopyranoside and their use in kinetic studies of acetyl migration 1353

Lipid A

The complete structure of the lipooligosaccharide from the halophilic bacterium *Pseudoalteromonas issachenkonii* KMM 3549^T 1985

The structure of the carbohydrate backbone of the lipopolysaccharide of *Pectinatus frisingensis* strain VTT E-79104 1637

Lipid A backbone

Structural studies on the R-type lipopolysaccharide of *Aeromonas hydrophila* 787

Lipochitin oligosaccharides (LCOs)

Acacia senegal and Prosopis chilensis-nodulating rhizobia Sinorhizobium arboris HAMBI 2361 and S. kostiense HAMBI 2362 produce tetra- and pentameric LCOs that are N-methylated, O-6-carbamoylated and partially sulfated 1061

Lipooligosaccharide

Structural analysis of the lipooligosaccharide from the commensal *Haemophilus somnus* genome strain 129Pt 529

The complete structure of the lipooligosaccharide from the halophilic bacterium *Pseudoalteromonas issachenkonii* KMM 3549^T 1985

The structure of the phosphorylated carbohydrate backbone of the lipopolysaccharide of the phytopathogen bacterium *Pseudomonas tolaasii* 2241

Lipopolysaccharide

A convenient synthesis of GDP D-glycero-α-D-manno-heptopyranose 147

Characterisation of a tetrasaccharide released on mild acid hydrolysis of LPS from two rough strains of *Shewanella* species representing different DNA homology groups 1185

Structural and immunochemical relationship between the Oantigenic polysaccharides from the enteroaggregative *Escherichia* coli strain 396/C-1 and *Escherichia coli* O126 1491

Structural characterization of the antigenic O-polysaccharide in the lipopolysaccharide produced by *Actinobacillus pleuropneumoniae* serotype 14 1399

Structural studies on the R-type lipopolysaccharide of Aeromonas hydrophila 787

Structure and cross-reactivity of the O-antigen of *Providencia* stuartii O18 containing 3-acetamido-3,6-dideoxy-D-glucose 409

Structure of a highly phosphorylated *O*-polysaccharide of *Proteus mirabilis* O41 1347

Structure of an acidic O-specific polysaccharide from marine bacterium *Shewanella fidelis* KMM $3582^{\rm T}$ containing $N^{\rm e}$ -[(S)-1-carboxyethyl]- $N^{\rm c}$ -(D-galacturonoyl)-L-lysine 1655

Structure of minor oligosaccharides from the lipopolysaccharide fraction from *Pseudomonas stutzeri* OX1 2657

Structure of the neutral O-polysaccharide and biological activities of the lipopolysaccharide of *Proteus mirabilis* O20 623

Structure of the O-polysaccharide from the lipopolysaccharide of *Hafnia alvei* strain PCM 1529 723

Structure of the O-polysaccharide of *Citrobacter youngae* O1 containing an α-p-ribofuranosyl group 321

Structure of the O-polysaccharide of *Idiomarina zobellii* KMM 231^T containing two unusual amino sugars with the free amino group, 4-amino-4,6-dideoxy-p-glucose and 2-amino-2-deoxy-L-guluronic acid 477

Structure of the O-polysaccharide of *Proteus mirabilis* CCUG 10701 (OB) classified into a new *Proteus* serogroup, O74 1395

Structure of the O-polysaccharide of *Proteus* serogroup O34 containing 2-acetamido-2-deoxy-α-D-galactosyl phosphate 2145

Structure of the O-polysaccharide of *Providencia alcalifaciens* O19 415 Structure of the O-polysaccharide of *Providencia stuartii* O4 containing 4-(*N*-acetyl-L-aspart-4-yl)amino-4,6-dideoxy-D-glucose 195 Structure of the O-polysaccharide of *Providencia stuartii* O49 1557 Structure of the O-polysaccharide of *Xanthomonas cassavae* GSPB 2437 157

Structure of the O-polysaccharide of the lipopolysaccharide of *Azospirillum irakense* KBC1 1813

Structure of the O-polysaccharide of the lipopolysaccharide of Rahnella aquatilis 1-95 1809

Structures of two O-polysaccharides of the lipopolysaccharide of *Citrobacter youngae* PCM 1538 (serogroup O9) 881

Synthesis and evaluation of a mechanism-based inhibitor of KDO8P synthase 385

The O-polysaccharide of *Pseudomonas syringae* pv. mori NCPPB 1656 is a β -(1 \rightarrow 2)-linked homopolymer of L-rhamnose 733

1656 is a β-(1 \rightarrow 2)-linked homopolymer of L-rhamnose 733 The structure of the carbohydrate backbone of the lipopolysacchar-

ide of Pectinatus frisingensis strain VTT E-79104 1637

The structure of the O-polysaccharide from the lipopolysaccharide of *Providencia stuartii* O47 2621

Lithium degradation

The extracellular polysaccharide of *Porphyridium* sp.: an NMR study of lithium-resistant oligosaccharidic fragments 97

Loops opening

Molecular dynamics simulations of glycosyltransferase LgtC 995

Characterisation of the core part of the lipopolysaccharide O-antigen of Francisella novicida (U112) 1643

Elucidation of two O-chain structures from the lipopolysaccharide fraction of *Agrobacterium tumefaciens* F/1 2451

Structural analysis of the lipopolysaccharide derived core oligosaccharides of *Actinobacillus pleuropneumoniae* serotypes 1, 2, 5a and the genome strain 5b 1973

The structure of the core region of the lipopolysaccharide from *Shewanella algae* BrY, containing 8-amino-3,8-dideoxy-**D**-*manno*-oct-2-ulosonic acid 737

The structure of the O-specific polysaccharide from Salmonella cerro (serogroup K, O:6,14,18) 2441

The structure of the O-specific polysaccharide from Ralstonia pickettii 2045

The structure of the core region of the lipopolysaccharide from *Geobacter sulfurreducens* 2901

Lycotetraose

Enzymatic liberation of lycotetraose from the \textit{Solanum} glycoalkaloid $\alpha\text{-tomatine}$ 2325

Lymph nodes

Expression of glycosphingolipids in lymph nodes of mice lacking TNF receptor 1: biochemical and flow cytometry analysis 77

Macromolecular complex

Low $M_{\rm w}$ sulfated curdlan with improved water solubility forms macromolecular complexes with polycytidylic acid 161

Maillard reaction

Carbohydrate carbonyl mobility—the key process in the formation of α -dicarbonyl intermediates 1609

Characterization and detection of lysine-arginine cross-links derived from dehydroascorbic acid 483

Pyridinium-carbaldehyde: active Maillard reaction product from the reaction of hexoses with lysine residues 705

Maize starch

Succinyl and acetyl starch derivatives of a hybrid maize: physicochemical characteristics and retrogradation properties monitored by differential scanning calorimetry 2673

MALDI-TOF MS

Structure of minor oligosaccharides from the lipopolysaccharide fraction from *Pseudomonas stutzeri* OX1 2657

MALDI-ToF-MS

Human serum IgA1 is substituted with up to six O-glycans as shown by matrix assisted laser desorption ionisation time-of-flight mass spectrometry 2329

Malt

Structural analysis of arabinoxylans isolated from native and malted finger millet (*Eleusine coracana*, ragi) 2457

Maltitol

Orientated growth of crystalline anhydrous maltitol (4-*O*-α-D-glucopyranosyl-D-glucitol) 1225

Maltodextrin

Two-dimensional rotating-frame Overhauser spectroscopy (ROESY) and ¹³C NMR study of the interactions between maltodextrin and an anionic surfactant 1105

Maltodextrin hydrolysis

Crosslinked enzyme crystals of glucoamylase as a potent catalyst for biotransformations 1099

Maltogenic amylase

In vitro enzymatic modification of puerarin to puerarin glycosides by maltogenic amylase 2789

Maltosaccharide

Neutral, acidic, and basic derivatives of anthranilamide that confer different formal charge to reducing oligosaccharides 221

Mannojirimycin

Synthesis and structure determination of some nonanomerically C–C-linked serine glycoconjugates structurally related to mannojirimycin 2187

Mannopyranoside

Crystal structure of *N*-(benzyloxycarbonyl)aminoethyl-2,3,4,6tetra-O-benzoyl-α-D-mannopyranoside: stabilization of the crystal lattice by a tandem network of N–H···O, C–H···O, and C–H··· π interactions 1087

Mannose

Facile synthesis of arabinomannose penta- and decasaccharide fragments of the lipoarabinomannan of the equine pathogen, *Rhodococcus equi* 1761

Synthesis of a 6^{V} -sulfated mannopentasaccharide analogue related to PI-88 1155

Synthesis of a hexasaccharide fragment of the O-deacetylated GXM of *C. neoformans* serotype B 1779

Synthesis of mannopyranose disaccharides as photoaffinity probes for mannosyltransferases in *Mycobacterium tuberculosis* 683

Synthesis of mannose-containing analogues of $(1\rightarrow 6)$ -branched $(1\rightarrow 3)$ -glucohexaose 377

Synthesis of two oligosaccharides, the GPI anchor glycans from *S. cerevesiae* and *A. fumigatus* 29

Mannose oligosaccharides

Conformational analysis and dynamics of mannobiosides and mannotriosides using Monte Carlo/stochastic dynamics simulations 967 Mannosyl hydrolase

The synthesis of a series of modified mannotrisaccharides as probes of the enzymes involved in the early stages of mammalian complex *N*-glycan formation 2487

Mannosyltransferases

Synthesis of mannopyranose disaccharides as photoaffinity probes for mannosyltransferases in *Mycobacterium tuberculosis* 683

Mannotrisaccharide

The synthesis of a series of modified mannotrisaccharides as probes of the enzymes involved in the early stages of mammalian complex *N*-glycan formation 2487

Mannuronic acid

Preparation and structure elucidation of alginate oligosaccharides degraded by alginate lyase from *Vibro* sp. 510 1475

Marine bacteria

Structure of the O-polysaccharide of *Idiomarina zobellii* KMM 231^T containing two unusual amino sugars with the free amino group, 4-amino-4,6-dideoxy-D-glucose and 2-amino-2-deoxy-L-guluronic acid. 477

The complete structure of the lipooligosaccharide from the halophilic bacterium *Pseudoalteromonas issachenkonii* KMM 3549^T 1985

Marine bacterium

Structure of an acidic O-specific polysaccharide from marine bacterium *Shewanella fidelis* KMM $3582^{\rm T}$ containing $N^{\rm e}$ -[(S)-1-carboxyethyl]- $N^{\rm c}$ -(D-galacturonoyl)-L-lysine 1655

Mass spectrometry

Formation of 3-hexuloses in aldol reactions, analysis of the products as their *O*-isopropylidene derivatives by GC–MS 2171 Stereoselective synthesis of chirally deuterated (*S*)-D-(6-²H₁)glucose 1173

Structural analysis of the lipooligosaccharide from the commensal *Haemophilus somnus* genome strain 129Pt 529

Structural analysis of the lipopolysaccharide derived core oligosaccharides of *Actinobacillus pleuropneumoniae* serotypes 1, 2, 5a and the genome strain 5b 1973

Mass spectroscopy

Structure of a major glycolipid from *Thermus oshimai* NTU-063 2593

Matricaria maritima

NMR characterisation of inulin-type fructooligosaccharides as the major water-soluble carbohydrates from *Matricaria maritima* (L.) 2445 Matrix

The influence of mutanase and dextranase on the production and structure of glucans synthesized by streptococcal glucosyltransferases 2127

Mechanical properties

Material properties of concentrated pectin networks 1317

Melting point

Melting behaviour of D-sucrose, D-glucose and D-fructose 2267

Metal complexes

The complexation of metal cations by D-galacturonic acid: a spectroscopic study 2391

Metal hyaluronate

Metal-ion environment in solid Mn(II), Co(II) and Ni(II) hyaluronates 2549

Metathesis

Synthesis and properties of new bolaform and macrocyclic galactose-based surfactants obtained by olefin metathesis 1243

Methanethiolsulfonate

Novel approaches to the syntheses of N-substituted S-glycosylsulfenamides 1561

Methanolysis

Cyclosophoraose as a catalytic carbohydrate for methanolysis 461 Methyl 3-amino-2,3-dideoxy-α-p-*arabino*-hexopyranoside

X-ray and conformational analysis of methyl 3-amino-2,3-dideoxy-α-D-*arabino*-hexopyranoside 1195

Methyl 2,3-anhydro-p-ribofuranosides

The thio-Mitsunobu reaction: a useful tool for the preparation of 2,5-anhydro-2-thio- and 3,5-anhydro-3-thiopentofuranosides 1787

Methyl 3,5-anhydro-3-seleno- α -D-lyxofuranoside

The thio-Mitsunobu reaction: a useful tool for the preparation of 2,5-anhydro-2-thio- and 3,5-anhydro-3-thiopentofuranosides 1787 Methyl 2,5-anhydro-2-thiopentofuranosides

The thio-Mitsunobu reaction: a useful tool for the preparation of 2,5-anhydro-2-thio- and 3,5-anhydro-3-thiopentofuranosides 1787

Methyl 3,5-anhydro-3-thiopentofuranosides

The thio-Mitsunobu reaction: a useful tool for the preparation of 2,5-anhydro-2-thio- and 3,5-anhydro-3-thiopentofuranosides 1787 Methyl α-D-galactopyranoside

