

Bibliography of carbohydrate polymers

1 BOOKS, REVIEWS & SYMPOSIA

- Szabo J, Kosik M// Fac Chem Technol STU, Dept Chem Technol Wood Pulp & Paper, Radlinskeho 9, CS-81237 Bratislava, Slovak Rep
Chem Listy 1993 **87** (12) 834
Oxidation reactions of lignins and their importance for the processing of pytomass (Review) (Czech, English Abstract)
Van Boeckel CAA, Petitou M// Organon Int BV, Kloosterstr 6, 5340 BH Oss, The Netherlands
Angew Chem Int Ed 1993 **32** (12) 1671
The unique antithrombin III binding domain of heparin: A lead to new synthetic antithrombotics (Review)

2 CELLULOSE

- Aoki N, Furuhashi KI, Sakamoto M*// *Tokyo Inst Technol, Fac Engn, Dept Organ & Polymer Mat, Meguro ku, Tokyo 152, Japan
J Appl Polym Sci 1994 **51** (4) 721
Cationic graft copolymerization of tetrahydrofuran onto bromodeoxycellulose
Bocek AM, Kalyuzhnaya LM, Petropavlovskii GA, Frenkel SY// Russian Acad Sci, Inst High Molec Cpd, St Petersburg, Russia
J Appl Chem-Engl Tr 1992 **65** (12 Pt 2) 2300
Flory-Huggins parameter for reaction between cellulose and methylmorpholine-N-oxide in mixtures with aprotic and proton-donating solvents
Bote AN, Nadkarni VM, Rajagopalan N*// *Natl Chem Lab, Div Polymer Chem, Poona 411008, India
J Control Release 1993 **27** (3) 207
Cellulose xanthide (CellX) as an encapsulating matrix. 1. Comparison with starch xanthide (StX) on swelling and release properties
Ceccorulli G, Pizzoli M, Scandola M*// *Univ Bologna, Dipt Chim, 6 Ciamician, via Selmi 2, I-40126 Bologna, Italy
Macromolecules 1993 **26** (25) 6722
Effect of a low molecular weight plasticizer on the thermal and viscoelastic properties of miscible blends of bacterial poly(3-hydroxybutyrate) with cellulose acetate butyrate
Christyakov VP, Gershtanskaya OS, Nemchinova OA, Remez VP, Remez EP// Kristall Sci & Ind Assoc, Chem Res Inst, Sverdlovsk, Russia
J Appl Chem-Engl Tr 1992 **65** (12 Pt 2) 2345
Study of the thermal stability of cellulose inorganic iron ferrocyanide adsorbents
Cuculo JA, Smith CB, Sangwatanaroj U, Stejskal EO, Sankar SS// Nth Carolina State Univ, Dept Text Engr Chem & Sci, Raleigh, NC 27695, USA
J Polym Sci A-Polym Chem 1994 **32** (2) 229
A study on the mechanism of dissolution of the cellulose/NH₃/NH₄SCN system. 1.
Cuculo JA, Smith CB, Sangwatanaroj U, Stejskal EO, Sankar SS// Nth Carolina State Univ, Dept Text Engr Chem & Sci, Raleigh, NC 27695, USA
J Polym Sci A-Polym Chem 1994 **32** (2) 241
A study on the mechanism of dissolution of the cellulose/NH₃/NH₄SCN system. 2.
Ebina K, Iwabuchi T// Hirosaki Univ, Sch Med, Dept Neurosurg, S Zaifu cho, Hirosaki, Aomori 036, Japan
Acta Neurochir 1993 **125** (1-4) 161
Preliminary experimental study on a newly-developed coating material (liquid cellulose) for cerebral aneurysms
Fedyakova NA, Rakhmanberdiev GR// Saratov NG State Univ, Chem Res Inst, II Astrakhanskaya 83, Saratov 410026, Russia
Vysokomol Soedin 1993 **35** (12) B2064
Optical activity and conformation of pyranose rings in macromolecules of cellulose and its esters (Russian, English Abstract)
Felix J, Gatenholm P, Schreiber HP*// *Ecole Polytech, Dept Chem Engr, POB 6079, Stn A, Montreal, Quebec, Canada H3C 3A7

- J Appl Polym Sci* 1994 **51** (2) 285
Plasma modification of cellulose fibers: Effects on some polymer composite properties
Friebe A, Moritz W*// *Humboldt Univ Berlin, Inst Theoret & Phys Chem, Bunsenstr 1, D-10117 Berlin, FRG
J Appl Polym Sci 1994 **51** (4) 625
Influence of electrolyte on electrical properties of thin cellulose acetate membranes
Gharieb HK, Faramawy S*, El-Amrousi FA// *Egyptian Petr Res Inst, Nasr, Egypt
J Chem Technol Biotechnol 1993 **58** (4) 395
Liquefaction of cellulosic wastes. 3. Production, characterization and evaluation of pyrolytic oils
Ghosh TB, Sreemany M// Indian Inst Technol, Dept Phys, Kharagpur 721302, West Bengal, India
Indian J Pure Appl Phys 1993 **31** (12) 931
On the carbon 1s photoelectron spectrum of cellulose
Hanna AA, Kenawy IMM, Mohamed AK, El-Said KS// Natl Res Ctr, Cairo, Egypt
Angew Makromol Chem 1993 **212** 13
The electrical conductivity of cellulose Hyphan® and its complexes
Iefuji H, Kishi J, Iimura Y, Obata T// Natl Res Inst Brewing, 2-6-30 Taki-nogawa, Kita ku, Tokyo 114, Japan
Nippon Nogetekagaku Kaishi 1994 **68** (1) 33
Isolation of a yeast strain that accelerates aggregation of cellulose fiber and its use in treatment of wastewater from sweet potato shochu distilleries (Japanese, English Abstract)
Itagaki H// Shizuoka Univ, Fac Educ, Dept Chem, 836 Ohya, Shizuoka 422, Japan
Polymer 1994 **35** (1) 50
Saccharification process of cellulose in 97% sulfuric acid monitored by sulfuric acid induced ultraviolet adsorption behaviour
Kai A, Xu P, Horii F, Hu SH// Tokyo Metropolitan Univ, Dept Ind Chem, Hachioji, Tokyo 19203, Japan
Polymer 1994 **35** (1) 75
CP/MAS ¹³C NMR study on microbial cellulose-fluorescent brightener complexes
Kawashima Y, Takeuchi H, Hino T, Niwa T, Lin TL, Sekigawa F// Gifu Pharmaceut Univ, 5-6-1 Mitahara Higashi, Gifu 502, Japan
Chem Pharm Bull Tokyo 1993 **41** (12) 2156
Preparation of a directly tabletable controlled-release matrix filler with microcrystalline cellulose modified with hydroxypropylmethylcellulose
Kokubo H, Nakamura S, Sunada H// Shin Etsu Chem Co Ltd, Specialty Chem Res Ctr, 28-1 Nishi-fukushima, Kubiki, Niigata 942, Japan
Chem Pharm Bull Tokyo 1993 **41** (12) 2151
Effect of several cellulosic binders on particle size distribution of granules prepared by a high-speed mixer
Kondo T, Sawatari C, Manley RS, Gray DG// Forestry & Forest Prod Res Inst, POB 16, Tsukuba norin, Ibaraki 305, Japan
Macromolecules 1994 **27** (1) 210
Characterization of hydrogen bonding in cellulose synthetic polymer blend systems with regioselectively substituted methylcellulose
Lamanna A, Conte U*, Giunchedi P, Maggi L, Torre ML// *Univ Pavia, Dipt Chim Farmaceut, Viale Taramelli 12, I-27100 Pavia, Italy
Farmaco 1993 **48** (10) 1417
Cellulose polymers for the constant release of a water-insoluble benzodiazepine
Lanes SF, Rothman KJ, Dreyer NA, Soden KJ// Epidemiol Resources Inc, 1 Newton Execut Pk, Newton Lower Falls, Ma 02162, USA
Scand J Work Environ Health 1993 **19** (6) 426
Mortality update of cellulose fiber production workers
Lenfeld J// Acad Sci Czech Rep, Inst Macromolec Chem, CS-16206 Prague 6, Czech Rep
Angew Makromol Chem 1993 **212** 147

As a service to subscribers, each issue of the Journal contains a bibliography of newly published material in the field of carbohydrate polymers. The bibliography is divided into ten sections: 1 Books, Reviews & Symposia; 2 Cellulose; 3 Cellulose-degrading Enzymes; 4 Cyclodextrins; 5 Lignin; 6 Polysaccharides - Named; 7 Polysaccharides - Other; 8 Lipopolysaccharides; 9 Starch; 10 Starch-degrading Enzymes. Within each section, articles are listed in alphabetical order with respect to author. When there are no publications to appear under one of these headings, that section will be omitted.

Magnetic bead cellulose

- Liepins R, Jahn RK, Elliott NE, Hubbard KM// Los Alamos Natl Lab, Div Mat Sci & Technol, Mail Stop E549, Los Alamos, NM 87545, USA
J Appl Polym Sci 1994 **51** (6) 1141
- Magnetic field processing of polymers. 1. Hydroxypropyl cellulose
 Li XG, Huang MR, Yang PC// Tianjin Inst Text Sci & Technol, Ctr Membrane Separat Engn, Tianjin 300160, Peoples Rep China
J Appl Polym Sci 1994 **51** (4) 743
- Composition and temperature effects on air separation through liquid crystalline alkyl cellulose membranes
 Marsano E, Conio G, Focher B, Tamagno M// Ist Chim Ind, Corso Europa 30, I-16132 Genoa, Italy
Polymer 1994 **35** (1) 168
- Cellulose-polyacrylonitrile blends. 2. Effect of graft copolymer on the phase properties in dimethylacetamide/LiCl
 Nehls I, Wagenknecht W, Philipp B, Stscherbina D// Fraunhofer Inst Appl Polymer Res, Kantstr 55, D-14513 Teltow, FRG
Prog Polym Sci 1994 **19** (1) 29
- Characterization of cellulose and cellulose derivatives in solution by high-resolution ¹³C-NMR spectroscopy
 Nguyen XQ, Nguyen QT*, Noezar I// *ENSIC, LCPM, CNRS, UA 494, BP 451, F-54001 Nancy, France
Polymer 1993 **34** (24) 5134
- Transport of organic penetrants through films of cellulose esters in transient regimes: A non-equilibrium thermodynamics analysis
 Okamoto Y, Ohashi T, Kaida Y, Yashima E// Nagoya Univ, Fac Engn, Dept Appl Chem, Chikusa ku, Nagoya 46401, Japan
Chirality 1993 **5** (8) 616
- Resolution of enantiomers by HPLC on tris(4-alkoxyphenylcarbamate)s of cellulose and amylose
 Olfat YM, Yaseen AAE*, Aziza IA// *Natl Res Ctr, Dept Food Technol, Tahrir St, Cairo, Egypt
Nahrung 1993 **37** (6) 544
- Enrichment of macaroni with cellulose-derivative protein complex from whey and corn steep liquor
 Park HJ, Weller CL, Vergano PJ, Testin RF// Clemson Univ, Dept Agr & Biol Engn, Clemson, SC 29631, USA
J Food Sci 1993 **58** (6) 1361
- Permeability and mechanical properties of cellulose-based edible films
 Phillies GDJ, Richardson C, Quinlan CA, Ren SZ// Worcester Polytech Inst, Dept Phys, Worcester, MA 01609, USA
Macromolecules 1993 **26** (25) 6849
- Transport in intermediate and high molecular weight hydroxypropylcellulose water solutions
 Prasad MP, Kalyanasundaram M// Indian Council Med Res, Vector Control Res Ctr, Pondicherry 605006, India
J Control Release 1993 **27** (3) 219
- Effect of incorporation of gelatin, an interactive polymer on the matrix stability and release of fenthion from crosslinked matrices of carboxymethylcellulose
 Reppas C, Adair CH, Barnett JL, Berardi RR, Duross D, Swidan SZ, Thill PF, Tobey SW, Dressman JB*// *Univ Michigan, Coll Pharm, Ann Arbor, MI 48109, USA
Diabetes Res Clin Pract 1993 **22** (1) 61
- High viscosity hydroxypropylmethylcellulose reduces postprandial blood glucose concentrations in NIDDM patients
 Revol JF, Godbout L, Dong XM, Gray DG*, Chanzy H, Maret G// *Pulp & Paper Res Inst Canada, Montreal, Quebec, Canada H3A 2A7
Liq Cryst 1994 **16** (1) 127
- Chiral nematic suspensions of cellulose crystallites: Phase separation and magnetic field orientation
 Rowe RC, McKillop AG, Bray D// Zeneca Pharmaceut, Alderley Pk, Macclesfield SK10 2NA, Cheshire, England
Int J Pharm 1994 **101** (1-2) 169
- The effect of batch and source variation on the crystallinity of microcrystalline cellulose
 Sakellariou P, Hassan A, Rowe RC// ICI Paints, Res Dept, Wexham Rd, Slough SL5 2DS, Berks, England
Colloid Polym Sci 1993 **271** (11) 1083
- Interactions and partitioning of diluents/plasticizers in hydroxypropyl methylcellulose and polyvinyl alcohol homopolymers and blends. 1. Diethylene glycol
 Samaranayake G, Glasser WG// Virginia Polytech Inst & State Univ, Dept Wood Sci & Forest Prod, Blacksburg, VA 24061, USA
Carbohydr Polym 1993 **22** (2) 79
- Cellulose derivatives with low DS. II. Analysis of alkanooates
 Schaub M, Wenz G, Wegner G, Stein A, Klemm D// Max Planck Inst Polymer Res, Postfach 3148, D-55021 Mainz, FRG
Advan Mater 1993 **5** (12) 919
- Ultrathin films of cellulose on silicon wafers
 Silinskaya IG, Kallistov OV, Kutsenko LI, Nikonova VI, Sidorovich AV, Petropavlovskii GA// Russian Acad Sci, Inst High Molec Cpds, St Petersburg, Russia
J Appl Chem-Engl Tr 1992 **65** (12 Pt 2) 2305
- Structure formation at various concentrations of solutions of hydroxypropylcellulose in trifluoroacetic acid
 Sultankulova AS, Sarybaeva RI, Afanasev VA// Acad Sci Kyrgyzstan, Inst Organ Chem, Prospect Chui 267, Bishkek, Kyrgyzstan
J Appl Polym Sci 1994 **51** (2) 241
- Infrared spectroscopy study of powder celluloses modified by Lewis acids
 Van Hazendonk JM, Van der Putten JC, Keurentjes JTF, Prins A// ATO, DLO, Agrotechnol Res Inst, POB 17, 6700 AA Wageningen, The Netherlands
Colloid Surface A 1993 **81** 251
- A simple experimental method for the measurement of the surface tension of cellulosic fibres and its relation with chemical composition
 Verbies Y, Fevre B, Andre A// ZA Tobernottes, Proc Vis, F-33370 Tresses, France
Analisis 1993 **21** (9) M29
- Continuous measurement of moisture and alcohol content of nitrocellulose using near infrared (French, English Abstract)
 Wanna JT, Powell JE// Amer Tobacco Co, Dept Res & Qual Assurance, POB 899, Hopewell, VA 23860, USA
Thermochim Acta 1993 **226** 257
- Thermal decomposition of cotton cellulose treated with selected salts
 Yanagida N, Takematsu S, Matsuo M*// *Nara Womens Univ, Fac Human Life & Environm, Dept Textile & Apparel Sci, Nara 630, Japan
Polym J 1994 **26** (1) 1
- Relationship between the morphology and mechanical properties of hydroxypropyl cellulose films and the characteristic behavior of the chains in solution