Evaluation of carbohydrate molecular mechanical force fields by quantum mechanical calculations 937

Methyl α-D-glucopyranoside

Evaluation of carbohydrate molecular mechanical force fields by quantum mechanical calculations 937

Methyl 5-deoxy-β-D-xylofuranoside

Evaluation of carbohydrate molecular mechanical force fields by quantum mechanical calculations 937

Methyl β -D-glucopyranoside

Evaluation of carbohydrate molecular mechanical force fields by quantum mechanical calculations 937

Methyl glucopyranoside

New class of quaternary ammonium salts, derivatives of methyl pglucopyranosides 1537

Methylated cyclodextrin

Synthesis of $6^{\rm I}$ -amino- $6^{\rm I}$ -deoxy- $2^{\rm I-VII}$, $3^{\rm I-VII}$ -tetradeca-O-methyl-cyclomaltoheptaose 1361

Methylation

Correlation of structure to antitumor activities of five derivatives of a β-glucan from *Poria cocos* sclerotium 2567

Methylation analysis

Isolation and partial characterization of fucan sulfates from the body wall of sea cucumber *Stichopus japonicus* and their ability to inhibit osteoclastogenesis 1339

Purification, structure and immunobiological activity of an arabinan-rich pectic polysaccharide from the cell walls of *Prunus dulcis* seeds 2555

The structure of the agaran sulfate from *Acanthophora spicifera* (Rhodomelaceae, Ceramiales) and its antiviral activity. Relation between structure and antiviral activity in agarans 335

Microemulsion, stability

Novel perfluoroalkylated derivatives of D-galactopyranose and xylitol for biomedical uses. Hemocompatibility and effect on perfluorocarbon emulsions 2177

Microscopy

Arabinan-cellulose composite in *Opuntia ficus-indica* prickly pear spines 123

Microwave

One step selective 5'-O-allylation of thymidine using microwave or ultrasound activation 1829

Synthesis and properties of new bolaform and macrocyclic galactose-based surfactants obtained by olefin metathesis 1243

Microwave radiation

Preparation of low-molecular-weight and high-sulfate-content chitosans under microwave radiation and their potential antioxidant activity in vitro 2515

Mitsunobu conditions

Synthesis of aryl sialosides using Mitsunobu conditions 2835

Mixtures

Synergistic interactions between the genetically modified bacterial polysaccharide P2 and carob or konjac mannan 2233

мм3

MM3 Potential energy surfaces of α -3-linked L-fucobiose and fucotriose and their sulfated counterparts 2381

Modified lipase

Preparation of gemini-type amphiphiles bearing cyclitol head groups and their application as high-performance modifiers for lipases 493

Molecular dynamic simulations

Use of ¹³C chemical shift surfaces in the study of carbohydrate conformation. Application to cyclomaltooligosaccharides (cyclodextrins) in the solid state and in solution 87

Molecular dynamics

Conformational analysis and dynamics of mannobiosides and mannotriosides using Monte Carlo/stochastic dynamics simulations 967

Effect of methylation on the stability and solvation free energy of amylose and cellulose fragments: a molecular dynamics study 1697 Molecular dynamics simulation of a decasaccharide fragment of heparin in aqueous solution 281

Molecular dynamics simulations of glycosyltransferase LgtC 995 Toward the understanding of the structure and dynamics of protein–carbohydrate interactions: molecular dynamics studies of the complexes between hevein and oligosaccharidic ligands 985

Molecular dynamics simulations

Molecular dynamics (MD) simulations for the prediction of chiral discrimination of N-acetylphenylalanine enantiomers by cyclomal-toheptaose (β -cyclodextrin, β -CD) based on the MM–PBSA (molecular mechanics–Poisson–Boltzmann surface area) approach 1961

Molecular flexibility

A theoretical study of the conformational behavior of analogues of α -L-rhamnose-1-phosphate 1323

Molecular mass

Chemical components and molecular mass of six polysaccharides isolated from the sclerotium of *Poria cocos* 327

Correlation of structure to antitumor activities of five derivatives of a β-glucan from *Poria cocos* sclerotium 2567

Molecular mechanics

MM3 Potential energy surfaces of α -3-linked L-fucobiose and fucotriose and their sulfated counterparts 2381

Molecular dynamics (MD) simulations for the prediction of chiral discrimination of N-acetylphenylalanine enantiomers by cyclomal-toheptaose (β -cyclodextrin, β -CD) based on the MM–PBSA (molecular mechanics–Poisson–Boltzmann surface area) approach 1961

The conformations of the O-specific polysaccharides of *Shigella dysenteriae* type 4 and *Escherichia coli* O159 studied with molecular mechanics (MM3) filtered systematic search 961

Molecular modeling

NMR spectroscopic and molecular modeling studies of protein–carbohydrate and protein–peptide interactions 907

The heparin-Ca²⁺ interaction: the influence of the O-sulfation pattern on binding 975

Molecular recognition

Role of CH/ π interactions in substrate binding by *Escherichia coli* β -galactosidase 2275

Molecular sieves

Practical de-O-acylation reactions promoted by molecular sieves 729

Molybdenum

Multinuclear NMR study of the complexes of 6-phospho-D-gluconic acid with W(VI) and Mo(VI) 2225

Mono- and disaccharides

Syntheses of alkenylated carbohydrate derivatives toward the preparation of monolayers on silicon surfaces 2599

Monohydrate

B3LYP/6-311++ G^{**} study of monohydrates of α - and β -D-glucopyranose: hydrogen bonding, stress energies, and effect of hydration on internal coordinates 553

Monosaccharide

Regiospecific alkaline protease-catalyzed divinyl acyl transesterifications of primary hydroxyl groups of mono- and di-saccharides in pyridine 2059

Monosaccharides

Kinetic and chemical studies on the isomerization of monosaccharides in *N*-methylmorpholine-*N*-oxide (NMMO) under Lyocell conditions 1899

QSPR models for various physical properties of carbohydrates based on molecular mechanics and quantum chemical calculations 269

Mosher's ester

Crystal structure, solid state and solution conformation of 1D-1,4-di-*O*-[(*S*)-*O*-acetylmandeloyl]-2,3:5,6-di-*O*-isopropylidene-*myo*-inositol 807

MS

Differentiation of isomeric oligosaccharide structures by ESI tandem MS and GC-MS 655

Multivalency

Synthesis of lactoside glycodendrons using photoaddition and reductive amination methodologies 2069

Multivariate regression analysis

Quantitative estimate of the effect of cellulase components during degradation of cotton fibers 819

Mushroom polysaccharide

Structural studies of water-soluble polysaccharides of an edible mushroom, *Termitomyces eurhizus*. A reinvestigation 1135

Mushroom sclerotia

Evaluation of sulfated fungal β -glucans from the sclerotium of *Pleurotus tuber-regium* as a potential water-soluble anti-viral agent 2297

Mutanase

The influence of mutanase and dextranase on the production and structure of glucans synthesized by streptococcal glucosyltransferases 2127

Mutans streptococci

Effect of carbohydrate fatty acid esters on *Streptococcus sobrinus* and glucosyltransferase activity 1029

Mutarotation

Proton-acceptor properties and capability for mutarotation of some glucosylamines in methanol 1439

Mycobacterium tuberculosis

Synthesis of mannopyranose disaccharides as photoaffinity probes for mannosyltransferases in *Mycobacterium tuberculosis* 683

myo-Inositol polyphosphates

First derivatives of *myo*-inositol 1,4,6-trisphosphate modified at positions 2 and 3: structural analogues of D-*myo*-inositol 1,4,5-trisphosphate 51

N-Acetyl-D-lactosaminide

Synthesis of 2-[(2-pyridyl)amino]ethyl β -D-lactosaminide and evaluation of its acceptor ability for sialyltransferase: a comparison with 4-methylumbelliferyl and dansyl β -D-lactosaminide 1545

N-Acetyl-D-mannosamine

Accessibility of N-acyl-D-mannosamines to N-acetyl-D-neuraminic acid aldolase 2091

N-Acetyl-D-neuraminic acid

Accessibility of N-acyl-D-mannosamines to N-acetyl-D-neuraminic acid aldolase 2091

N-Acetylglucosaminyl transferase

The synthesis of a series of modified mannotrisaccharides as probes of the enzymes involved in the early stages of mammalian complex *N*-glycan formation 2487

N-Acetyltryptophane

Synthesis and characterization of carboxymethylated cyclosophoraose, and its inclusion complexation behavior 519

N-Acyl-D-mannosamine

Accessibility of N-acyl-D-mannosamines to N-acetyl-D-neuraminic acid aldolase 2091

N-acylated D-glucosamine

Transglycosylation reaction of *Mucor hiemalis* endo- β -*N*-acetylglucosaminidase using sugar derivatives modified at C-1 or C-2 as oligosaccharide acceptors 1403

Nanoparticles

Synthesis of polysaccharide-stabilized gold and silver nanoparticles: a green method 2627

Nanotubes

Synthesis, self-assembly and characterization of a new glucosidetype hydrogel having a Schiff base on the aglycon 1311

Neoglycoconjugates

High efficiency of transferring a native sugar chain from a glycopeptide by a microbial endoglycosidase in organic solvents 719 Neoglycoprotein

Synthesis of oligogalacturonates conjugated to BSA 2159 Network

Material properties of concentrated pectin networks 1317

Neutral positional isomers

Evaluation of newly synthesized and commercially available charged cyclomaltooligosaccharides (cyclodextrins) for capillary electrokinetic chromatography 241

N-Glycosylation site

Indiscriminate glycosylation of procarboxypeptidase Y expressed in *Pichia pastoris* 1041

4-Nitrophenyl β-D-xylopyranoside acetates

Lipase-catalysed preparation of acetates of 4-nitrophenyl β-D-xylopyranoside and their use in kinetic studies of acetyl migration 1353

Kinetic and chemical studies on the isomerization of monosaccharides in *N*-methylmorpholine-*N*-oxide (NMMO) under Lyocell conditions 1899

NMR

A highly regular fraction of a fucoidan from the brown seaweed Fucus distichus L. 511

An arabinogalactan from the skin of *Opuntia ficus-indica* prickly pear fruits 1201

Chemical structure of aeromonas gum—extracellular polysaccharide from *Aeromonas nichidenii* 5797 1631

Multinuclear NMR study of the complexes of 6-phospho-D-gluconic acid with W(VI) and $Mo(VI)\ 2225$

NMR characterization of the polysaccharidic fraction from Lentinula edodes grown on olive mill waste waters 1129 NMR spectroscopic and molecular modeling studies of protein-carbohydrate and protein-peptide interactions 907

NMR study on the hydroxy protons of the Lewis X and Lewis Y oligosaccharides 2465

Refinement of the structures of cell-wall glucans of *Schizosacchar-omyces pombe* by chemical modification and NMR spectroscopy 2255

Structural analysis of the lipooligosaccharide from the commensal *Haemophilus somnus* genome strain 129Pt 529

Structural analysis of the lipopolysaccharide derived core oligosaccharides of *Actinobacillus pleuropneumoniae* serotypes 1, 2, 5a and the genome strain 5b 1973

Structural and immunochemical relationship between the Oantigenic polysaccharides from the enteroaggregative *Escherichia* coli strain 396/C-1 and *Escherichia* coli O126 1491

Structure of a major glycolipid from *Thermus oshimai* NTU-063 2593

The extracellular polysaccharide of *Porphyridium* sp.: an NMR study of lithium-resistant oligosaccharidic fragments 97

NMR analysis

Structural studies of water-soluble polysaccharides of an edible mushroom, *Termitomyces eurhizus*. A reinvestigation 1135

NMR spectroscopy

Isolation and partial characterization of fucan sulfates from the body wall of sea cucumber *Stichopus japonicus* and their ability to inhibit osteoclastogenesis 1339

Stereoselective synthesis of chirally deuterated (S)- \mathbf{D} -(6- 2 H₁)glucose 1173

Structural investigation of a water-soluble glucan from an edible mushroom, *Astraeus hygrometricus* 2249

Structure of an acidic O-specific polysaccharide from marine bacterium *Shewanella fidelis* KMM $3582^{\rm T}$ containing $N^{\rm e}$ -[(S)-1-carboxyethyl]- N^{α} -(D-galacturonoyl)-L-lysine 1655

Structure of minor oligosaccharides from the lipopolysaccharide fraction from *Pseudomonas stutzeri* OX1 2657

The composition of 2-keto aldoses in organic solvents as determined by NMR spectroscopy 217

The heparin–Ca²⁺ interaction: the influence of the O-sulfation pattern on binding 975

The revised NMR chemical shift data of carrageenans 2309

The structure of a sulfated galactan from *Porphyra haitanensis* and its in vivo antioxidant activity 105

The structure of the agaran sulfate from *Acanthophora spicifera* (Rhodomelaceae, Ceramiales) and its antiviral activity. Relation between structure and antiviral activity in agarans 335

The structure of the phosphorylated carbohydrate backbone of the lipopolysaccharide of the phytopathogen bacterium *Pseudomonas tolaasii* 2241

Isolation and characterization of two positional isomers of novel heterogeneous branched cyclomaltohexaoses (α -cyclodextrins) having a D-galactobiosyl residue on the side chain 2875

Structure elucidation by NMR spectroscopy of a new acetylated saponin from *Centratherum anthelminticum* 2871