3 CELLULOSE-DEGRADING ENZYMES

- Nidetzky B, Zachariae W*, Gercken G, Hayn M, Steiner W// *Chem Landesuntersuchungsanstalt, Bissierstr 5, D-79114 Freiburg, FRG
Enzyme Microb Technol 1994 **16** (1) 43
- Hydrolysis of cellobiosaccharides by *Trichoderma reesei* cellobiohydrolases: Experimental data and kinetic modeling
 Park CH, Orozco-Avila I// Univ Minnesota, Dept Agr Engn, St Paul, MN 55108, USA
Biotechnol Progr 1993 **9** (6) 640
- Concentrating cellulases using a temperature-sensitive hydrogel: Effect of gel particle size and geometry
 Pohlschroder M, Leschine SB, Canale-Parola E*// *Univ Massachusetts, Dept Microbiol, Amherst, MA 01003, USA
J Bacteriol 1994 **176** (1) 70
- Multicomplex cellulase/xylanase system of *Clostridium papyrosolvens* C7
 Spear L, Gallagher J, McHale L, McHale AP// Univ Ulster, Dept Biol & Biomed Sci, Coleraine, Londonderry, Northern Ireland
Biotechnol Lett 1993 **15** (12) 1265
- Production of cellulase and β -glucosidase activities following growth of *Streptomyces hygroscopicus* on cellulose containing media
 Tomme P, Gilkes NR, Miller RC, Warren AJ, Kilburn DG*// *Univ British Columbia, Dept Microbiol, 300-6174 Univ Blvd, Vancouver, Brit Columbia, Canada V6T 1Z3
Protein Eng 1994 **7** (1) 117
- An internal cellulose-binding domain mediates adsorption of an engineered bifunctional xylanase/cellulase

4 CYCLODEXTRINS

- Bonomo RP, Impellizzeri G, Pappalardo G, Rizzarelli E, Vecchio G// Univ Catania, Dipt Sci Chim, V Le A Doria 6, I-95125 Catania, Italy
Gazz Chim Ital 1993 **123** (10) 593
- Cyclo-L-histidyl-L-histidyl capped β -cyclodextrin. A new potentially enzyme-mimicking compound of artificial receptor with two recognition sites
 Coleman AW, Munoz M, Chatigakis AK, Cardot P// Univ Paris Sud, CNRS, Ctr Pharmaceut, F-92296 Chatenay Malabry, France
J Phys Org Chem 1993 **6** (12) 651
- Classification of the solubility behaviour of β -cyclodextrin in aqueous co-sol-

vent mixtures

Deege A, Husmann H, Hubinger E, Kobor F, Schomburg G// Max Planck Inst Kohlenforsch, Dept Chromatog & Electrophoresis, D-45470 Mulheim, FRG
J High Res Chromatogr 1993 **16** (10) 587
Purification and analysis of partially alkylated cyclodextrins by liquid and gas chromatography

Divakar S// Cent Food Technol Res Inst, Organ Chem Sect, Mysore 570013, Karnataka, India

J Inclusion Phenom Mol Recogn 1993 **15** (4) 305

A structural study of the naringin- β -cyclodextrin

Dodzuik H, Nowinski K// Polish Acad Sci, Inst Organ Chem, Kasprzaka 44, PL-01224 Warsaw, Poland

Theochem-J Mol Struct 1994 **110** (1) 61

Structure of cyclodextrins and their complexes. 2. Do cyclodextrins have a rigid truncated-cone structure?

Donze C, Coleman AW*// *Univ Paris Sud, Ctr Pharmaceut, CNRS, UPR 180, F-92290 Chateaufort Malabry, France

J Inclusion Phenom Mol Recogn 1993 **16** (1) 1

β -CD inclusion complexes: Relative selectivity of terpene and aromatic guest molecules studied by competitive inclusion experiments

Duchene D, Wouessidjewe D// Univ Paris 11, Fac Pharm, Pharm Galen & Biopharm Lab, CNRS, URA 1218, F-92290 Chateaufort Malabry, France

J Coord Chem 1992 **27** (1-3 Pt B) 223

Industrial uses of cyclodextrins and their derivatives

Fotiadu F, Fathallah M, Jaime C*// *Univ Autonoma Barcelona, Fac Ciencias, Dept Quim, E-08193 Barcelona, Spain

J Inclusion Phenom Mol Recogn 1993 **16** (1) 55

Molecular mechanics calculations on the differentiation of diastereomeric complexes of cisdecalin with β -cyclodextrin

Jamuna R, Saswathi N, Sheela R, Ramakrishna SV*// *Reg Res Lab, Div Biotechnol, Trivandrum 695019, Kerala, India

Appl Biochem Biotech 1993 **43** (3) 163

Synthesis of cyclodextrin glucosyl transferase by *Bacillus cereus* for the production of cyclodextrins

Kobor F, Schomburg G// Max Planck Inst Kohlenforsch, Dept Chromatog & Electrophoresis, D-45470 Mulheim, FRG

J High Res Chromatogr 1993 **16** (12) 693

6-*tert*-Butyldimethylsilyl-2,3-dimethyl- α -, β -, and γ -cyclodextrins, dissolved in polysiloxanes, as chiral selectors for gas chromatography: Influence of selector concentration and polysiloxane matrix polarity on enantioselectivity

Kowalewski J, Widmalm G// Stockholm Univ, Arrhenius Lab, Div Phys Chem, S-10691 Stockholm, Sweden

J Phys Chem 1994 **98** (1) 28

Multiple-field ^{13}C NMR relaxation study of cyclodextrins

Kuwabara T, Matsushita A, Nakamura A, Ueno A, Toda F// Tokyo Inst Technol, Fac Biosci & Biotechnol, Dept Bioengn, 4259 Nagatsuta, Midori ku, Yokohama, Kanagawa 227, Japan

Chem Lett 1993 (12) 2081

A novel color change indicator for molecules: Guest-induced color-to-colorless change of *p*-nitrophenol-modified β -cyclodextrin

Leroy-Lechat F, Wouessidjewe D, Andreux JP, Puisieux F, Duchene D*// *Univ Paris 11, Physicochim Pharmacotech & Biopharm Lab, CNRS, URA 1218, rue Jean Baptiste Clement, F-92296 Chateaufort Malabry, France

Int J Pharm 1994 **101** (1-2) 97

Evaluation of the cytotoxicity of cyclodextrins and hydroxypropylated derivatives

Maas B, Dietrich A, Karl V, Kaunzinger A, Lehmann D, Kopke T, Mosandl A// Address not available.

J Microcolumn Sep 1993 **5** (6) 551

tert-Butyldimethyl-substituted cyclodextrin derivatives as versatile chiral stationary phases in capillary GC (*J Microcolumn Sep* 1993, **5** 421) (Correction)

Pande GS, Shangraw RF*// *Univ Maryland, Sch Pharm, Dept Pharmaceut, Baltimore, Md 21201, USA

Int J Pharm 1994 **101** (1-2) 71

Characterization of β -cyclodextrin for direct compression tableting

Ramusino MC, Rufini L, Mustazza C// Ist Super Sanita, Chim Farm Lab, Viale Regina Elena 299, I-00161 Rome, Italy

J Inclusion Phenom Mol Recogn 1993 **15** (4) 359

UV spectroscopic study of the interaction between α -, β -, and γ -cyclodextrins and pyridine derivatives

Reetz MT, Rudolph J// Max Planck Inst Kohlenforsch, Kaiser Wilhelm Pl 1, D-45470 Mulheim, FRG

Tetrahedron-Asymmetry 1993 **4** (12) 2405

Synthesis of a phosphine-modified cyclodextrin and its rhodium complex

Sakairi N, Kuzuhara H// Inst Phys & Chem Res, Wako, Saitama 35101, Japan
Chem Lett 1993 (12) 2077

Efficient and regioselective preparation of an 8th-membered interglycosidic benzyldiene derivative of β -cyclodextrin

Schmitt T, Engelhardt H*// *Univ Saarland, Postfach 1150, D-66041 Saarbrücken, FRG

Chromatographia 1993 **37** (9-10) 475

Charged and uncharged cyclodextrins as chiral selectors in capillary electrophoresis

Sideris EE, Koupparis MA, Macheras PE*// *Univ Athens, Dept Pharm, GR-15771 Athens, Greece

Pharmaceut Res 1994 **11** (1) 90

Effect of cyclodextrins on protein binding of drugs: The diflunisal/hydroxypropyl- β -cyclodextrin model case

Szafranek A, Szafranek J// Univ Gdansk, Inst Phys, ul Wita Stwosza 57, PL-80952 Gdansk, Poland

J Inclusion Phenom Mol Recogn 1993 **15** (4) 351

Thermogravimetric properties of inclusion complexes of β -cyclodextrin with benzene, acetylsalicylic acid and methyl salicylate

Trotta F, Moraglio G, Marzona M, Maritano S// Univ Torino, Dipt Chim Inorgan Chim Fis & Chim Mat, via Piro Giurua 7, I-10125 Turin, Italy