2-O-α-Galactobiosyl-α-cyclodextrin

Isolation and characterization of two positional isomers of novel heterogeneous branched cyclomaltohexaoses (α-cyclodextrins) having a D-galactobiosyl residue on the side chain 2875

Nodulation

Acacia senegal and Prosopis chilensis-nodulating rhizobia Sinorhizobium arboris HAMBI 2361 and S. kostiense HAMBI 2362 produce tetra- and pentameric LCOs that are N-methylated, O-6-carbamoylated and partially sulfated 1061

Nonionic bolaform amphiphiles

A synthetic strategy for novel nonsymmetrical bola amphiphiles based on carbohydrates 1147

Nonspecific adsorption

Blocking nonspecific adsorption of native food-borne microorganisms by immunomagnetic beads with 1-carrageenan 613

Nucleophilic fluorination

Synthesis of 2,3- or 1,2-unsaturated derivatives of 2-deoxy-2-trifluoromethylhexopyranoses 1833

Nucleoside

One step selective 5'-O-allylation of thymidine using microwave or ultrasound activation 1829

O-acetylation

The O-acetylation patterns in the O-antigens of *Hafnia alvei* strains PCM 1200 and 1203, serologically closely related to PCM 1205 2521

O-acetyl groups

NMR structural determination of dissolved O-acetylated galactoglucomannan isolated from spruce thermomechanical pulp 301

O-Acetylmandeloyl

Crystal structure, solid state and solution conformation of 1p-1,4-di-*O*-[(*S*)-*O*-acetylmandeloyl]-2,3:5,6-di-*O*-isopropylidene-*myo*-inositol 807

O-antigen

Structure of the O-polysaccharide from the lipopolysaccharide of *Hafnia alvei* strain PCM 1529 723

Structure of the O-polysaccharide of *Citrobacter youngae* O1 containing an α-p-ribofuranosyl group 321

Structure of the O-polysaccharide of the lipopolysaccharide of Azospirillum irakense KBC1 1813

The O-acetylation patterns in the O-antigens of *Hafnia alvei* strains PCM 1200 and 1203, serologically closely related to PCM 1205 2521 O-Antigen

Structure of the O-polysaccharide of *Proteus* serogroup O34 containing 2-acetamido-2-deoxy-α-D-galactosyl phosphate 2145 Structure of the O-polysaccharide of the lipopolysaccharide of *Rahnella aquatilis* 1-95 1809

Structures of two O-polysaccharides of the lipopolysaccharide of *Citrobacter youngae* PCM 1538 (serogroup O9) 881

The conformations of the O-specific polysaccharides of *Shigella dysenteriae* type 4 and *Escherichia coli* O159 studied with molecular mechanics (MM3) filtered systematic search 961

The structure of the O-polysaccharide from the lipopolysaccharide of *Providencia stuartii* O47 2621

3-*O*-β-Chacotriosyl-26-*O*-β-D-glucopyranosyl-(25*R*)-furost-5-en Synthesis of bidesmosidic dihydrodiosgenin saponins bearing a 3-*O*-β-chacotriosyl moiety 1753

O-chain

Elucidation of two O-chain structures from the lipopolysaccharide fraction of *Agrobacterium tumefaciens* F/1 2451

Synthesis of the pentasaccharide repeating unit of the major *O*-antigen component from *Pseudomonas syringae* pv. *ribicola* NVPPB 1010 393

O-Chain

The structure of the O-specific polysaccharide from Salmonella cerro (serogroup K, O:6,14,18) 2441

The structure of the O-specific polysaccharide from Ralstonia pickettii 2045

O-Chair

Synthesis of a D-rhamnose branched tetrasaccharide, repeating unit of the *O*-chain from *Pseudomonas syringae* pv. *Syringae* (cerasi) 435 1907

3-O- β -D-Xylopyranosyl-L-arabinose

The gel-forming polysaccharide of psyllium husk (*Plantago ovata* Forsk) 2009

6-O-(Fluoroalkyl)-D-galactopyranoses

Novel perfluoroalkylated derivatives of p-galactopyranose and xylitol for biomedical uses. Hemocompatibility and effect on perfluorocarbon emulsions 2177

1-O-(Fluoroalkyl)-DL-xylitol

Novel perfluoroalkylated derivatives of D-galactopyranose and xylitol for biomedical uses. Hemocompatibility and effect on perfluorocarbon emulsions 2177

O-glycosylation

Human serum IgA1 is substituted with up to six O-glycans as shown by matrix assisted laser desorption ionisation time-of-flight mass spectrometry 2329

O-Glycosylation site

Indiscriminate glycosylation of procarboxypeptidase Y expressed in *Pichia pastoris* 1041

O-H···Cl hydrogen bonds

Crystal structures of dihydroxyacetone and its derivatives 1995

O-H···O hydrogen bonds

Crystal structures of dihydroxyacetone and its derivatives 1995 *Olea europaea* L.

1,5-Anhydroxylitol from leaves of Olea europaea 2731

6-O-(L-Tyrosylglycyl)-D-glucopyranose

Synthesis and intramolecular reactions of Tyr-Gly and Tyr-Gly-Gly related 6-*O*-glucopyranose esters 67

6-O-(L-Tyrosylglycylglycyl)-D-glucopyranose

Synthesis and intramolecular reactions of Tyr-Gly and Tyr-Gly-Gly related 6-*O*-glucopyranose esters 67

O-Methyl ether

A nearly idealized 6'-O-methylated 1-carrageenan from the Australian red alga *Claviclonium ovatum* (Acrotylaceae, Gigartinales) 1459

3-*O*-Methylgalactose

Bioactive polysaccharides from the stems of the Thai medicinal plant *Acanthus ebracteatus*: their chemical and physical features 753

4-O-Methyl-GlcNAc

Chemical synthesis of UDP-4-O-methyl-GlcNAc, a potential chain terminator of chitin synthesis 1531

o-Phenylenediamine (OPD)

Carbohydrate carbonyl mobility—the key process in the formation of α -dicarbonyl intermediates 1609

O-polysaccharide

Structure and cross-reactivity of the O-antigen of *Providencia stuartii* O18 containing 3-acetamido-3,6-dideoxy-**D**-glucose 409 Structure of the O-polysaccharide of *Providencia alcalifaciens* O19 415

Structure of the O-polysaccharide of *Providencia stuartii* O4 containing 4-(*N*-acetyl-L-aspart-4-yl)amino-4,6-dideoxy-D-glucose 195

O-Polysaccharide

Structure of the O-polysaccharide of *Providencia stuartii* O49 1557

O-Polysaccharide structure

Structure of the neutral O-polysaccharide and biological activities of the lipopolysaccharide of *Proteus mirabilis* O20 623

O-polysaccharide structure

Structure of the O-polysaccharide of *Xanthomonas cassavae* GSPB 2437 157

O-polysaccharide structure

Structure of a highly phosphorylated *O*-polysaccharide of *Proteus mirabilis* O41 1347

Opuntia ficus-indica

An arabinogalactan from the skin of *Opuntia ficus-indica* prickly pear fruits 1201

Arabinan-cellulose composite in *Opuntia ficus-indica* prickly pear spines 123

Structural features of pectic polysaccharides from the skin of *Opuntia ficus-indica* prickly pear fruits 1119

O-Specific polysaccharide

Structure of the O-polysaccharide of *Proteus mirabilis* CCUG 10701 (OB) classified into a new *Proteus* serogroup, O74 1395

O-sulfonation

Sulfatase-catalyzed assembly of regioselectively O-sulfonated p-nitrophenyl α -D-gluco- and α -D-mannopyranosides 1597

Okra mucilage

A convenient synthesis of lepidimoide from okra mucilage and its growth-promoting activity in hypocotyls 9

Oligogalacturonides

On the separation, detection and quantification of pectin derived oligosaccharides by capillary electrophoresis 1711

Oligosaccharide

A concise synthesis of two isomeric pentasaccharides, the O repeat units from the lipopolysaccharides of *P. syringae* pv. porri NCPPB 3364^T and NCPPB 3365 43

Oligosaccharide identification and mixture quantification using Raman spectroscopy and chemometric analysis 141

Synthesis of a D-rhamnose branched tetrasaccharide, repeating unit of the *O*-chain from *Pseudomonas syringae* pv. *Syringae* (cerasi) 435 1907

Synthesis of divalent β -(1 \rightarrow 6)-branched (1 \rightarrow 3)-glucohexaose and trivalent β -(1 \rightarrow 6)-branched (1 \rightarrow 3)-glucotriose 2761

Synthesis of mannose-containing analogues of $(1\rightarrow 6)$ -branched $(1\rightarrow 3)$ -glucohexaose 377

Synthesis of two oligosaccharides, the GPI anchor glycans from *S. cerevesiae* and *A. fumigatus* 29

Oligosaccharides

Gram-scale syntheses of the $(1\rightarrow 3)$ -linked and $(1\rightarrow 4)$ -linked hyaluronan disaccharides 1255

Preparation and structure elucidation of alginate oligosaccharides degraded by alginate lyase from *Vibro* sp. 510 1475

Synthesis of chacotriose analogues 1511

Synthesis of disaccharides derived from heparin and evaluation of effects on endothelial cell growth and on binding of heparin to FGF-2 2343

Synthesis of the pentasaccharide repeating unit of the major *O*-antigen component from *Pseudomonas syringae* pv. *ribicola* NVPPB 1010 393

The influence of small oligosaccharides on the immune system 1673 Olive mill waste waters

NMR characterization of the polysaccharidic fraction from Lentinula edodes grown on olive mill waste waters 1129

One-pot reaction

Synthesis of *N*-unsubstituted, mono- and disubstituted carbohydrate-1-*O*-carbamates and their behaviour in glycoside syntheses 2821

One-pot synthesis

Synthesis of N-sugar-substituted phthalimides and their derivatives from sugar azides and phthalic anhydride 1419

Open-chain ketose

Golgi endomannosidase inhibitor, α -D-glucopyranosyl- $(1\rightarrow 3)$ -1-deoxymannojirimycin: a five-step synthesis from maltulose and examples of *N*-modified derivatives 1823

Organic solvent

High efficiency of transferring a native sugar chain from a glycopeptide by a microbial endoglycosidase in organic solvents 719

Organic synthesis in water

Indium-promoted Barbier-type allylations in aqueous media: a convenient approach to 4-C-branched monosaccharides and $(1\rightarrow 4)$ -C-disaccharides 2737

Oriental growth

Orientated growth of crystalline anhydrous maltitol (4-*O*-α-D-glucopyranosyl-D-glucitol) 1225

Orientation

FT-IR study of the *Chara corallina* cell wall under deformation 629 Osteoclastogenesis

Isolation and partial characterization of fucan sulfates from the body wall of sea cucumber *Stichopus japonicus* and their ability to inhibit osteoclastogenesis 1339

Oxabicycles

Intramolecular aldol cyclization of *C*-4-ulopyranosyl-2'-oxoalkanes controlled by steric effects. Asymmetric synthesis of substituted 8-oxabicyclo[3.2.1]octanones and -octenones and cyclopentenones 2475

Oxepine

Synthesis, crystal structure, and reactivity of a D-xylose based oxepine 1163

Synthesis of 2-iodo-2-deoxy septanosides from a p-xylose-based oxepine: intramolecular cyclization in the absence of a glycosyl acceptor 2363

Oxidation

A facile preparation of uronates via selective oxidation with TEMPO/KBr/Ca(OCl)₂ under aqueous conditions 1219

Kinetics and mechanism of the oxidation of D-fructose by vanadium(V) in H₂SO₄ medium 133

Palladium-catalyzed oxidation of benzylated aldose hemiacetals to lactones 1377

The chemistry of castanospermine. Direct oxidation of the tetraacetate to the corresponding γ -lactam 1747

Palladium

Palladium-catalyzed oxidation of benzylated aldose hemiacetals to lactones 1377

Partially protected D-glucitol

Two approaches to the synthesis of 3- β -D-glucopyranosyl-D-glucitol 2407

Pectin

Bioactive polysaccharides from the stems of the Thai medicinal plant *Acanthus ebracteatus*: their chemical and physical features 753 Isolation of diferulic bridges ester-linked to arabinan in sugar beet cell walls 2315

Material properties of concentrated pectin networks 1317

On the separation, detection and quantification of pectin derived oligosaccharides by capillary electrophoresis 1711

Pectin-chitosan interactions and gel formation 1933

Physicochemical studies of pectin/poly-L-lysine gelation 209

Structural features of pectic polysaccharides from the skin of *Opuntia ficus-indica* prickly pear fruits 1119

Synthesis of oligogalacturonates conjugated to BSA 2159

Pectin methylesterase

Pectin methylesterases: sequence-structural features and phylogenetic relationships 2281

Pectinatus frisingensis

The structure of the carbohydrate backbone of the lipopolysaccharide of *Pectinatus frisingensis* strain VTT E-79104 1637

Pectins

Synthesis of an apiose-containing disaccharide fragment of rhamnogalacturonan-II and some analogues 21

Pentaerythritol

Syntheses of monohydroxy benzyl ethers of polyols: tri-O-benzylpentaerythritol and other highly benzylated derivatives of symmetrical polyols 2607

Pentenyl glycoside

Synthesis of oligogalacturonates conjugated to BSA 2159

Pentosans

Inactivated enzymes as probes of the structure of arabinoxylans as observed by atomic force microscopy 579

Pentoses

Synthesis of pentose-containing disaccharides using a thermostable α -L-arabinofuranosidase 2019

2-Pentuloses

Formation of 3-hexuloses in aldol reactions, analysis of the products as their *O*-isopropylidene derivatives by GC-MS 2171

Peptide

Synthesis and intramolecular reactions of Tyr-Gly and Tyr-Gly-Gly related 6-O-glucopyranose esters 67

Perbenzylated (-)-keto-conduritol

Synthesis of (+)-(2R,3S,4R)-2,3,4-trihydroxycyclohexanone from D-glucose 361

Perfluoroalkyl epoxides

Novel perfluoroalkylated derivatives of D-galactopyranose and xylitol for biomedical uses. Hemocompatibility and effect on perfluorocarbon emulsions 2177

Perlin aldehyde

Reinvestigation of the mercuration–demercuration reaction on alkylated glycals: an improved method for the preparation of 2,3-dideoxy- α , β -unsaturated carbohydrate enals 2031

Permethylation

Differentiation of isomeric oligosaccharide structures by ESI tandem MS and GC-MS 655

Peyer's patch cells

Structure of oligosaccharide side chains of an intestinal immune system modulating arabinogalactan isolated from rhizomes of *Atractylodes lancea* DC 763

Phase transformation

Structure and stability of columnar cyclomaltohexaose (α -cyclodextrin) hydrate 2805

1,10-Phenanthroline

Interaction between β-cyclodextrin and 1,10-phenanthroline: uncommon 2:3 inclusion complex in the solid state 1649

Phosphatidylinositol

Fluorinated cyclitols as useful biological probes of phosphatidylinositol metabolism 1585

Phosphatidylinositol 3-kinase

Fluorinated cyclitols as useful biological probes of phosphatidylinositol metabolism 1585

6-Phospho-D-gluconic acid

Multinuclear NMR study of the complexes of 6-phospho-D-gluconic acid with W(VI) and Mo(VI) 2225

Photoaddition

Synthesis of lactoside glycodendrons using photoaddition and reductive amination methodologies 2069

Photoaffinity probe

Synthesis of mannopyranose disaccharides as photoaffinity probes for mannosyltransferases in $Mycobacterium\ tuberculosis\ 683$

Phthalic anhydride

Synthesis of *N*-sugar-substituted phthalimides and their derivatives from sugar azides and phthalic anhydride 1419

Phthalimide

Unexpected reductions of glycosyl spacer-armed phthalimides 1497 Phthalimides and their derivatives

Synthesis of N-sugar-substituted phthalimides and their derivatives from sugar azides and phthalic anhydride 1419

Physical properties

QSPR models for various physical properties of carbohydrates based on molecular mechanics and quantum chemical calculations 269

Phytoalexin-elicitor activity

Synthesis, $(1\rightarrow 3)$ - β -D-glucanase-binding ability, and phytoalexinelicitor activity of a mixture of 3,4-epoxybutyl $(1\rightarrow 3)$ - β -D-oligoglucosides 1453

Phytopathogen bacteria

The structure of the phosphorylated carbohydrate backbone of the lipopolysaccharide of the phytopathogen bacterium *Pseudomonas tolaasii* 2241

Phytopathogenic bacteria

Structure of the O-polysaccharide of *Xanthomonas cassavae* GSPB 2437 157

Pichia pastoris

Indiscriminate glycosylation of procarboxypeptidase Y expressed in *Pichia pastoris* 1041

Pinnatifinoside

Conversion of diacetyl-C-(β-D-glucopyranosyl)phloroglucinol to spiroketal compounds 429

Pinus sp.

A novel α-glucosidase inhibitor from pine bark 715

Pk-trisaccharide

Large-scale chemical and chemo-enzymatic synthesis of a spacer-containing Pk-trisaccharide 1141

Plant cell walls

Material properties of concentrated pectin networks 1317

Plant oligosaccharides

Differentiation of isomeric oligosaccharide structures by ESI tandem MS and GC-MS 655

Plantago ovata mucilage

The gel-forming polysaccharide of psyllium husk (*Plantago ovata* Forsk) 2009

Pleurotus tuber-regium

Evaluation of sulfated fungal β -glucans from the sclerotium of *Pleurotus tuber-regium* as a potential water-soluble anti-viral agent 2297

PLS

Oligosaccharide identification and mixture quantification using Raman spectroscopy and chemometric analysis 141

Polar glycolipid

Structure of a major glycolipid from *Thermus oshimai* NTU-063 2593

Poly(C)

Rod-like architecture and helicity of the poly(C)/schizophyllan complex observed by AFM and SEM 251

Polycytidylic acid

Low M_w sulfated curdlan with improved water solubility forms macromolecular complexes with polycytidylic acid 161

Polygalacturonase

On the separation, detection and quantification of pectin derived oligosaccharides by capillary electrophoresis 1711

Polylactide

Synthesis and characterization of a brush-like copolymer of polylactide grafted onto chitosan 845

Poly-L-lysine

Physicochemical studies of pectin/poly-L-lysine gelation 209

Polysaccharide

Chemical components and molecular mass of six polysaccharides isolated from the sclerotium of *Poria cocos* 327

Correlation of structure to antitumor activities of five derivatives of a β -glucan from *Poria cocos* sclerotium 2567

Molecular dynamics simulation of a decasaccharide fragment of heparin in aqueous solution 281

Structural characterization of a 2-O-acetylglucomannan from Dendrobium officinale stem 2219

Structural investigation of a novel rhamnoglucogalactan isolated from the fruiting bodies of the fungus *Hericium erinaceus* 2667

Structural investigation of a water-soluble glucan from an edible mushroom, Astraeus hygrometricus 2249

Structural studies of the capsular polysaccharide of a non-neoformans Cryptococcus species identified as C. laurentii, which was reclassified as Cryptococcus flavescens, from a patient with AIDS 503

Polysaccharide fine structure

On the separation, detection and quantification of pectin derived oligosaccharides by capillary electrophoresis 1711

Polysaccharide lyase

The synthesis of a novel thio-linked disaccharide of chondroitin as a potential inhibitor of polysaccharide lyases 699

Polysaccharide structure

A nearly idealized 6'-O-methylated \(\text{\capacita}\) carrageenan from the Australian red alga \(Claviclonium\) ovatum (Acrotylaceae, Gigartinales) 1459

Chemical structure of aeromonas gum—extracellular polysaccharide from *Aeromonas nichidenii* 5797 1631

Structures of two O-polysaccharides of the lipopolysaccharide of Citrobacter youngae PCM 1538 (serogroup O9) 881 The structure of the O-polysaccharide from the lipopolysaccharide of *Providencia stuartii* O47 2621

Polysaccharides

Purification, structure and immunobiological activity of an arabinan-rich pectic polysaccharide from the cell walls of *Prunus dulcis* seeds 2555

Synthesis of polysaccharide-stabilized gold and silver nanoparticles: a green method 2627

Poria cocos sclerotium

Chemical components and molecular mass of six polysaccharides isolated from the sclerotium of *Poria cocos* 327

Correlation of structure to antitumor activities of five derivatives of a β -glucan from *Poria cocos* sclerotium 2567

Porphyra haitanensis

The structure of a sulfated galactan from *Porphyra haitanensis* and its in vivo antioxidant activity 105

Porphyridium sp.

The extracellular polysaccharide of *Porphyridium* sp.: an NMR study of lithium-resistant oligosaccharidic fragments 97

Positional isomer

Isolation and characterization of two positional isomers of novel heterogeneous branched cyclomaltohexaoses (α-cyclodextrins) having a D-galactobiosyl residue on the side chain 2875

Postprandial hyperglycemia

A novel α-glucosidase inhibitor from pine bark 715

Potential energy surfaces

mm3 Potential energy surfaces of α -3-linked L-fucobiose and fucotriose and their sulfated counterparts 2381

Prickly pear

An arabinogalactan from the skin of *Opuntia ficus-indica* prickly pear fruits 1201

Structural features of pectic polysaccharides from the skin of *Opuntia ficus-indica* prickly pear fruits 1119

Procarboxypeptidase Y

Indiscriminate glycosylation of procarboxypeptidase Y expressed in *Pichia pastoris* 1041

Prosopis chilensis

Acacia senegal and Prosopis chilensis-nodulating rhizobia Sinorhizobium arboris HAMBI 2361 and S. kostiense HAMBI 2362 produce tetra- and pentameric LCOs that are N-methylated, O-6-carbamoylated and partially sulfated 1061

Protease

Regioselective monoacylation of cyclomaltoheptaose at the C-2 secondary hydroxyl groups by the alkaline protease from *Bacillus subtilis* in nonaqueous media 1279

Regiospecific alkaline protease-catalyzed divinyl acyl transesterifications of primary hydroxyl groups of mono- and di-saccharides in pyridine 2059

Protein carbohydrate interactions

Toward the understanding of the structure and dynamics of protein-carbohydrate interactions: molecular dynamics studies of the complexes between hevein and oligosaccharidic ligands 985

Protein-carbohydrate interactions

NMR spectroscopic and molecular modeling studies of proteincarbohydrate and protein-peptide interactions 907

Protein-peptide interactions

NMR spectroscopic and molecular modeling studies of proteincarbohydrate and protein-peptide interactions 907

Protein expression

Effect of carbohydrates on fructosyltransferase expression and distribution in *Streptococcus mutans* GS-5 biofilms 2883

Proteoglycan

An expeditious preparation of various sulfoforms of the disaccharide β -D-Galp-(1 \rightarrow 3)-D-Galp, a partial structure of the linkage region of proteoglycans, as their 4-methoxyphenyl β -D-glycosides 349

Proteus mirabilis

Structure of a highly phosphorylated *O*-polysaccharide of *Proteus mirabilis* O41 1347

Structure of the neutral O-polysaccharide and biological activities of the lipopolysaccharide of *Proteus mirabilis* O20 623

Structure of the O-polysaccharide of *Proteus mirabilis* CCUG 10701 (OB) classified into a new *Proteus* serogroup, O74 1395

Structure of the O-polysaccharide of *Proteus* serogroup O34 containing 2-acetamido-2-deoxy-α-p-galactosyl phosphate 2145

Proteus vulgaris

Structure of the O-polysaccharide of *Proteus* serogroup O34 containing 2-acetamido-2-deoxy-α-D-galactosyl phosphate 2145

Proto-dioscin

Synthesis of bidesmosidic dihydrodiosgenin saponins bearing a 3-*O*-β-chacotriosyl moiety 1753

Providencia alcalifaciens

Structure of the O-polysaccharide of *Providencia alcalifaciens* O19 415

Providencia O-serogroup

Structure and cross-reactivity of the O-antigen of *Providencia stuartii* O18 containing 3-acetamido-3,6-dideoxy-p-glucose 409

Providencia stuartii

Structure and cross-reactivity of the O-antigen of *Providencia* stuartii O18 containing 3-acetamido-3,6-dideoxy-D-glucose 409 Structure of the O-polysaccharide of *Providencia stuartii* O4 containing 4-(*N*-acetyl-L-aspart-4-yl)amino-4,6-dideoxy-D-glucose 195 Structure of the O-polysaccharide of *Providencia stuartii* O49 1557 The structure of the O-polysaccharide from the lipopolysaccharide of *Providencia stuartii* O47 2621

Prunus dulcis

Purification, structure and immunobiological activity of an arabinan-rich pectic polysaccharide from the cell walls of *Prunus dulcis* seeds 2555

Pseudoalteromonas issachenkonii

The complete structure of the lipooligosaccharide from the halophilic bacterium *Pseudoalteromonas issachenkonii* KMM 3549^T 1985

Pseudomonas cerasi

Synthesis of a D-rhamnose branched tetrasaccharide, repeating unit of the *O*-chain from *Pseudomonas syringae* pv. *Syringae* (cerasi) 435 1907

Pseudomonas lipopolysaccharide

 $\alpha\textsc{-Mannosidase-catalyzed}$ synthesis of a (1 \rightarrow 2)- $\alpha\textsc{-D}$ -rhamnodisaccharide derivative 1389

Pseudomonas ribicola

Synthesis of the pentasaccharide repeating unit of the major *O*-antigen component from *Pseudomonas syringae* pv. *ribicola* NVPPB 1010 393

Pseudomonas stutzeri OX1

Structure of minor oligosaccharides from the lipopolysaccharide fraction from *Pseudomonas stutzeri* OX1 2657

Pseudomonas syringae

The O-polysaccharide of *Pseudomonas syringae* pv. mori NCPPB 1656 is a β -(1 \rightarrow 2)-linked homopolymer of L-rhamnose 733

Pseudomonas tolaasii

The structure of the phosphorylated carbohydrate backbone of the lipopolysaccharide of the phytopathogen bacterium *Pseudomonas tolaasii* 2241

Psyllium seed polysaccharide

The gel-forming polysaccharide of psyllium husk (*Plantago ovata* Forsk) 2009

Pueraria lobata

In vitro enzymatic modification of puerarin to puerarin glycosides by maltogenic amylase 2789

Puerarin

In vitro enzymatic modification of puerarin to puerarin glycosides by maltogenic amylase 2789

Purification

Facile preparation of the α-Gal-recognizing Griffonia simplicifolia I-B₄ isolectin 153