Gazz Chim Ital 1993 **123** (10) 559

Acyclic carbonates of β -cyclodextrin

Wang Z, Horikawa T, Hirayama F, Uekama K*// *Kumamoto Univ, Fac Pharmaceut Sci, 5-1 Oe Honmachi, Kumamoto 862, Japan

J Pharm Pharmacol 1993 **45** (11) 942

Design and *in vitro* evaluation of a modified-release oral dosage form of nifedipine by hybridization of hydroxypropyl- β -cyclodextrin and hydroxypropylcellulose

5 LIGNIN

De Oliveira W, Glasser WG*// *Virginia Polytech Inst & State Univ, Dept Wood Sci & Forest Prod, Blacksburg, Va 24061, USA

Macromolecules 1994 **27** (1) 5

Multiphase materials with lignin. 11. Starlike copolymers with caprolactone

De Oliveira W, Glasser WG*// Virginia Polytech Inst & State Univ, Dept Wood Sci & Forest Prod, Blacksburg, Va 24061, USA

J Appl Polym Sci 1994 **51** (3) 563

Multiphase materials with lignin. 12. Blends of poly(vinyl chloride) with lignin caprolactone copolymers

Feldman D, Lacasse MA// Concordia Univ, Ctr Bldg Studies, Montreal, Quebec, Canada H3G 1M8

J Appl Polym Sci 1994 **51** (4) 701

Polymer filler interaction in polyurethane Kraft lignin polyblends

Kajihara J, Hattori T, Shirono H, Shimada M*// *Kyoto Univ, Wood Res Inst, Uji, Kyoto 611, Japan

Holzforchung 1993 **47** (6) 479

Characterization of antiviral water-soluble lignin from bagasse degraded by *Lentinus edodes*

Monakov YB, Belyaev VY, Moskvicheva TV, Karmanov AP// Russian Acad Sci, Ural Div, Komi Sci Ctr, Syktyvkar, Russia

Dokl Akad Nauk 1993 **333** (2) 200

The polymer models of lignin: Hydrodynamic and conformational properties (Russian)

Perra B, Haluk JP, Metche M// ENSAIA, Biochim Appl Lab, 2 Ave Foret Haye, F-54500 Vandoeuvre Nancy, France

Holzforchung 1993 **47** (6) 486

Extraction of suberin and lignin from beech barks (*Fagus sylvatica* L)

Stephanou A, Pizzi A*// *Univ Witwatersrand, Dept Chem, Johannesburg 2001, Rep Sth Africa

Holzforchung 1993 **47** (6) 501

Rapid-curing lignin-based exterior wood adhesives. 2. Esters acceleration mechanism and application to panel products

6 POLYSACCHARIDES - NAMED

Bapat N, Boroujerdi M*// *Northeastern Univ, Dept Pharmaceut Sci, Boston, Ma 02115, USA

Drug Develop Ind Pharm 1993 **19** (20) 2651

Effect of colloidal carriers on the disposition and tissue uptake of doxorubicin. 1. Conjugation with oxidized dextran particles

Barbakadze VV, Kemertelidze EP, Dekanosidze HE, Usov AI// IG Kutateladze

- Pharmakochem Inst, Tbilisi, Rep of Georgia
Bioorg Khim 1993 19 (9) 912
 Isolation and investigation of a glucosfructan from *Ornithogalum ponticum* Zahar, (Liliaceae) (Russian, English Abstract)
- Basak S, Ramaswamy HS*// *McGill Univ, Dept Food Sci & Agr Chem, MacDonald Campus, Box 187, St Anne Bellevue, Quebec, Canada H9X 3V9
J Food Eng 1994 21 (3) 385
 Simultaneous evaluation of shear rate and time dependency of stirred yogurt rheology as influences by added pectin and strawberry concentrate
- Benedetti L, Cortivo R, Berti T, Berti A, Pea F, Mazzo M, Moras M, Abatan-gelo G*// *Fidia Adv Biopolymers, via Ponte Fabbica, Abano Terme, Italy
Biomaterials 1993 14 (15) 1154
 Biocompatibility and biodegradation of different hyaluronan derivatives (Hyafl) implanted in rats
- Biswas B, Phillips GO// Newtech Innovat Ctr, Deeside, Clwyd, Wales
Food Hydrocolloid 1993 7 (6) 507
 Classification of natural gums. 5. Identification of commercial gum arabic from Africa by euclidean modelling
- Brenes A, Guenter W, Marquardt RR, Rotter BA// CSIC, Inst Alimentac Anim, Ciudad Univ, E-28040 Madrid, Spain
Can J Anim Sci 1993 73 (4) 941
 Effect of β -glucanase pentosanase enzyme supplementation on the performance of chickens and laying hens fed wheat, barley, naked oats and rye diets
- Brumano MHN, Coelho JLC, De Araujo EF, Silva DO*// *Univ Fed Vicosa, Dept Microbiol, Vicosa 36570-000, MG, Brazil
Rev Microbiol 1993 24 (3) 175
 Pectin lyase activity of *Penicillium griseoroseum* related to degumming of ramie
- Buchert J, Salminen J, Siikaaho M, Ranua M, Viikari L*// *VTI, Biotech Lab, POB 202, SF-02151 Espoo, Finland
Holzforchung 1993 47 (6) 473
 The role of *Trichoderma reesei* xylanase and mannanase in the treatment of softwood Kraft pulp prior to bleaching
- Chikamai BN, Banks WB// Univ Coll Nth Wales, Sch Agr & Forest Sci, Bangor LL57 2UW, Wales
Food Hydrocolloid 1993 7 (6) 521
 Gum arabic from *Acacia senegal* (L.) Willd in Kenya
- Christov LP, Prior BA// Univ Orange Free State, Dept Microbiol & Biochem, POB 339, Bloemfontein 9300, Rep Sth Africa
Biotechnol Lett 1993 15 (12) 1269
 Xylan removal from dissolving pulp using enzymes of *Aureobasidium pullulans*
- Ciancia M, Matulewicz MC, Cerezo AS*// *Univ Buenos Aires, Fac Ciencias Exactas & Nat, Dept Quim Organ, Pabellon 2 Ciudad Univ, RA-1428 Buenos Aires, Argentina
Phytochemistry 1993 34 (6) 1541
 L-Galactose containing galactans from the carrageenophyte *Gigartina skottsbergii*
- Demarger-Andre S, Domard A*// *Univ Lyon 1, Lab Etud Mat Plast & Biomater, URA CNRS 507, 43 Blvd 11 Novembre 1918, F-69622 Villeurbanne, France