Pyranoid enolone ester

Synthesis and co-polymerization of an unsaturated 1,5-anhydro-Dfructose derivative 2077

Pyrene nucleoside

Facile route for the synthesis of the iminosugar nucleoside (3R,4R)-1-(pyren-1-yl)-4-(hydroxymethyl)pyrrolidin-3-ol 1565

Pyridinium chlorochromate

Sugar bislactones by one-step oxidative dimerisation with pyridinium chlorochromate versus regioselective oxidation of vicinal diols 1889

Pyridinium-carbaldehyde

Pyridinium-carbaldehyde: active Maillard reaction product from the reaction of hexoses with lysine residues 705

Pyrrolidinol sugar

Facile route for the synthesis of the iminosugar nucleoside (3R,4R)-1-(pyren-1-yl)-4-(hydroxymethyl)pyrrolidin-3-ol 1565

QSPR models for various physical properties of carbohydrates based on molecular mechanics and quantum chemical calculations

Quaternary ammonium salt

New class of quaternary ammonium salts, derivatives of methyl Dglucopyranosides 1537

Synthesis and structure of selected quaternary N-(1,4-anhydro-5deoxy-2,3-O-isopropylidene-D,L-ribitol-5-yl)ammonium 2355

Quaternary carbon

Conversion of diacetyl-C-(β-D-glucopyranosyl)phloroglucinol to spiroketal compounds 429

Ouaternization

Synthesis and antimicrobial activity of a water-soluble chitosan derivative with a fiber-reactive group 313

Quercetin 3-O-6"-(3-hydroxyl-3-methylglutaryl)-β-D-glucopyranoside Two new flavonol glycosides from Gymnema sylvestre and Euphorbia ebracteolata 891

Quinic acid

Preparation of gemini-type amphiphiles bearing cyclitol head groups and their application as high-performance modifiers for lipases 493

Studies for the transformation of carbocycles into carbohydrates: approach toward the synthesis of higher sugar derivatives 665 Quinoxaline

Carbohydrate carbonyl mobility—the key process in the formation of α-dicarbonyl intermediates 1609

Radical polymerization

Synthesis and co-polymerization of an unsaturated 1,5-anhydro-Dfructose derivative 2077

Rahnella aquatilis

Structure of the O-polysaccharide of the lipopolysaccharide of Rahnella aquatilis 1-95 1809

Ralstonia

The structure of the O-specific polysaccharide from Ralstonia pickettii 2045

Ralstonia pickettii

The structure of the O-specific polysaccharide from Ralstonia pickettii 2045

Ramachandran map

MM3 Potential energy surfaces of α-3-linked L-fucobiose and fucotriose and their sulfated counterparts 2381

Raman

Oligosaccharide identification and mixture quantification using Raman spectroscopy and chemometric analysis 141

Reaction pathways

Molecular modeling insights into the catalytic mechanism of the retaining galactosyltransferase LgtC 1007

Reactive oxidising species

The influence of small oligosaccharides on the immune system

Reactive oxygen species

The influence of small oligosaccharides on the immune system 1673

Syntheses of alkenylated carbohydrate derivatives toward the preparation of monolayers on silicon surfaces 2599

Recycling

Environmentally friendly C-glycosylation of phloroacetophenone with unprotected D-glucose using scandium(III) trifluoromethanesulfonate in aqueous media: key compounds for the syntheses of mono- and di-C-glucosylflavonoids 2611

Red seaweed

The system of galactans of the red seaweed, Kappaphycus alvarezii, with emphasis on its minor constituents 2575

Reduction

Unexpected reductions of glycosyl spacer-armed phthalimides 1497 Reductive amination

A synthetic strategy for novel nonsymmetrical bola amphiphiles based on carbohydrates 1147

An optimized CZE method for analysis of mono- and oligomeric aldose mixtures 2037

Neutral, acidic, and basic derivatives of anthranilamide that confer different formal charge to reducing oligosaccharides 221

Synthesis of lactoside glycodendrons using photoaddition and reductive amination methodologies 2069

Reductive amination reaction

Facile route for the synthesis of the iminosugar nucleoside (3R,4R)-1-(pyren-1-yl)-4-(hydroxymethyl)pyrrolidin-3-ol 1565

Regio- and stereoselective synthesis

Facile synthesis of arabinomannose penta- and decasaccharide fragments of the lipoarabinomannan of the equine pathogen, Rhodococcus equi 1761

Regioselective

A convenient preparation of 1,2,3-tri-O-acetyl-β-D-ribofuranose by enzymatic regioselective 5-O-deacetylation of the peracetylated ribofuranose 1215

Regioselective acetylation

An efficient chemoenzymatic route to methyl 4-O-benzyl-2,3anhydro-β-D-lyxopyranoside from methyl β-D-xylopyranoside 425 Regioselective deacetylation

An efficient chemoenzymatic route to methyl 4-O-benzyl-2,3anhydro-β-D-lyxopyranoside from methyl β-D-xylopyranoside 425 Regioselective glycosylation

Glycosylation of 1,4:3,6-dianhydro-D-glucitol (isosorbide) 2433 Synthesis of fagopyritols A1 and B1 from D-chiro-inositol 2303

Regioselective oxidation

Sugar bislactones by one-step oxidative dimerisation with pyridinium chlorochromate versus regioselective oxidation of vicinal diols 1889

Regioselective silylation

Synthesis and biological activities of octyl 2,3,4-tri-O-sulfo-α-Lfucopyranosyl- $(1\rightarrow 3)$ -2,4-di-O-sulfo- α -L-fucopyranosyl- $(1\rightarrow 3)$ -2,4di-O-sulfo- α -L-fucopyranosyl- $(1\rightarrow 3)$ -2,4-di-O-sulfo- β -L-fucopyra-

Synthesis and biological activities of octyl 2,3-di-O-sulfo-α-Lfucopyranosyl- $(1\rightarrow 3)$ -2-O-sulfo- α -L-fucopyranosyl- $(1\rightarrow 4)$ -2,3-di-Osulfo- α -L-fucopyranosyl- $(1\rightarrow 3)$ -2-O-sulfo- α -L-fucopyranosyl- $(1\rightarrow 4)$ -2,3-di-O-sulfo-β-L-fucopyranoside 2083

Regioselectivity

Lipase-catalysed preparation of acetates of 4-nitrophenyl β-Dxylopyranoside and their use in kinetic studies of acetyl migration Regioselective monoacylation of cyclomaltoheptaose at the C-2 secondary hydroxyl groups by the alkaline protease from *Bacillus subtilis* in nonaqueous media 1279

Regiospecific alkaline protease-catalyzed divinyl acyl transesterifications of primary hydroxyl groups of mono- and di-saccharides in pyridine 2059

Sulfatase-catalyzed assembly of regioselectively O-sulfonated *p*-nitrophenyl α-D-gluco- and α-D-mannopyranosides 1597

Relative free energy

B3LYP/6-311++ G^{**} study of monohydrates of α - and β -D-glucopyranose: hydrogen bonding, stress energies, and effect of hydration on internal coordinates 553

B3LYP/6-311++ G^{**} study of α- and β-D-glucopyranose and 1,5-anhydro-D-glucitol: 4C_1 and 1C_4 chairs, ${}^{3,O}B$ and $B_{3,O}$ boats, and skew-boat conformations 537

Relative reactivity

A facile approach to anhydrogalactosucrose derivatives from chlorinated sucrose 2651

Renewables

Hydrothermal upgrading of biomass to biofuel; studies on some monosaccharide model compounds 1717

Repeating unit

Synthesis of a D-rhamnose branched tetrasaccharide, repeating unit of the *O*-chain from *Pseudomonas syringae* pv. *Syringae* (cerasi) 435 1907

Synthesis of the pentasaccharide repeating unit of the major *O*-antigen component from *Pseudomonas syringae* pv. *ribicola* NVPPB 1010 393

Resolution

Crystal structure, solid state and solution conformation of 1D-1,4-di-*O*-[(*S*)-*O*-acetylmandeloyl]-2,3:5,6-di-*O*-isopropylidene-*myo*-inositol 807

Retaining glycosyltransferases

Molecular modeling insights into the catalytic mechanism of the retaining galactosyltransferase LgtC 1007

Retrogradation

Succinyl and acetyl starch derivatives of a hybrid maize: physicochemical characteristics and retrogradation properties monitored by differential scanning calorimetry 2673

Rhamnogalacturonan

Structural features of pectic polysaccharides from the skin of *Opuntia ficus-indica* prickly pear fruits 1119

Rhamnogalacturonan II

Synthesis of a disaccharide fragment of rhamnogalacturonan II 2507 Rhamnoglucogalactan

Structural investigation of a novel rhamnoglucogalactan isolated from the fruiting bodies of the fungus *Hericium erinaceus* 2667

Rhamnose

A concise synthesis of two isomeric pentasaccharides, the O repeat units from the lipopolysaccharides of *P. syringae* pv. porri NCPPB 3364^T and NCPPB 3365 43

Rhamnose oligosaccharides

Synthesis of a hexasaccharide fragment of group E streptococci polysaccharide and the tetrasaccharide repeating unit of *E. coli* O7:K98:H6 1503

Rhamnose phosphate

A theoretical study of the conformational behavior of analogues of α -L-rhamnose-1-phosphate 1323

Rheology

Synergistic interactions between the genetically modified bacterial polysaccharide P2 and carob or konjac mannan 2233

Rhizobium leguminosarum biovar trifolii

Synthesis and characterization of carboxymethylated cyclosophoraose, and its inclusion complexation behavior 519

Rhizobium meliloti

Cyclosophoraose as a catalytic carbohydrate for methanolysis 461

Rhodomelaceae

The structure of the agaran sulfate from *Acanthophora spicifera* (Rhodomelaceae, Ceramiales) and its antiviral activity. Relation between structure and antiviral activity in agarans 335

Rhodophyta

A nearly idealized 6'-O-methylated t-carrageenan from the Australian red alga *Claviclonium ovatum* (Acrotylaceae, Gigartinales) 1459

Rhodymenan

Hydrolysis of *Nothogenia erinacea* xylan by xylanases from families 10 and 11 1047

Ribitol phosphate

Structure of a highly phosphorylated O-polysaccharide of Proteus mirabilis O41 1347

Ribofuranose

A convenient preparation of 1,2,3-tri-*O*-acetyl-β-D-ribofuranose by enzymatic regioselective 5-O-deacetylation of the peracetylated ribofuranose 1215

Rod-like architecture

Rod-like architecture and helicity of the poly(C)/schizophyllan complex observed by AFM and SEM 251

ROESY

Two-dimensional rotating-frame Overhauser spectroscopy (ROESY) and ¹³C NMR study of the interactions between maltodextrin and an anionic surfactant 1105

Saccharide polymers

Synthesis and co-polymerization of an unsaturated 1,5-anhydro-D-fructose derivative 2077

Saccharides

Vacuum-ultraviolet circular dichroism study of saccharides by synchrotron radiation spectrophotometry 591

Vibrational circular dichroism of carbohydrate films formed from aqueous solutions 2713

Saccharomyces cerevisiae

A conformational study of α -D-Manp-(1 \rightarrow 2)- α -D-Manp-(1 \rightarrow 0)-L-Ser by NMR 1 H, 1 H T-ROESY experiments and molecular-dynamics simulations 1331

5-S-Acetyl-5-thiopentofuranosides

The thio-Mitsunobu reaction: a useful tool for the preparation of 2,5-anhydro-2-thio- and 3,5-anhydro-3-thiopentofuranosides 1787

α-Salicin

Enzymatic synthesis of two salicin analogues by reaction of salicyl alcohol with *Bacillus macerans* cyclomaltodextrin glucanyltransferase and *Leuconostoc mesenteroides* B-742CB dextransucrase 1517

Enzymatic synthesis of two salicin analogues by reaction of salicyl alcohol with *Bacillus macerans* cyclomaltodextrin glucanyltransferase and *Leuconostoc mesenteroides* B-742CB dextransucrase 1517

Salicin analogues

Enzymatic synthesis of two salicin analogues by reaction of salicyl alcohol with *Bacillus macerans* cyclomaltodextrin glucanyl-transferase and *Leuconostoc mesenteroides* B-742CB dextransucrase 1517

Salacinol analogues

Synthesis of a novel class of sulfonium ions as potential inhibitors of UDP-galactopyranose mutase 401

Salicyl alcohol

Enzymatic synthesis of two salicin analogues by reaction of salicyl alcohol with *Bacillus macerans* cyclomaltodextrin glucanyl-transferase and *Leuconostoc mesenteroides* B-742CB dextransucrase 1517

S-alkylthiohexitols

Direct syntheses of S-alkylthio-D-galactono-, D-mannono-1,4-lactones, S-alkylthio-L-galactitols and D-mannitols displaying amphiphilic and mesophasic properties 1817

S-alkylthiohexonolactones

Direct syntheses of *S*-alkylthio-**D**-galactono-, **D**-mannono-1,4-lactones, *S*-alkylthio-**L**-galactitols and **D**-mannitols displaying amphiphilic and mesophasic properties 1817

Salmonella

The structure of the O-specific polysaccharide from Salmonella cerro (serogroup K, O:6,14,18) 2441

Salmonella Enteritidis

Blocking nonspecific adsorption of native food-borne microorganisms by immunomagnetic beads with t-carrageenan 613

Saponin

A facile preparation of uronates via selective oxidation with TEMPO/KBr/Ca(OCl)₂ under aqueous conditions 1219