Carbohydr Polym 1993 22 (2) 117
 Chitosan behaviours in a dispersion of undecylenic acid
- Drouet L// Hop Ray Poincare, Hematol Lab, F-92380 Garches, France
Presse Medicale 1993 22 (40) 2002
 Low molecular weight heparins (French, English Abstract)
- Ebringerova A, Banzragch D, Malovikova A, Kacurakova M// Slovak Acad Sci, Inst Chem, CS-84238 Bratislava, Slovak Rep
J Carbohydr Chem 1993 12 (8) 1057
 Characterization of pectins isolated from Mongolian plants
- Fernandes PB, Goncalves MP, Doublier JL// Nestle Res Ctr, Vers-chez-les-Blanc, POB 44, CH-1000 Lausanne 26, Switzerland
Carbohydr Polym 1993 22 (2) 99
 Influence of locust bean gum on the rheological properties of κ -carrageenan systems in the vicinity of the gel point
- Ferragut V, Chiralt A, Salazar JA// Univ Politecn Valencia, Dept Technol Alimentos, Camino Vera 14, E-46022 Valencia, Spain
Rev Espan Cien Tecnol Aliment 1993 33 (6) 607
 Stability of oil-water emulsions locust bean gum and dried whole egg or skim milk powder as emulsifiers
- Fleury N, Lahaye M*// *INRA, Biochim & Technol Glucides Lab, BP 527, F-44026 Nantes 03, France
J Appl Phycol 1993 5 (6) 605
 Studies on by-products from the industrial extraction of alginate. 2. Chemical structure analysis of fucans from the leach-water
- Fouissac E, Milas M*, Rinaudo M// *Joseph Fourier Univ Grenoble, Ctr Rech Macromolec Vegetales, BP 53 X, F-38041 Grenoble, France
Macromolecules 1993 26 (25) 6945
 Shear rate, concentration, molecular weight, and temperature viscosity dependences of hyaluronate, a wormlike polyelectrolyte
- Gagne N, Simpson BK// McGill Univ, Dept Food Sci, MacDonald Campus, St Anne Bellevue, Quebec, Canada H9X 3V9
Food Biotechnol 1993 7 (3) 253
 Use of proteolytic enzymes to facilitate the recovery of chitin from shrimp wastes
- Gallez B, Lacour V, Demeure R, Debuyst R, Dejeht F, De Keyser JL, Dumont P// UCL 7340, CMFA, Med Chem Lab, Ave Mounier 73, B-1200 Brussels, Belgium
Magn Reson Imaging 1994 12 (1) 61
 Spin labelled arabinogalactan as MRI contrast agent
- Gilbert M, Yaguchi M, Watson DC, Wong KKY, Breuil C, Saddler JN*// *Univ British Columbia, Fac Forestry, Chair Forest Prod Biotechnol, 270-2357 Main Mall, Vancouver, Brit Columbia, Canada V6T 1Z4
Appl Microbiol Biotechnol 1993 40 (4) 508
 A comparison of two xylanases from the thermophilic fungi *Thielavia terrestris* and *Thermoascus crustaceus*
- Goto H, Yuasa K, Rylander R// Tokyo Metropolitan Komagome Gen Hosp, Dept Pulm Dis, Bunkyo ku, 3-18-22 Honkomagome, Tokyo, Tokyo 113, Japan
Amer J Ind Med 1994 25 (1) 81
 (1 $\rightarrow$ 3)- β -D-Glucan in indoor air, its measurement and *in vitro* activity
- Gupta MN, Dong GQ, Mattiasson B*// *Lund Univ, Ctr Chem, Dept Biotechnol, POB 124, S-22100 Lund, Sweden
Biotechnol Appl Biochem 1993 18 (3) 321
 Purification of endo-polygalacturonase by affinity precipitation using alginate
- Hamase K, Nakamura H, Nakajima T*// *Suntory Inst Bioorgan Res, 1-1-1 Wakayamadai, Shimamoto cho, Mishima, Osaka 618, Japan
Anal Sci 1993 9 (6) 799
 Curdlan gel, evaluated as a polysaccharide support by electrophoresis of substituted benzenes
- Hayakawa K, Mitsushashi N, Saito Y, Takahashi M, Katano S, Shiojima K, Furuta M, Niibe H// Gunma Univ, Sch Med, Dept Radiol & Radiat Oncol, 3-39-22 Showa machi, Maebashi, Gunma 371, Japan
Anticancer Res 1993 13 (5C) 1815
 Effect of krestin (PSK) as adjuvant treatment on the prognosis after radical radiotherapy in patients with non-small cell lung cancer
- Hirano S, Yoshida S, Takabuchi N// Tottori Univ, Dept Agr Biochem & Biotechnol, Tottori 680, Japan
Carbohydr Polym 1993 22 (2) 137
 N-[¹³C=O]Acetylchitosan and its digestibility by silkworms
- Jang LK// Calif State Univ Long Beach, Dept Chem Engr, Long Beach, Ca 90840, USA
Biotechnol Bioeng 1994 43 (2) 183
 Diffusivity of Cu²⁺ in calcium alginate gel beads (Letter)
- Karhunen T, Mantyla A, Nevalainen KMH, Suominen PL*// *Fazer Chocolates Ltd, POB 4, SF-00941 Helsinki, Finland
Mol Gen Genet 1993 241 (5-6) 515
 High frequency one step gene replacement in *Trichoderma reesei*. 1. Endoglucanase I overproduction
- Kashiwagi T, Ito Y, Imanishi Y*// *Kyoto Univ, Dept Polymer Chem, Kyoto 60601, Japan
Biomaterials 1993 14 (15) 1145
 Non-thrombogenicity of organic polymers by blending with alkyl heparin complexes
- Kavitha R, Chandrashekar A*// *Cent Food Technol Res Inst, Molec Biol Unit, Mysore 570013, India
Carbohydr Polym 1993 22 (2) 107
 Characterization of cell wall components from the endosperm of sorghum varieties varying in hardness
- Komatsu H, Takahata T, Tanaka M, Ishimitsu S, Okada S// Natl Inst Hlth Sci, Div Drugs, 1-1-43 Hoenzaka, Chuo ku, Osaka 540, Japan
Biol Pharm Bull 1993 16 (12) 1189
 Determination of the molecular weight distribution of low-molecular-weight heparins using high-performance gel permeation chromatography
- Konicek J, Lasik J, Safar H// Acad Sci Czech Rep, Inst Microbiol, CS-14220 Prague 4, Czech Rep
Folia Microbiol Prague 1993 38 (5) 403
 Xanthan gum produced from whey by a mutant strain of *Xanthomonas cam-*