Enzymatic liberation of lycotetraose from the Solanum glycoalk-aloid α -tomatine 2325

Synthesis of L-arabinose-containing fragments of the oat root saponin Avenacin A-1 1285

Structure elucidation by NMR spectroscopy of a new acetylated saponin from *Centratherum anthelminticum* 2871

Saturation transfer difference

NMR spectroscopic and molecular modeling studies of proteincarbohydrate and protein-peptide interactions 907

S. cerro

The structure of the O-specific polysaccharide from *Salmonella cerro* (serogroup K, O:6,14,18) 2441

Schiff bases

Binuclear copper(II) complexes of 5-N-(β -ketoen)amino-5-deoxy-1,2-O-isopropylidene- α -D-glucofuranoses: synthesis, structure, and catecholoxidase activity 1941

Schizophyllan

Rod-like architecture and helicity of the poly(C)/schizophyllan complex observed by AFM and SEM 251

Schizosaccharomyces pombe

Refinement of the structures of cell-wall glucans of *Schizosacchar-omyces pombe* by chemical modification and NMR spectroscopy 2255 Sc(OTf)₃

Environmentally friendly C-glycosylation of phloroacetophenone with unprotected p-glucose using scandium(III) trifluoromethane-sulfonate in aqueous media: key compounds for the syntheses of mono- and di-C-glucosylflavonoids 2611

Sea cucumber body wall

Isolation and partial characterization of fucan sulfates from the body wall of sea cucumber *Stichopus japonicus* and their ability to inhibit osteoclastogenesis 1339

Seaweed

A highly regular fraction of a fucoidan from the brown seaweed $\it Fucus \ distichus \ L. \ 511$

Hydrolysis of $Nothogenia\ erinacea$ xylan by xylanases from families 10 and 11 1047

The structure of the agaran sulfate from *Acanthophora spicifera* (Rhodomelaceae, Ceramiales) and its antiviral activity. Relation between structure and antiviral activity in agarans 335

Secondary acylation

Regioselective monoacylation of cyclomaltoheptaose at the C-2 secondary hydroxyl groups by the alkaline protease from *Bacillus subtilis* in nonaqueous media 1279

Seeds

Purification, structure and immunobiological activity of an arabinan-rich pectic polysaccharide from the cell walls of *Prunus dulcis* seeds 2555

Selective allylation

One step selective 5'-O-allylation of thymidine using microwave or ultrasound activation 1829

Selective tosylation

Synthesis of $6^{\rm I}$ -amino- $6^{\rm I}$ -deoxy- $2^{\rm I-VII}$, $3^{\rm I-VII}$ -tetradeca-O-methyl-cyclomaltoheptaose 1361

Selenonium ions

Synthesis of novel ammonium and selenonium ions and their evaluation as inhibitors of UDP-galactopyranose mutase 2205

Self-assembly

Synthesis, self-assembly and characterization of a new glucosidetype hydrogel having a Schiff base on the aglycon 1311

SEM

Rod-like architecture and helicity of the poly(C)/schizophyllan complex observed by AFM and SEM 251

Separation

Isolation and characterization of two positional isomers of novel heterogeneous branched cyclomaltohexaoses (α-cyclodextrins) having a p-galactobiosyl residue on the side chain 2875

Septanose carbohydrates

Synthesis of 2-iodo-2-deoxy septanosides from a D-xylose-based oxepine: intramolecular cyclization in the absence of a glycosyl acceptor 2363

Synthesis, crystal structure, and reactivity of a D-xylose based oxepine 1163

Sequence comparison

Pectin methylesterases: sequence-structural features and phylogenetic relationships 2281

Serine

Synthesis and structure determination of some nonanomerically C–C-linked serine glycoconjugates structurally related to mannojirimycin 2187

Serological classification

Structure of the O-polysaccharide of *Citrobacter youngae* O1 containing an α-p-ribofuranosyl group 321

Structure of the O-polysaccharide of *Proteus mirabilis* CCUG 10701 (OB) classified into a new *Proteus* serogroup, O74 1395

Serological cross-reactivity

Structure of the neutral O-polysaccharide and biological activities of the lipopolysaccharide of *Proteus mirabilis* O20 623

Serology

Structural and immunochemical relationship between the Oantigenic polysaccharides from the enteroaggregative *Escherichia* coli strain 396/C-1 and *Escherichia coli* O126 1491

The O-acetylation patterns in the O-antigens of *Hafnia alvei* strains PCM 1200 and 1203, serologically closely related to PCM 1205 2521

SERS

Oligosaccharide identification and mixture quantification using Raman spectroscopy and chemometric analysis 141

Shewanella

The structure of the core region of the lipopolysaccharide from *Shewanella algae* BrY, containing 8-amino-3,8-dideoxy-D-*manno*-oct-2-ulosonic acid 737

Shewanella fidelis

Structure of an acidic O-specific polysaccharide from marine bacterium *Shewanella fidelis* KMM $3582^{\rm T}$ containing $N^{\rm e}$ -[(S)-1-carboxyethyl]- $N^{\rm e}$ -(D-galacturonoyl)-L-lysine 1655

Shewanella putrefaciens

Characterisation of a tetrasaccharide released on mild acid hydrolysis of LPS from two rough strains of *Shewanella* species representing different DNA homology groups 1185

Shigella

The conformations of the O-specific polysaccharides of *Shigella dysenteriae* type 4 and *Escherichia coli* O159 studied with molecular mechanics (MM3) filtered systematic search 961

Shrinkage

Flexible chitin films: structural studies 2701

Sialic acid

Accessibility of N-acyl-D-mannosamines to N-acetyl-D-neuraminic acid aldolase 2091

Sialidase inhibitor

2β,3β-Difluorosialic acid derivatives structurally modified at the C-4 position: synthesis and biological evaluation as inhibitors of human parainfluenza virus type 1 1367

Sialoadhesin

Saturation transfer difference NMR and computational modeling of a sialoadhesin–sialyl lactose complex 259

Sialyl lactose

Saturation transfer difference NMR and computational modeling of a sialoadhesin–sialyl lactose complex 259

Sialyl Lewis^x

Conformational analysis of complex oligosaccharides: the CICA-DA approach to the uromodulin O-glycans 949

Sialyltransferase

Synthesis of 2-[(2-pyridyl)amino]ethyl β -D-lactosaminide and evaluation of its acceptor ability for sialyltransferase: a comparison with 4-methylumbelliferyl and dansyl β -D-lactosaminide 1545 Signal transduction

Synthesis of a glucuronic acid and glucose conjugate library and evaluation of effects on endothelial cell growth 1873

Synthesis of disaccharides derived from heparin and evaluation of effects on endothelial cell growth and on binding of heparin to FGF-2 2343

Silver ion activation

Novel approaches to the syntheses of N-substituted S-glycosyl-sulfenamides 1561

Silvlation

A selective $Sc(OTf)_3$ -catalyzed trialkylsilyl ether to acetyl ester exchange reaction with β -L-idopyranoside and 3,4-O-isopropylidene- β -D-galactopyranoside derivatives 2841

Single crystal

Crystal structure of ammonium isosaccharate and aqueous solubility of ammonium and sodium isosaccharates 2811

Crystal structure of sodium isosaccharate, $NaC_6H_{11}O_6\cdot H_2O$ 801 Single-crystal X-ray analysis

Crystal architecture and conformational properties of the inclusion complex, neohesperidin dihydrochalcone–cyclomaltoheptaose (β-cyclodextrin), by X-ray diffraction 2117

Single-crystal X-ray structure

Metal—ion interactions with sugars. The crystal structure and FTIR study of an SrCl₂-fructose complex 1421

Single-step perturbation

Effect of methylation on the stability and solvation free energy of amylose and cellulose fragments: a molecular dynamics study 1697 Sinorhizobium arboris

Acacia senegal and Prosopis chilensis-nodulating rhizobia Sinorhizobium arboris HAMBI 2361 and S. kostiense HAMBI 2362 produce tetra- and pentameric LCOs that are N-methylated, O-6-carbamoylated and partially sulfated 1061

Sinorhizobium kostiense

Acacia senegal and Prosopis chilensis-nodulating rhizobia Sinorhizobium arboris HAMBI 2361 and S. kostiense HAMBI 2362 produce tetra- and pentameric LCOs that are N-methylated, O-6-carbamoylated and partially sulfated 1061

Skew

B3LYP/6-311++ G^{**} study of α- and β-D-glucopyranose and 1,5-anhydro-D-glucitol: 4C_1 and 1C_4 chairs, ${}^{3,O}B$ and $B_{3,O}$ boats, and skew-boat conformations 537

Skew-boat conformation

X-ray crystallography and solution NMR spectroscopy characterization of heptakis(2,3-di-*O*-acetyl-6-bromo-6-deoxy)cyclomaltoheptaose 1189

Sodium isosaccharate

Crystal structure of sodium isosaccharate, $NaC_6H_{11}O_6\cdot H_2O$ 801 Solid-state NMR

Crystal and molecular structure of methyl 4-*O*-methyl-β-D-*ribo*-hex-3-ulopyranoside 795

Solubility

In vitro enzymatic modification of puerarin to puerarin glycosides by maltogenic amylase 2789

Synthesis and characterization of camphorsulfonyl acetate of cellulose 1925

Solution NMR spectroscopy

X-ray crystallography and solution NMR spectroscopy characterization of heptakis(2,3-di-*O*-acetyl-6-bromo-6-deoxy)cyclomaltoheptaose 1189

Specificity

Synthesis of unnatural sugar nucleotides and their evaluation as donor substrates in glycosyltransferase-catalyzed reactions 2641

Spin-label reagent, acetyl-protected

Synthesis and enzyme-catalyzed hydrolysis of a radical-masked glycosylated spin-label reagent 2425

Spiro[benzofuran-2(3*H*),2'-[2*H*]furan]

Conversion of diacetyl-C-(β-D-glucopyranosyl)phloroglucinol to spiroketal compounds 429

Spiro[benzofuran-2(3H),2'-[2H]pyran]

Conversion of diacetyl-C-(β-D-glucopyranosyl)phloroglucinol to spiroketal compounds 429

Splenocyte activation

Structural investigation of a water-soluble glucan from an edible mushroom, *Astraeus hygrometricus* 2249

Spruc

NMR structural determination of dissolved O-acetylated galactoglucomannan isolated from spruce thermomechanical pulp 301

Sr-D-fructose complex

Metal-ion interactions with sugars. The crystal structure and FTIR study of an SrCl₂-fructose complex 1421

Stability

Effect of methylation on the stability and solvation free energy of amylose and cellulose fragments: a molecular dynamics study 1697 Stannylene acetals

First derivatives of *myo*-inositol 1,4,6-trisphosphate modified at positions 2 and 3: structural analogues of **D**-*myo*-inositol 1,4,5-trisphosphate 51

Staphylococcus epidermidis

Structural elucidation of the extracellular and cell-wall teichoic acids of *Staphylococcus epidermidis* RP62A, a reference biofilm-positive strain 1467

Starch

Effects of annealing on the polymorphic structure of starches from sweet potatoes (*Ayamurasaki* and *Sunnyred* cultivars) grown at various soil temperatures 1093

Starch hydrolysis

Crosslinked enzyme crystals of glucoamylase as a potent catalyst for biotransformations 1099

STD NMR

Saturation transfer difference NMR and computational modeling of a sialoadhesin-sialyl lactose complex 259

Stereochemistry

Conversion of diacetyl-C-(β-D-glucopyranosyl)phloroglucinol to spiroketal compounds 429

Crystal and molecular structure and absolute configuration of lincomycin hydrochloride monohydrate 2111

Strecker degradation

Pyridinium-carbaldehyde: active Maillard reaction product from the reaction of hexoses with lysine residues 705

Streptococcus agalactiae

Complementary exploration of the action pattern of hyaluronate lyase from *Streptococcus agalactiae* using capillary electrophoresis, gel-permeation chromatography and viscosimetric measurements 2541

Streptococcus mutans

Effect of carbohydrates on fructosyltransferase expression and distribution in *Streptococcus mutans* GS-5 biofilms 2883

Structural analyses

Synthesis and characterization of carboxymethylated cyclosophoraose, and its inclusion complexation behavior 519

Structural water molecules

Molecular dynamics simulations of glycosyltransferase LgtC 995 Structure

Elucidation of two O-chain structures from the lipopolysaccharide fraction of *Agrobacterium tumefaciens* F/1 2451

Molecular dynamics simulation of a decasaccharide fragment of heparin in aqueous solution 281

Structural characterization of a 2-O-acetylglucomannan from Dendrobium officinale stem 2219

Structural investigation of a water-soluble glucan from an edible mushroom, *Astraeus hygrometricus* 2249

Structural studies of the capsular polysaccharide of a non-neoformans Cryptococcus species identified as C. laurentii, which was reclassified as Cryptococcus flavescens, from a patient with AIDS 503 Structural studies of the main exopolysaccharide produced by the deep-sea bacterium Alteromonas infernus 2371

Structural studies of water-soluble polysaccharides of an edible mushroom, *Termitomyces eurhizus*. A reinvestigation 1135

Structure and hydrodynamic properties of the extracellular polysaccharide from a mutant strain (RA3W) of *Erwinia chrysanthemi* RA3 2049

Structure of an acidic O-specific polysaccharide from marine bacterium *Shewanella fidelis* KMM $3582^{\rm T}$ containing $N^{\rm e}$ -[(S)-1-carboxyethyl]- $N^{\rm e}$ -(D-galacturonoyl)-L-lysine 1655

The extracellular polysaccharide of *Porphyridium* sp.: an NMR study of lithium-resistant oligosaccharidic fragments 97

The structure of the O-specific polysaccharide from Ralstonia pickettii 2045

The structure of the O-specific polysaccharide from Salmonella cerro (serogroup K, O:6,14,18) 2441

X-ray crystallography and solution NMR spectroscopy characterization of heptakis(2,3-di-*O*-acetyl-6-bromo-6-deoxy)cyclomaltoheptaose 1189

Structure analysis

The revised NMR chemical shift data of carrageenans 2309

Structural analysis

Isolation and characterization of two positional isomers of novel heterogeneous branched cyclomaltohexaoses (α-cyclodextrins) having a D-galactobiosyl residue on the side chain 2875

Structure determination

The system of galactans of the red seaweed, *Kappaphycus alvarezii*, with emphasis on its minor constituents 2575

Subcritical reactions

Hydrothermal upgrading of biomass to biofuel; studies on some monosaccharide model compounds 1717

Substituent distribution

Enzymatic degradation and electrospray tandem mass spectrometry as tools for determining the structure of cationic starches prepared by wet and dry methods 637

2-Substituted monosaccharides

Electrochemical synthesis and X-ray crystal structures of β -D-2-phenylselenyl-1,3,4,6-tetra-O-acetylglucopyranose and α -D-2-phenylselenyl-1,3,4,6-tetra-O-acetylmannopyranose 37

Substrate inhibition

Kinetics of substrate transglycosylation by glycoside hydrolase family 3 glucan $(1\rightarrow 3)$ - β -glucosidase from the white-rot fungus *Phanerochaete chrysosporium* 2851

Succinylation

Succinyl and acetyl starch derivatives of a hybrid maize: physicochemical characteristics and retrogradation properties monitored by differential scanning calorimetry 2673

Sugar acetals

Tricyclic furanoid dichloroacetyl orthoesters of D-mannose from 1,2-O-trichloroethylidene-β-D-mannofuranose 1739

Sugar amino acids

Synthesis and structure determination of some nonanomerically C–C-linked serine glycoconjugates structurally related to mannojirimycin 2187

Sugar analogues

A theoretical study of the conformational behavior of analogues of α -L-rhamnose-1-phosphate 1323

Sugar azide

Synthesis of *N*-sugar-substituted phthalimides and their derivatives from sugar azides and phthalic anhydride 1419

Sugar beet

Isolation of diferulic bridges ester-linked to arabinan in sugar beet cell walls 2315

Sugar bislactones

Sugar bislactones by one-step oxidative dimerisation with pyridinium chlorochromate versus regioselective oxidation of vicinal diols 1889

Sugar derivative

Synthesis, self-assembly and characterization of a new glucosidetype hydrogel having a Schiff base on the aglycon 1311

Sugar derivatives

Synthesis and co-polymerization of an unsaturated 1,5-anhydro-D-fructose derivative 2077

Sugar esters

Effect of carbohydrate fatty acid esters on *Streptococcus sobrinus* and glucosyltransferase activity 1029

Sugar hemiacetals

Palladium-catalyzed oxidation of benzylated aldose hemiacetals to lactones 1377

Sugar lactones

Palladium-catalyzed oxidation of benzylated aldose hemiacetals to lactones 1377

Sugar nucleotide

A convenient synthesis of GDP D-glycero- α -D-manno-heptopyranose 147

Sugar nucleotides

Synthesis of unnatural sugar nucleotides and their evaluation as donor substrates in glycosyltransferase-catalyzed reactions 2641

Sugar orthoesters

Tricyclic furanoid dichloroacetyl orthoesters of D-mannose from 1,2-O-trichloroethylidene-β-D-mannofuranose 1739

Sugarcane bagasse

Fractional and physico-chemical characterization of hemicelluloses from ultrasonic irradiated sugarcane bagasse 291

Sugars

Crystal structures of dihydroxyacetone and its derivatives 1995 Sulfatase

Sulfatase-catalyzed assembly of regioselectively O-sulfonated p-nitrophenyl α -D-gluco- and α -D-mannopyranosides 1597

Sulfated agarans

The structure of the agaran sulfate from *Acanthophora spicifera* (Rhodomelaceae, Ceramiales) and its antiviral activity. Relation between structure and antiviral activity in agarans 335

Sulfated galactan

The structure of a sulfated galactan from *Porphyra haitanensis* and its in vivo antioxidant activity 105

Sulfated galactans

Desulfation of sulfated galactans with chlorotrimethylsilane. Characterization of β -carrageenan by 1H NMR spectroscopy 1619

The system of galactans of the red seaweed, *Kappaphycus alvarezii*, with emphasis on its minor constituents 2575

Sulfated oligosaccharide

Synthesis and biological activities of octyl 2,3,4-tri-O-sulfo- α -L-fucopyranosyl-(1 \rightarrow 3)-2,4-di-O-sulfo- α -L-fucopyranosyl-(1 \rightarrow 3)-2,4-di-O-sulfo- β -L-fucopyranosyl-(1 \rightarrow 3)-2,4-di-O-sulfo- β -L-fucopyranoside 867

Synthesis and biological activities of octyl 2,3-di-O-sulfo- α -L-fucopyranosyl-(1 \rightarrow 3)-2-O-sulfo- α -L-fucopyranosyl-(1 \rightarrow 4)-2,3-di-O-sulfo- α -L-fucopyranosyl-(1 \rightarrow 4)-2,3-di-O-sulfo- β -L-fucopyranoside 2083

Sulfated oligosaccharides

Isolation of κ-carrageenan oligosaccharides using ion-pair liquid chromatography—characterisation by electrospray ionisation mass spectrometry in positive-ion mode 1301

Synthesis of a 6^{V} -sulfated mannopentasaccharide analogue related to PI-88 1155

Sulfation

Correlation of structure to antitumor activities of five derivatives of a β -glucan from *Poria cocos* sclerotium 2567

Evaluation of sulfated fungal β -glucans from the sclerotium of *Pleurotus tuber-regium* as a potential water-soluble anti-viral agent 2297

Low $M_{\rm w}$ sulfated curdlan with improved water solubility forms macromolecular complexes with polycytidylic acid 161

Sulfenamide

Novel approaches to the syntheses of N-substituted S-glycosyl-sulfenamides 1561

Sulfoforms

An expeditious preparation of various sulfoforms of the disaccharide β -D-Galp-(1 \rightarrow 3)-D-Galp, a partial structure of the linkage region of proteoglycans, as their 4-methoxyphenyl β -D-glycosides 349

Sulfonium salt

Synthesis of a novel class of sulfonium ions as potential inhibitors of UDP-galactopyranose mutase 401

Sulfonylation

Synthesis and characterization of camphorsulfonyl acetate of cellulose 1925

Superoxide radical

Preparation of low-molecular-weight and high-sulfate-content chitosans under microwave radiation and their potential antioxidant activity in vitro 2515

Supersulfated disaccharides

Synthesis of 2,5-anhydro-(β -D-glucopyranosyluronate)- and (α -L-idopyranosyluronate)-D-mannitol hexa-O-sulfonate hepta sodium salt 1569

Surface-layer glycoprotein

A convenient synthesis of GDP D-glycero-α-D-manno-heptopyranose 147

Surface pressure

Surface and aggregate properties of an amphiphilic derivative of carboxymethylchitosan 1113

Surface tension

Surface and aggregate properties of an amphiphilic derivative of carboxymethylchitosan 1113

Surfactant

Synthesis and properties of new bolaform and macrocyclic galactose-based surfactants obtained by olefin metathesis 1243 Two-dimensional rotating-frame Overhauser spectroscopy (ROESY) and ¹³C NMR study of the interactions between maltodextrin and an anionic surfactant 1105

Sustainable energy

Hydrothermal upgrading of biomass to biofuel; studies on some monosaccharide model compounds 1717

Synchrotron-radiation spectrophotometry

Vacuum-ultraviolet circular dichroism study of saccharides by synchrotron radiation spectrophotometry 591

Synthesis

An effective synthesis of an arabinogalactan with a β -(1 \rightarrow 6)-linked galactopyranose backbone and α -(1 \rightarrow 2) arabinofuranose side chains 673

Chemical synthesis of UDP-4-O-methyl-GlcNAc, a potential chain terminator of chitin synthesis 1531

Fluorinated cyclitols as useful biological probes of phosphatidylinositol metabolism 1585

Metal-N-saccharide chemistry: synthesis and structure determination of two Cu(II) complexes containing glycosylamines 2139

Synthesis of a D-rhamnose branched tetrasaccharide, repeating unit of the *O*-chain from *Pseudomonas syringae* pv. *Syringae* (cerasi) 435 1907

Synthesis of an α -linked dimer of the trisaccharide repeating unit of the exopolysaccharide produced by *Pediococcus damnosus* 2.6 2499 Synthesis of bidesmosidic dihydrodiosgenin saponins bearing a 3-O- β -chacotriosyl moiety 1753

Synthesis, $(1\rightarrow 3)$ - β -D-glucanase-binding ability, and phytoalexinelicitor activity of a mixture of 3,4-epoxybutyl $(1\rightarrow 3)$ - β -D-oligoglucosides 1453

Synthesis of polysaccharide-stabilized gold and silver nanoparticles: a green method 2627

An efficient route to thioglycosides with the 2,3-anhydro-p-ribo stereochemistry 2895

Tandem mass spectrometry

Enzymatic degradation and electrospray tandem mass spectrometry as tools for determining the structure of cationic starches prepared by wet and dry methods 637

Teichoic acid

Structural elucidation of the extracellular and cell-wall teichoic acids of *Staphylococcus epidermidis* RP62A, a reference biofilm-positive strain 1467

TEMPO

A facile preparation of uronates via selective oxidation with TEMPO/KBr/Ca(OCl)₂ under aqueous conditions 1219

Tensile properties

Flexible chitin films: structural studies 2701

Termitomyces eurhizus

Structural studies of water-soluble polysaccharides of an edible mushroom, *Termitomyces eurhizus*. A reinvestigation 1135

Thermal stability

Crosslinked enzyme crystals of glucoamylase as a potent catalyst for biotransformations 1099

Synthesis and characterization of camphorsulfonyl acetate of cellulose 1925

Thermoanaerobacter sp.

Enzyme-catalysed synthesis of galactosylated 1D- and 1L-*chiro*-inositol, 1D-pinitol, *myo*-inositol and selected derivatives using the β -galactosidase from the thermophile *Thermoanaerobacter* sp. strain TP6-B1 1857

Thermodynamic parameters

Proton-acceptor properties and capability for mutarotation of some glucosylamines in methanol 1439

Thermodynamic properties

Effects of annealing on the polymorphic structure of starches from sweet potatoes (*Ayamurasaki* and *Sunnyred* cultivars) grown at various soil temperatures 1093

Thermophilic bacteria

Structure of a major glycolipid from *Thermus oshimai* NTU-063 2593

Thermostable enzymes

Enzyme-catalysed synthesis of galactosylated 1D- and 1L-chiro-inositol, 1D-pinitol, myo-inositol and selected derivatives using the β -galactosidase from the thermophile Thermoanaerobacter sp. strain TP6-B1 1857

Thermus oshimai

Structure of a major glycolipid from *Thermus oshimai* NTU-063 2593

THF

Reinvestigation of the mercuration–demercuration reaction on alkylated glycals: an improved method for the preparation of 2,3-dideoxy- α , β -unsaturated carbohydrate enals 2031

Thiadiazolinthione

Comparative evaluation of D-glucosyl thiouronium, glucosylthio heterocycles, Daonil, and insulin as inhibitors for hepatic glycosidases 469

Thioglycoside

Chloramine-T-mediated chemoselective hydrolysis of thioglycosides into glycosyl hemiacetals under neutral conditions

Thioglycosides

Catalytic ceric ammonium nitrate mediated synthesis of 2-deoxy-1thioglycosides 2197

An efficient route to thioglycosides with the 2,3-anhydro-p-ribo stereochemistry 2895

1-Thio-β-D-galactopyranoside

A selective Sc(OTf)3-catalyzed trialkylsilyl ether to acetyl ester exchange reaction with β-L-idopyranoside and 3,4-O-isopropylidene-β-D-galactopyranoside derivatives 2841

Thioglycosides

An efficient route to thioglycosides with the 2,3-anhydro-D-ribo stereochemistry 2895

Thio-Mitsunobu reaction

The thio-Mitsunobu reaction: a useful tool for the preparation of 2,5-anhydro-2-thio- and 3,5-anhydro-3-thiopentofuranosides 1787

Thiouronium

Comparative evaluation of D-glucosyl thiouronium, glucosylthio heterocycles, Daonil, and insulin as inhibitors for hepatic glycosidases 469

Thymidine

One step selective 5'-O-allylation of thymidine using microwave or ultrasound activation 1829

TMEDA

Improved anomeric selectivity for the aroylation of sugars 1373 TMP

NMR structural determination of dissolved O-acetylated galactoglucomannan isolated from spruce thermomechanical pulp 301