pestris

- Kubo K, Nakamura T, Takagaki K, Yoshida Y, Endo M// *Hirosaki Univ, Sch Med, Dept Biochem, 5 Zaifu cho, Hirosaki, Aomori 036, Japan
Glycoconjugate J 1993 10 (6) 435
Depolymerization of hyaluronan by sonication
- Lewandowski Z, Roe F// Montana State Univ, Ctr Biofilm Engr, Bozeman, Mt 59717, USA
Biotechnol Bioeng 1994 43 (2) 186
Diffusivity of Cu^{2+} in calcium alginate gel beads: Recalculation (Letter)
- Lin SH// Yuan Ze Inst Technol, Dept Chem Engr, Tayuan 320, Taiwan
J Food Eng 1994 21 (3) 305
A mathematical model for freezing of calcium alginate gel balls
- Ljungstrom KG// Karolinska Inst, Danderyd Hosp, Dept Surg, S-18288 Danderyd, Sweden
Infusionstherapie 1993 20 (5) 206
Safety of dextran in relation to other colloids: Ten years experience with hapten inhibition
- Maes PC, Nagels LJ, Spanoghe BR// Univ Antwerp, RUCA, Dept Chem, Groenenenborgerlaan 171, B-2020 Antwerp, Belgium
Chromatographia 1993 37 (9-10) 511
High-performance liquid chromatographic determination of native and reduced α -glucan oligosaccharides on reversed phase columns using post-column immobilized enzyme reactors
- Malovikova A, Rinaudo M, Milas M// Slovak Acad Sci, Inst Chem, CS-84238 Bratislava, Slovak Rep
Carbohydr Polym 1993 22 (2) 87
On the characterization of polygalacturonate salts in dilute solution
- Manolov RJ, Kambourova MS*, Emanuilova EI// *Bulgarian Acad Sci, Inst Microbiol, BU-1113 Sofia, Bulgaria
Biotechnol Appl Biochem 1993 18 (3) 409
Immobilization and properties of *Bacillus stearothermophilus* pullulanase
- Manzanares P, Navarro A, Sendra JM*, Carbonell JV// *INVECEMA, Asociac Invest Cerveza & Malta, Jaime Roig 11, E-46010 Valencia, Spain
J Cereal Sci 1993 18 (3) 211
Determination of the average molecular weight of barley β -glucan within the range 30-100K by the calcofluor FIA method
- Marchetti G// GIM Consulting, via G Carducci 5, I-41035 Massa Finalese, Italy
Ind Aliment 1993 32 (319) 945
Fructans and inulin (Italian, English Abstract)
- Matsumoto T, Kawai M, Masuda T// Kyoto Univ, Div Mat Chem, Kyoto 606, Japan
Biorheology 1993 30 (5-6) 435
Rheological properties and fractal structure of concentrated polyion complexes of chitosan and alginate
- Medin AS, Janson JC// Uppsala Univ, Biochem Separat Ctr, Box 577, S-75123 Uppsala, Sweden
Carbohydr Polym 1993 22 (2) 127
Studies on aqueous polymer two-phase systems containing agarose
- Muramatsu T, Yamada K, Date M, Yoshioka S// Nagasaki Univ, Fac Fisheries, Div Biochem, Nagasaki 852, Japan
Biosci Biotechnol Biochem 1993 57 (12) 1990
Action of poly(β -D-mannuronate)lyase from *Turbo cornutus* on oligomeric substrates
- Muramatsu T, Katsuki F, Miyazaki M// Nagasaki Univ, Fac Fisheries, Div Biochem, Nagasaki 852, Japan
Biosci Biotechnol Biochem 1993 57 (12) 2168
Change in ultraviolet absorption spectra of polyguluronate caused by poly(α -L-guluronate)lyase and activity measurement by the circular dichroic spectral change
- Nakamura K, Harada K, Tanaka Y// Hokkaido Univ, Fac Sci, Dept Polym Sci, Kita ku, Sapporo, Hokkaido 080, Japan
Food Hydrocolloid 1993 7 (5) 435
Viscoelastic properties of aqueous gellan solutions: The effects of concentration of gelation
- Nordmeier E, Rad D// Platanenallee 9, D-49152 Bad Essen 1, FRG
J Polym Sci B-Polym Phys 1994 32 (1) 63
Light scattering studies of copolymers. 1. Soluble hemoglobin/dextran complexes
- Ogawa E// Showagakuin Jr Coll, Ichikawa, Chiba 272, Japan
Food Hydrocolloid 1993 7 (5) 397
Osmotic pressure measurements for gellan gum aqueous solutions
- Oh BK, Park CK, Lee YM// *Hanyang Univ, Coll Engr, Dept Ind Chem, Seoul 133791, South Korea
Polym Bull 1993 31 (6) 723
Dehydration of aqueous pyridine solution through crosslinked chitosan membrane
- Okamoto T, Kubota K, Kuwahara N// Gunma Univ, Fac Technol, Dept Biol & Chem Engr, Kiryu, Gunma 376, Japan
Food Hydrocolloid 1993 7 (5) 363
Light scattering study of gellan gum
- Padua GW// Univ Illinois, Dept Food Sci, 382 AESB, 1304 West Penn Ave, Urbana, IL 61801, USA
J Food Sci 1993 58 (6) 1426
Microwave heating of agar gels containing sucrose
- Peng T, Yao KD*, Yuan C, Goosen MFA// *Tianjin Univ, Dept Mat Sci & Engr, Tianjin 30072, Peoples Rep China
J Polym Sci A-Polym Chem 1994 32 (3) 591
Structural changes of pH-sensitive chitosan polyether hydrogels in different pH solution
- Pueyo ME, Darquy S, Capron F, Reach G// *Hop Hotel Dieu, Serv Diabetol, INSERM, U341, 1 Pl Parvis Notre Dame, F-75181 Paris 04, France
J Biomater Sci-Polym Ed 1993 5 (3) 197
In vitro activation of human macrophages by alginate polylysine microcapsules
- Safarik I, Safarikova M// Inst Landscape Ecol, Dept Analyt Chem & Biochem, Branisovska 31, CS-37005 Ceske Budejovice, Czech Rep
J Biochem Biophys Meth 1993 27 (4) 327
Batch isolation of hen egg white lysozyme with magnetic chitin
- Sato I, Zu J, Nishikawa S, Kashimura N// *Mie Univ, Fac Bioresources, Dept Biosci, Biofunt Chem Lab, Kamihamacho, Tsu, Mie 514, Japan
Biosci Biotechnol Biochem 1993 57 (12) 2005
Depolymerization of hyaluronic acid by D-fructose 6-phosphate
- Sekkal M, Huvenne JP*, Legrand P, Sombret B, Mollet JC, Mouradi-Givernaud A, Verdu MC// *Univ Lille 1, LASIR, CNRS, UPR A2631 L, Bat C5, F-59655 Villeneuve Dascq, France
Mikrochim Acta 1993 112 (1-4) 1
Direct structural identification of polysaccharides from red algae by FTIR microspectrometry. 1. Localization of agar in *Gracilaria verrucosa* sections
- Shand PJ, Sofos JN, Schmidt GR// Univ Saskatchewan, Dept Appl Microbiol & Food Sci, Saskatoon, Saskatchewan, Canada S7N 0W0
J Food Sci 1993 58 (6) 1224
Properties of algin calcium and salt phosphate structured beef rolls with added gums
- Shimazaki T, Ogino K// Chiba Inst Technol, Fac Engr, Dept Ind Chem, 2-17-1 Tsudanuma, Narashino, Chiba 275, Japan
Food Hydrocolloid 1993 7 (5) 417
Viscoelastic properties of gellan gum aqueous solutions
- Sinquin A, Hubert P*, Dellacherie E// *ENSIC, Chim Phys Macromolec Lab, CNRS, URA 494, BP 451, F-54001 Nancy, France
Langmuir 1993 9 (12) 3334
Amphiphilic derivatives of alginate: Evidence for intramolecular and intermolecular hydrophobic associations in aqueous solution (Letter)
- Suzuki M, Kikuchi T, Takatsuki F, Hamuro J// Ajinomoto Co Inc, Cent Res Labs, Basic Res Labs, 1-1 Suzuki cho, Kawasaki ku, Kawasaki 210, Japan
Cancer Immunol Immunother 1994 38 (1) 1
Curative effects of combination therapy with lentinan and interleukin-2 against established murine tumors, and the role of CD8-positive T-cells
- Takai Y, Goodman GB, Chaplin DJ, Grulkey W, Lam GKY// Tohoku Univ, Fac Med, Dept Radiol, 1-1 Seiryomachi, Aoba ku, Sendai, Miyagi 980, Japan
Int J Oncol 1994 4 (2) 385
Combination therapy of single or fractionated X-rays and schizophyllan (SPG) for murine B-16 melanoma
- Takeo K, Kawaguchi M, Kitamura S// Kyoto Prefectural Univ, Dept Agr Chem, Kyoto 606, Japan
J Carbohydr Chem 1993 12 (8) 1043
Synthesis of polyacrylamide copolymers containing (1 $\rightarrow$ 6) branched (1 $\rightarrow$ 3)- β -D-linked tri and tetra-saccharides related to schizophyllan
- Tanada S, Kyotani S, Nakamura T, Nishioka Y// Kinki Univ, Fac Pharmaceut Sci, Kowakae 3-4-1, Osaka 577, Japan
Bull Environ Contam Toxicol 1994 52 (3) 432
Acceleration of paraquat adsorption onto chitosan by the presence of sodium chloride
- Tanaka Y, Sakurai M, Nakamura K// Hokkaido Univ, Fac Sci, Dept Polymer Sci, Sapporo, Hokkaido 060, Japan
Food Hydrocolloid 1993 7 (5) 407
Ultrasonic velocities in aqueous gellan solutions