TNF receptor 1

Expression of glycosphingolipids in lymph nodes of mice lacking TNF receptor 1: biochemical and flow cytometry analysis 77

Tomatinase

Enzymatic liberation of lycotetraose from the Solanum glycoalkaloid α-tomatine 2325

Traditional heating

Preparation of low-molecular-weight and high-sulfate-content chitosans under microwave radiation and their potential antioxidant activity in vitro 2515

Transesterification

Regioselective monoacylation of cyclomaltoheptaose at the C-2 secondary hydroxyl groups by the alkaline protease from Bacillus subtilis in nonaqueous media 1279

Transferred NOE

NMR spectroscopic and molecular modeling studies of protein-carbohydrate and protein-peptide interactions 907

Transferred ROE

NMR spectroscopic and molecular modeling studies of proteincarbohydrate and protein-peptide interactions 907

Transgalactosylation

Enzymatic synthesis of a β-D-galactopyranosyl cyclic tetrasaccharide by β-galactosidases 1603

Transglycosylation

High efficiency of transferring a native sugar chain from a glycopeptide by a microbial endoglycosidase in organic solvents 719 In vitro enzymatic modification of puerarin to puerarin glycosides by maltogenic amylase 2789

Mucor hiemalis endo-β-N-acetylglucosaminidase can transglycosylate a bisecting hybrid-type oligosaccharide from an ovalbumin glycopeptide 2633

Synthesis of pentose-containing disaccharides using a thermostable α-L-arabinofuranosidase 2019

Transglycosylation reaction of Mucor hiemalis endo-β-N-acetylglucosaminidase using sugar derivatives modified at C-1 or C-2 as oligosaccharide acceptors 1403

Kinetics of substrate transglycosylation by glycoside hydrolase family 3 glucan $(1\rightarrow 3)$ - β -glucosidase from the white-rot fungus Phanerochaete chrysosporium 2851

Transglycosylation reaction

 α -Mannosidase-catalyzed synthesis of a $(1\rightarrow 2)$ - α -D-rhamnodisaccharide derivative 1389

Transition state

B3LYP/6-311++ G^{**} study of α - and β -D-glucopyranose and 1,5anhydro-D-glucitol: 4C_1 and 1C_4 chairs, ${}^{3,O}B$ and $B_{3,O}$ boats, and skew-boat conformations 537

Molecular modeling insights into the catalytic mechanism of the retaining galactosyltransferase LgtC 1007

Transparent

Flexible chitin films: structural studies 2701

Trehalose

A Fourier-transform infrared spectroscopy study of sugar glasses 1077 Tremella mesenterica

The structure of the glucuronoxylomannan produced by culinarymedicinal yellow brain mushroom (Tremella mesenterica Ritz.:Fr., Heterobasidiomycetes) grown as one cell biomass in submerged culture 1483

Tri-O-benzylpentaerythritol

Syntheses of monohydroxy benzyl ethers of polyols: tri-Obenzylpentaerythritol and other highly benzylated derivatives of symmetrical polyols 2607

Trichloroacetimidate method

Synthesis of chacotriose analogues 1511

Trichloroacetimidates

An effective synthesis of an arabinogalactan with a β -(1 \rightarrow 6)-linked galactopyranose backbone and α -(1 \rightarrow 2) arabinofuranose side chains 673

Synthesis of a hexasaccharide fragment of group E streptococci polysaccharide and the tetrasaccharide repeating unit of E. coli O7:K98:H6 1503

Synthesis of an α-linked dimer of the trisaccharide repeating unit of the exopolysaccharide produced by Pediococcus damnosus 2.6 2499 Trichloroethylidene acetals

Tricyclic furanoid dichloroacetyl orthoesters of D-mannose from 1,2-O-trichloroethylidene-β-D-mannofuranose 1739

Trifluoromethylated anhydrohex-1-enitols

Synthesis of 2,3- or 1,2-unsaturated derivatives of 2-deoxy-2trifluoromethylhexopyranoses 1833

Trifluoromethylated sugars

Synthesis of 2,3- or 1,2-unsaturated derivatives of 2-deoxy-2trifluoromethylhexopyranoses 1833

(+)-(2R,3S,4R)-2,3,4-Trihydroxycyclohexanone

Synthesis of (+)-(2R,3S,4R)-2,3,4-trihydroxycyclohexanone from D-glucose 361

Trihydroxymethylethane

Syntheses of monohydroxy benzyl ethers of polyols: tri-Obenzylpentaerythritol and other highly benzylated derivatives of symmetrical polyols 2607

Trisaccharides

MM3 Potential energy surfaces of α-3-linked L-fucobiose and fucotriose and their sulfated counterparts 2381

Trp residues

Tertiary structure of human α_1 -acid glycoprotein (orosomucoid). Straightforward fluorescence experiments revealing the presence of a binding pocket 607

Tungsten

Multinuclear NMR study of the complexes of 6-phospho-Dgluconic acid with W(VI) and Mo(VI) 2225

UDP-galactopyranose mutase

Synthesis of novel ammonium and selenonium ions and their evaluation as inhibitors of UDP-galactopyranose mutase 2205

UDP-Galactopyranose mutase inhibitors

Synthesis of a novel class of sulfonium ions as potential inhibitors of UDP-galactopyranose mutase 401

UDP-sugar analog

Chemical synthesis of UDP-4-O-methyl-GlcNAc, a potential chain terminator of chitin synthesis 1531

Ugi four-component reaction

Synthesis of cluster mannosides via a Ugi four-component reaction and their inhibition against the binding of yeast mannan to concanavalin A 873

5-Ulose

Simple syntheses of 4-O-glucosylated 1-deoxynojirimycins from maltose and cellobiose 2615

Ultrasound

Fractional and physico-chemical characterization of hemicelluloses from ultrasonic irradiated sugarcane bagasse 291

One step selective 5'-O-allylation of thymidine using microwave or ultrasound activation 1829

Ultrastructure

Arabinan-cellulose composite in *Opuntia ficus-indica* prickly pear spines 123

Unprotected bromohexolactones

Direct syntheses of S-alkylthio-D-galactono-, D-mannono-1,4-lactones, S-alkylthio-L-galactitols and D-mannitols displaying amphiphilic and mesophasic properties 1817

Unprotected glucose

Environmentally friendly C-glycosylation of phloroacetophenone with unprotected p-glucose using scandium(III) trifluoromethanesulfonate in aqueous media: key compounds for the syntheses of mono- and di-C-glucosylflavonoids 2611

Unsaturated

Synthesis and co-polymerization of an unsaturated 1,5-anhydro-D-fructose derivative 2077

Unsaturated disaccharide

A convenient synthesis of lepidimoide from okra mucilage and its growth-promoting activity in hypocotyls 9

Unsaturated sugars

Synthesis of 2,3- or 1,2-unsaturated derivatives of 2-deoxy-2-trifluoromethylhexopyranoses 1833

Uronate

A facile preparation of uronates via selective oxidation with TEMPO/KBr/Ca(OCl)₂ under aqueous conditions 1219

Uronic acid

Synthesis of *cis*-(1→3)-glycosides of allyl 2-acetamido-4,6-*O*-benzy-lidene-2-deoxy-α-p-glucopyranoside 1293

Vacuum-ultraviolet circular dichroism

Vacuum-ultraviolet circular dichroism study of saccharides by synchrotron radiation spectrophotometry 591

V-Amylose

Inclusion complexes of V-amylose with undecanoic acid and dodecanol at atomic resolution: X-ray structures with cycloamylose containing 26 p-glucoses (cyclohexaicosaose) as host 1427

Vanadium(V)

Kinetics and mechanism of the oxidation of D-fructose by vanadium(V) in H₂SO₄ medium 133

Vibrational circular dichroism

The complexation of metal cations by D-galacturonic acid: a spectroscopic study 2391

Vibrational spectra

Vibrational circular dichroism of carbohydrate films formed from aqueous solutions 2713

Vicinal cis-diols

Complexation of vanadium(V) oxyanions with hexopyranose- and mannopyranoseuronic acid-containing polysaccharides: stereochemical considerations 771

Video microscopy

Development of a digital video-microscopy technique to study lactose crystallisation kinetics in situ 2721

Vinyl ethers

Electrochemical synthesis and X-ray crystal structures of β -D-2-phenylselenyl-1,3,4,6-tetra-O-acetylglucopyranose and α -D-2-phenylselenyl-1,3,4,6-tetra-O-acetylmannopyranose 37

Vinyl monomer

Regiospecific alkaline protease-catalyzed divinyl acyl transesterifications of primary hydroxyl groups of mono- and di-saccharides in pyridine 2059

Viscosity

Complementary exploration of the action pattern of hyaluronate lyase from *Streptococcus agalactiae* using capillary electrophoresis, gel-permeation chromatography and viscosimetric measurements 2541

⁵¹V NMR spectroscopy

Complexation of vanadium(V) oxyanions with hexopyranose- and mannopyranoseuronic acid-containing polysaccharides: stereochemical considerations 771

Voglibose

Determination of the structures of four new isomeric cyclitols 2027 VO₃(V) complexes

Complexation of vanadium(V) oxyanions with hexopyranose- and mannopyranoseuronic acid-containing polysaccharides: stereochemical considerations 771

Water-soluble chitosan derivative

Synthesis and antimicrobial activity of a water-soluble chitosan derivative with a fiber-reactive group 313

Water vapor sorption

Structure and stability of columnar cyclomaltohexaose (α -cyclodextrin) hydrate 2805

Weak interactions

Crystal structure of *N*-(benzyloxycarbonyl)aminoethyl-2,3,4,6tetra-O-benzoyl- α -D-mannopyranoside: stabilization of the crystal lattice by a tandem network of N–H···O, C–H···O, and C–H··· π interactions 1087

Solution and solid-state structure of N-acetamido-3,4,6-tri-O-acetyl-2-azido-2-deoxy- α -D-galactopyranosylamine 1447

Wheat bran

Impact and efficiency of GH10 and GH11 thermostable endoxylanases on wheat bran and alkali-extractable arabinoxylans 2529

Wheat starch

Structural parameters of amylopectin clusters and semi-crystalline growth rings in wheat starches with different amylose content 2683 Wide-angle X-ray diffraction

Structure and stability of columnar cyclomaltohexaose (α -cyclodextrin) hydrate 2805

Xanthomonas cassavae

Structure of the O-polysaccharide of *Xanthomonas cassavae* GSPB 2437 157

X-ray analysis

A facile approach to anhydrogalactosucrose derivatives from chlorinated sucrose 2651

Electrochemical synthesis and X-ray crystal structures of β -D-2-phenylselenyl-1,3,4,6-tetra-O-acetylglucopyranose and α -D-2-phenylselenyl-1,3,4,6-tetra-O-acetylmannopyranose 37

X-ray crystallography

New class of quaternary ammonium salts, derivatives of methyl pglucopyranosides 1537 Synthesis and structure determination of some nonanomerically C–C-linked serine glycoconjugates structurally related to mannojirimycin 2187

Synthesis and structure of selected quaternary *N*-(1,4-anhydro-5-deoxy-2,3-*O*-isopropylidene-D,L-ribitol-5-yl)ammonium salts 2355

X-ray crystallography and solution NMR spectroscopy characterization of heptakis(2,3-di-*O*-acetyl-6-bromo-6-deoxy)cyclomaltoheptaose 1189

X-ray diffraction

Variations in the fibre repeat between samples of cellulose I from different sources 2889

X-ray powder diffraction

Transformation of lactulose trihydrate into anhydrous lactulose by fluidized bed drying and its characterization 1069

X-ray structural analysis

The thio-Mitsunobu reaction: a useful tool for the preparation of 2,5-anhydro-2-thio- and 3,5-anhydro-3-thiopentofuranosides 1787

X-ray structure

Orientated growth of crystalline anhydrous maltitol (4-O- α -D-glucopyranosyl-D-glucitol) 1225

Xvlan

NMR characterization of the polysaccharidic fraction from *Lentinula edodes* grown on olive mill waste waters 1129

Purification, structure and immunobiological activity of an arabinan-rich pectic polysaccharide from the cell walls of *Prunus dulcis* seeds 2555

Structural investigation of hemicellulosic polysaccharides from *Argania spinosa*: characterisation of a novel xyloglucan motif 201 Xylanases

Hydrolysis of $Nothogenia\ erinacea$ xylan by xylanases from families 10 and 11 1047

Impact and efficiency of GH10 and GH11 thermostable endoxylanases on wheat bran and alkali-extractable arabinoxylans 2529 Inactivated enzymes as probes of the structure of arabinoxylans as observed by atomic force microscopy 579

Xylans

NMR structural determination of dissolved O-acetylated galactoglucomannan isolated from spruce thermomechanical pulp 301

Cu(II) complex formation with xylitol in alkaline solutions 599 Xylodextrins

An optimized CZE method for analysis of mono- and oligomeric aldose mixtures 2037

Xyloglucan

Structural investigation of hemicellulosic polysaccharides from *Argania spinosa*: characterisation of a novel xyloglucan motif 201

Xylooligosaccharides

Hydrolysis of *Nothogenia erinacea* xylan by xylanases from families 10 and 11 1047

Xylopyranosides

Synthesis of pentose-containing disaccharides using a thermostable α -L-arabinofuranosidase 2019

Xvlose

Synthesis of a hexasaccharide fragment of the O-deacetylated GXM of *C. neoformans* serotype B 1779