- Tani M, Tanimura H, Yamaue H, Tsunoda T, Iwahashi M, Noguchi K, Tamai M, Hotta T, Mizobata S// Wakayama Med Coll, Dept Gastroenterol Surg, 27 Shichiban cho, Wakayama 640, Japan
Anticancer Res 1993 13 (5C) 1773
Augmentation of lymphokine-activated killer cell activity by lentinan
- Terayama H, Kuzuhara H, Takahashi S*, Sakuda S, Yamada Y// *Inst Phys & Chem Res RIKEN, Wako, Saitama 35101, Japan
Biosci Biotechnol Biochem 1993 57 (12) 2067
Synthesis of a new allosamidin analog, *N,N'*-diacetyl- β -chitobiosyl allosamidine, and its inhibitory activity against some chitinases
- Thome JP, Jeuniaux C// Univ Liege, Inst Zool, Morphol Systemat & Ecol Anim Lab, 22 Quai van Beneden, B-4020 Liege, Belgium
Bull Soc Zool Fr 1993 118 (3) 339
Biotechnological applications of chitin and chitosan in environmental protection and medicine
- Tomida H, Nakamura C, Yoshitomi H, Kiryu S// Fukuyama Univ, Fac Pharm & Pharmaceut Sci, Sanzo 1, Fukuyama, Hiroshima 72902, Japan
Chem Pharm Bull Tokyo 1993 41 (12) 2161
Preparation of theophylline-loaded calcium alginate gel capsules and evaluation of their drug release characteristics
- Torres LG, Nienow AW, Sanchez A, Galindo E*// *Univ Nacl Autonoma Mexico, Inst Biotecnol, Dept Bioingen, Apdo Postal 510-3, Cuernavaca 62271, Morelos, Mexico
Bioprocess Eng 1993 9 (6) 231
The characterization of a viscoelasticity parameter and other rheological properties of various xanthan gum fermentation broths and solutions
- Tsutsumi A, Ya D, Hiroaki T, Mochiku H, Yamaguchi R, Takahashi N// Hokkaido Univ, Fac Engn, Dept Appl Phys, Sapporo, Hokkaido 060, Japan
Food Hydrocolloid 1993 7 (5) 427
ESR studies of Mn(II) binding to gellan and carrageenan gels
- Volpi N// Univ Modena, Dept Anim Biol, via Berengario 14, I-41100 Modena, Italy
J Chromatogr-Biomed Appl 1993 622 (1) 13
Characterization of heparins with different relative molecular masses (from 11 600 to 1600) by various analytical techniques
- Watase M, Nishinari K// Shizuoka Univ, Fac Liberal Arts, Chem Res Lab, Ohya, Shizuoka 422, Japan
Food Hydrocolloid 1993 7 (5) 449
Effect of potassium ions on the rheological and thermal properties of gellan gum gels
- Wilkins MJ, Davies MC, Jackson DE, Roberts CJ, Tendler SJB// Univ Nottingham, Dept Pharmaceut Sci, Biophys & Surface Anal Lab, Univ Pk, Nottingham NG7 2RD, England
J Microsc-Oxford 1993 172 (3) 215
An investigation of substrate and sample preparation effects on scanning-tunnelling microscopy studies on xanthan gum
- Yoshida H, Takahashi M// Tokyo Metropolitan Univ, Fac Engn, Minami Oh-sawa, Hachioji, Tokyo 19203, Japan
Food Hydrocolloid 1993 7 (5) 387
Structural change of gellan hydrogel induced by annealing
- Yuguchi Y, Mimura M, Kitamura S, Urakawa H, Kajiwaru K*// *Kyoto Inst Technol, Fac Engn & Design, Sakyo ku, Kyoto, Japan
Food Hydrocolloid 1993 7 (5) 373
Structural characteristics of gellan in aqueous solution
- Ctr, Labs Complex, Lahore 54600, Pakistan
Folia Microbiol Prague 1993 38 (6) 509
Effects of photon flux density, CO₂ aeration rate, and inoculum density on growth and extracellular polysaccharide production by *Porphyridium cruentum*
- Kasapis S// Cranfield Inst Technol, Silsoe Coll, Dept Food Res & Technol, Silsoe, Beds, England
Food Sci Technol-Lebensm Wiss 1993 26 (6) 572
A study on the unusual spectroscopic behaviour of the *Rhizobium* capsular polysaccharide
- Kiho T, Hui J, Yamane A, Ukai S*// *Gifu Pharmaceut Univ, 5-6-1 Mitahora Higashi, Gifu 502, Japan
Biol Pharm Bull 1993 16 (12) 1291
Polysaccharides in fungi. 32. Hypoglycemic activity and chemical properties of a polysaccharide from the cultural mycelium of *Cordyceps sinensis*
- Kunou M, Akaike T, Hatanaka K*// *Tokyo Inst Technol, Dept Biomolec Engn, 4259 Nagatsuta cho, Midori ku, Yokohama, Kanagawa 227, Japan
J Biomater Sci-Polym Ed 1993 5 (3) 259
Effect of sulfated polysaccharides on hepatocyte adhesion
- Mitra A, Nath RK, Chakraborty AK*// *Tripura Univ, Dept Chem, Agartala 799004, Tripura, India
Colloid Polym Sci 1993 271 (11) 1042
Interaction of bacterial acidic polysaccharide with cationic dyes
- Mukhopadhyay C, Bush CA// Univ Maryland, Dept Chem & Biochem, Catonsville, Md 21228, USA
Biopolymers 1994 34 (1) 11
Molecular dynamics simulation of oligosaccharides containing *N*-acetyl neuraminic acid
- Parsons CL// Univ Calif San Diego, Med Ctr, Div Urol, 200 West Arbor Dr, San Diego, Ca 92103, USA
Urol Clin Nih Amer 1994 21 (1) 93
The therapeutic role of sulfated polysaccharides in the urinary bladder
- Quesada E, Bejar V, Calvo C// Univ Granada, Fac Pharm, Dept Microbiol, Campus Univ Cartuja, E-18071 Granada, Spain
Experientia 1993 49 (12) 1037
Exopolysaccharide production by *Volcaniella eurihalina*
- Reeslev M, Jorgensen BB, Jorgensen OB// Univ Copenhagen, Dept Gen Microbiol, Solvgade 83H, DK-1307 Copenhagen K, Denmark
J Gen Microbiol 1993 139 (12) 3065
Influence of Zn²⁺ on yeast-mycelium dimorphism and exopolysaccharide production by the fungus *Aureobasidium pullulans* grown in a defined medium in continuous culture
- Samant SK, Singhal RS, Kulkarni PR*, Rege DV// *Univ Bombay, Dept Chem Technol, Div Food & Fermentat Technol, Bombay 400019, India
Int J Food Sci Technol 1993 28 (6) 547
Protein-polysaccharide interactions: A new approach in food formulations
- Sekkal M, De Clerck C, Huvenne JP*, Legrand P, Sombret B, Verdus MC// *Univ Lille 1, LASIR, CNRS, UPR A2631 L, Bat C5, F-59655 Villeneuve Dascq, France
Mikrochim Acta 1993 112 (1-4) 11
Direct structural identification of polysaccharides from red algae by FTIR microspectrometry. 2. Identification of the constituents of *Gracilaria verrucosa*
- Tomoda M, Matsumoto K, Shimizu N, Gonda R, Ohara N// Kyoritsu Coll Pharmaceut Sci, Shibakoen, Minato ku, Tokyo 105, Japan
Biol Pharm Bull 1993 16 (12) 1207
Characterization of a neutral and an acidic polysaccharide having immunological activities from the root of *Paonia lactiflora*
- Votselko SK, Pirog TP, Malashenko YR, Grinberg TA// Ukrainian Acad Sci, Inst Microbiol & Virol, 154 Zabolotnogo St, Kiev 252627, Ukraine
J Microbiol Meth 1993 18 (4) 349
A method for determining the mass-molecular composition of microbial exopolysaccharides

7 POLYSACCHARIDES - OTHER

- Ball JW, Jurs PC*// *Penn State Univ, Dept Chem, 152 Davey Lab, Univ Pk, Pa 16802, USA
Anal Chem 1993 65 (24) 3615
Simulation of polysaccharide ¹³C nuclear magnetic resonance spectra using regression analysis and neural networks
- Cesaro A, Cumani J, Geciova R, Michelazzo F// Univ Trieste, Dept Biochem Biophys & Macromolec Chem, I-34127 Trieste, Italy
Thermochim Acta 1993 227 167
A calorimetric study of cooperative phase equilibria in microbial polysaccharides
- De Pinto GL, Martinez M, Ortega S, Villavicencio N, Borjas L// Univ Zulia, Fac Humanidades & Educ, Invest Quim Lab, Apdo 526, Maracabo, Venezuela
Biochem Syst Ecol 1993 21 (8) 795
Comparison of gum specimens from *Acacia tortuosa* and other Gummiferae species
- Iqbal M, Zafar SI// Pakistan Council Sci & Ind Res, Biotechnol & Food Res

8 LIPOPOLYSACCHARIDES

- Aspinall GO, McDonald AG, Pang H, Kurjanczyk LA, Penner JL// York Univ, Dept Chem, Nth York, Ontario, Canada M3J 1P3
Biochemistry-USA 1994 33 (1) 241
Lipopolysaccharides of *Campylobacter jejuni* serotype O:19. Structures of core oligosaccharide regions from the serostrain and two bacterial isolates from patients with Guillain-Barre syndrome
- Aspinall GO, McDonald AG, Pang H// York Univ, Dept Chem, Nth York M3J 1P3, Ontario, Canada
Biochemistry-USA 1994 33 (1) 250

Lipopolysaccharides of *Campylobacter jejuni* serotype-O:19. Structures of O-antigen chains from the serostrain and two bacterial isolates from patients with the Guillain-Barre syndrome

Nazarenko EL, Zubkov VA, Shashkov AS, Knirel YA, Komandrova NA, Gorshkova RP, Ovodov YS// Russian Acad Sci, Pacific Inst Bioorgan Chem, Vladivostok, Russia

Bioorg Khim 1993 19 (10) 989

Structure of the repeating unit of the O-specific polysaccharides from *Vibrio fluvialis* (Russian, English Abstract)

Nifantev NE, Shashkov AS, Lipkind GM, Kochetkov NK, Jann B, Jann K// ND Zelinsky Organ Chem, Moscow, Russia

Bioorg Khim 1993 19 (10) 981

Computer-assisted structural analysis of the *Escherichia coli* O1A, O1B, and O1C specific polysaccharides (Russian, English Abstract)

Shashkov AS, Kocharova NA, Knirel YA, Varbanets LD, Moskalenko NV, Zdokhlyi AV// ND Zelinskii Inst Organ Chem, Moscow, Russia

Bioorg Khim 1993 19 (11) 1089

Antigenic polysaccharides of bacteria. 38. The structures of the O-antigens of *Pseudomonas solanacearum* ICMP-7942 and ICM-8169 (Russian, English Abstract)

Vinogradov EV, Stuikeprill R, Bock K, Holst O*, Brade H// *Forschungsinstitut Borstel, Inst Exptl Biol & Med, Div Biochem Microbiol, Parkallee 22, D-23845 Borstel, FRG

Eur J Biochem 1993 218 (2) 543

The structure of the carbohydrate backbone of the core lipid A region of the lipopolysaccharide from *Vibrio cholerae* strain H11 (non-O1)

Vinogradov EV, Knirel YA, Kochetkov NK, Radziewska-Lebrecht J, Kaca W// ND Zelinskii Inst Organ Chem, Moscow, Russia

Bioorg Khim 1993 19 (11) 1132

Structural study of O-specific polysaccharides of *Proteus mirabilis* O28 and 3/6 containing amides of D-galacturonic acid with L-amino acids: C-methylation and β -elimination in residues of serine and threonine in the course of methylation analysis (Russian, English Abstract)

9 STARCH

Aiyeyele FB, Akingbala JO, Oguntimein GB*// *Univ Ibadan, Dept Food Technol, Ibadan, Nigeria

Starch 1993 45 (12) 443

Chemical factors affecting acetylation of cassava starch

Bertoft E, Qin Z, Manelius R// Univ Turku, Abo Akad, Dept Biochem & Pharm, POB 66, SF-20521 Turku, Finland

Starch 1993 45 (12) 420

Studies on the structure of pea starches. 4. Intermediate material of wrinkled pea starch

Chang WC// Chung Hua Polytech Inst, Dept Civil Engr, Hsinchu 30067, Taiwan

Angew Makromol Chem 1993 213 81

Indium ion removal and recovery by means of water-insoluble amphoteric starches

Fujio Y, Igura N, Hayashi N, Hayakawa I// Kyushu Univ, Fac Agr, Dept Food Sci & Technol, Higashi ku, 6-10-1 Hakozaki, Fukuoka 812, Japan

Starch 1993 45 (12) 432

Molecular depolymerization of moist sweet potato starch melt by shearing force under an elevated temperature

Fujita S, Morita T, Fujiyama G// Tsu City Coll, Dept Food & Nutr, Ishinden 157, Tsu, Mie 51401, Japan

Starch 1993 45 (12) 436

A study of melting temperature and enthalpy of starch from rice, barley, wheat, foxtail and proso millets

Gholap AV, Marondeze LH, Tomasik P// Univ Zimbabwe, Fac Sci, Dept Phys, POB MP 167, Harare, Zimbabwe

Starch 1993 45 (12) 430

Dextrinization of starch with nitrogen laser

Jenkins JPJ, Cameron RE, Donald AM// Univ Cambridge, Cavendish Lab, Madingley Rd, Cambridge CB3 0HE, England

Starch 1993 45 (12) 417

A universal feature in the structure of starch granules from different botanical sources

Khalil MI, Mostafa KM, Hebeish A// Natl Res Ctr, Cairo, Egypt

Angew Makromol Chem 1993 213 43

Graft polymerization of acrylamide onto maize starch using potassium persulfate as initiator

Korotchenko KA, Sharpatyi VA// NN Semenov Chem Phys Inst, Moscow, Russia

High Energy Chem-Engl Tr 1993 27 (4) 289

Mechanism for formation of dicarboxylic acids in corn starch by γ -ray irradiation in the presence of oxygen

Kulicke WM, Roessner D, Kull W// Univ Hamburg, Inst Tech & Makromolek Chem, Bundesstr 45, D-20146 Hamburg, FRG

Starch 1993 45 (12) 445

Characterization of hydroxyethyl starch by polymer analysis for the use as a plasma volume expander

Orford PD, Parker R*, Ring SG// *AFRC Inst Food Res, Norwich Lab, Colney Lane, Norwich NR4 7UA, England

J Cereal Sci 1993 18 (3) 277

The functional properties of extrusion-cooked waxy-maize starch

Petrucelli S, Zamponi RA, Jovanovich G, Anon MC*// *Univ Nacl La Plata, Consejo Nacl Invest Cient & Tecn, Fac Ciencias Exactas, CIDCA, Calle 47 & 116, RA-1900 La Plata, Buenos Aires, Argentina

J Food Biochem 1993 17 (3) 161

Characterization of fermented cassava starches

Raphaelides SN// TEI, Sch Food Technol & Nutr, SINDO, POB 14561, Thessaloniki, Greece

Food Hydrocolloid 1993 7 (6) 479

Rheological studies of starch fatty acid gels

Shogren RL// USDA ARS, Natl Ctr Agr Utilizat Res, Plant Polymer Res Unit, 1815 Nth Univ St, Peoria, IL 61604, USA

Carbohydr Polym 1993 22 (2) 93

Complexes of starch with telechelic poly(ϵ -caprolactone) phosphate

Sievert D, Wursch P// Nestle Res Ctr, Vers Chez Les Blanc, POB 44, CH-1000 Lausanne 26, Switzerland

J Food Sci 1993 58 (6) 1332

Amylose chain association based on differential scanning calorimetry

Tewierik GHP, Eissens AC, Lerk CF*// *Univ Groningen, Dept Pharmaceut Technol & Biopharm, Ant Deusinglaan 1, 9713 AV Groningen, The Netherlands

Pharmaceut Res 1994 11 (1) 108

Preparation, characterization, and pharmaceutical application of linear dextrin. 3. Drug release from fatty suppository bases containing amylopectin

Vallera AM, Cruz MM, Ring S, Boue F// Univ Lisbon, Dept Fis, Campo Grande Edificio C1, P-1700 Lisbon, Portugal

J Phys-Condens Matter 1994 6 (2) 311

The structure of amylose gels

Venancio A, Teixeira JA*, Mota M// *Univ Oporto, Ctr Engr Quim, R Bragas, P-4099 Oporto, Portugal

Biotechnol Progr 1993 9 (6) 635

Evaluation of crude hydroxypropyl starch as a bioseparation aqueous phase-forming polymer

Zhang Q, Abe T, Ando H, Sasahara T// Yamagata Univ, Fac Agr, Plant Breeding Lab, Tsuruoka, Yamagata 997, Japan

Ann Bot 1993 72 (6) 551

Classification of glutinous rice (*Oryza sativa* L) starches based on X-ray diffraction pattern

10 STARCH-DEGRADING ENZYMES

De Cordt S, Hendrickx M*, Maesmans G, Tobback P// *Katholieke Univ Leuven, Fac Agr & Appl Biol Sci, Ctr Food Sci & Technol, Food Preservat Unit, B-3001 Haverlee, Belgium

Biotechnol Bioeng 1994 43 (2) 107

The influence of polyalcohols and carbohydrates on the thermostability of α -amylase

Denter U, Knittel D, Schollmeyer E// Univ Duisburg Gesamthsch, Deutsch Text Forschungszentrum NW eV, Frankenring 2, D-47798 Krefeld, FRG

Starch 1993 45 (12) 441

Contribution to the enzymatic degradation of starch sizing agents on a textile fabric (German, English Abstract)

Erdal K// Address not available.

Monatsschr Brauwissen 1993 46 (12) 461

Determination of α - and β -amylase in malt (German, English Abstract)

Nebesny E// Tech Univ Lodz, Dept Food Technol, Stefanowski St 4-10, PL-90924 Lodz, Poland

Starch 1993 45 (12) 426

Changes of carbohydrate compositions during enzymatic hydrolysis of starches of various origin