

## POSTER SESSION I

Sunday, September 9

### Applications-Biomedical

- P001** Evaluation of Semi-Interpenetrating Polymer Networks Composed of Chitosan and Poloxamer for Wound Dressing Application  
Mi-Kyong Yoo, In-Yong Kim, Sung-Sik Park, Hee-Sam Na, Hyun-Chul Lee, Se-Kwon Kim, Chong-Su Cho
- P002** Biomimetic Hybrid Scaffolds For Tissue Engineering Applications  
Sinan Güven, Nesrin Hasirci, Sevda Müftüoğlu, Kezban Ulubayram
- P003** Characterization of Glyoxal Crosslinked Chitosan Hydrogels from Shrimp (*Pleuroncodes planipes*) for Skin Tissue Engineering Applications  
M. Guerrero, S. Madrigal, M. Rojas, A Sánchez, M. Sibaja
- P004** Biocompatibility Assessment Of Alginate/Chitosan Scaffolds As Tissue Engineering Matrices  
Nalan Özdemir, Cem Bayram, Şükran Yılmaz, Eylem Öztürk, Emir B. Denkbaş
- P005** Synthesis of 2-benzylamino-2-deoxy-D-glucose and the biological inhibitory activity against T-type calcium channel  
Kee Dal Nam, Heduck Mah, Dongyun Shin and Hoh-Gyu Hahn
- P006** Synthesis of O-(Quinolone-3-carboxyl) Chitosan Derivatives as an Antibacterial Effect  
Soung-Ryual Ryu, Ga-youn Ryu, Kwang-Sim Yoon, Kwang-Hyun No
- P007** Carboxymethylated Chitosan Microspheres Including Magnetical Microparticles For Diverse Biotechnological Applications  
Tamer Çirak, Berna Berberoğlu, Eylem Öztürk, Doğa Kavaz, Osman Kazak, Emir Baki Denkbaş
- P008** Preparation of Chitosan-Polyethylene glycol Microspheres as Controlled Release Systems  
Ismail Doğan Günbaş, Nesrin Hasirci
- P009** Physical Properties And Adsorption Performance Of Chitosan Nanoparticles Prepared By Precipitation/Coacervation Method  
Ru-Ling Tseng
- P010** Effect Of Ultrasonication On The Size Of Chitosan Nanoparticles  
Yavuz Gokce, Burcu Cengiz, Nuray Yildiz, Zeki Aktas, Ayla Calimli
- P011** Preparation and Evaluation of Surface-Modified PLGA Microparticles with Chitosan for Pulmonary Delivery of Proteins  
B. Devrim, A. Bozkir, K. Canefe
- P012** Physical Properties And Adsorption Performance Of Chitosan Micro- & Nano-Particles Prepared By Various Mixing Methods  
Feng-Chin Wu

- P013** Development Of Mucoadhesive Films For The Buccal Delivery Of Dihydroergotamine Methanesulfonate  
M. Marciello, S. Rossi, F. Ferrari, G. Sandri, M.C. Bonferoni, C. Caramella
- P014** Interaction Of Palmitoyl Glycol Chitosan Polymeric Micelles With A Corneal Epithelial Cell Culture  
Maria Cristina Bonferoni, Giuseppina Sandri, Sara Gibin, Silvia Rossi, Franca Ferrari, Ylenia Zambito, Carla Caramella
- P015** Freeze-Dual Crosslinking Method For Preparation Of Chitosan-Alginate Scaffolds  
Wipaporn Rojanarat, Luelak Lomlim, Kwunchit Oungbho
- P016** Radiation Synthesis of Antibacterial PVA/Chitosan Hydrogel  
M. Mahlous, D. Tahtat, S. Benamer, A. Nacer Khodja, S. Larbi Youcef, N. Hadjarab, W.Mezaache
- P017** Evaluation of Nano Encapsulation Techniques in Different Polymeric Systems for the Delivery of Anti-Tuberculosis Drugs  
L. Kalombo, H. Swai, S. Naidoo, K. Rapatla, B. Semete, P. Chelule
- P018** Composite Materials On The Basis Of Chitosan And Polyacrylonitrile  
Alekeyeva M.F., Nistratov V.P., Mochalova A.E., Andrijanova N.A., Smirnova L.A.
- P019** Evaluation of Mechanical Properties of Miconazole Nitrate Vaginal Gel Formulation Consisting Chitosan  
E. Baloğlu, S.Y. Karavana, Z. Ay, T. Güneri
- P020** The Antifungal Activity Studies of Chitosan Gels Incorporated with Terbinafine Hydrochloride on Filamentous Fungi  
Ipek Özcan, Buket Aksu, Özlem Abacı, Alev Haliki, Hayal Boyacıoğlu, Tamer Güneri, Sevda Şenel, Özgen Özer
- P021** Chitosan-based Preparations For Medicine, Veterinary And Food Industry  
A. I. Albulov
- P022** Enzyme Replacement Therapies: the Case of the Prolidase Deficiency  
Claudia Colonna, Bice Conti, Paola Perugini, Franca Pavanetto, Tiziana Modena, Rossella Dorati, Ida Genta
- P023** Reinforcement of Chitosan-Glycerophosphate Hydrogels with Glyoxal Cross-Linker  
A. Chenite, C. Jarry, M. Garon, E. A. DesRosiers
- P024** Antimicrobial Effect of the Cinnamaldehyde N-acylated Chitosan Derivative Against some Agricultural Pathogen Agents  
G. Porras, M. Calvo, M. Esquivel, M. Sibaja, S. Madrigal-Carballo
- P025** Hydroxyapatite – Chitosan Biocomposites  
M. Ratajska, K. Haberko, D. Ciechańska, A. Niekraszewicz, M. Kucharska, M.H. Struszczyk

- P026** Biomaterials Research Trends in Institute of Biopolymers and Chemical Fibres  
D. Ciechańska, A. Niekraszewicz, M. Kucharska, G. Strobin, M. Wiśniewska-Wrona,  
M. H. Struszczyk
- P027** Preparation of Chitosan/Methylcellulose Fibers for Sulture Application  
Piyabutr Wanichpongpan, Wimolsiri Pridasawas, Onsri Chananya and Wiwat  
Ruenglertpanyakul
- P028** Chitosan/Cyclodextrin Nanoparticles as New Carriers for Nasal Delivery of  
Macromolecules: In Vivo Study of Insulin-Loaded Nanoparticles  
C. Remuñán-López, D. Teijeiro-Osorio and M.J. Alonso

### Enzymatic aspects - Chitooligosaccharides

- P029** Increase of Protease and Cellulase Activities From Bacillus Subtilis and Their Chitosan  
Hydrolytic Ability  
Li-Jung Yin
- P030** Classification Of Chitosanases By Hydrolytic Specificity Against N, N4-  
Diacetylchitohexaose  
Masaru Mitsutomi, Masamichi Watanabe, Katsuaki Hirano, Kiyohiko Seki
- P031** Chitosanase From The Strain Bacillus Subtilis EGE 1.19 As An Alternative Biocontrol Agent  
Ozlem Imamoglu, In-Jae Oh, Nermin Sarigul, Rengin Eltem, Ro-Dong Park
- P032** Cleavage Of N-Acetylchitooligosaccharides By 46 Kda Endochitinase From Paecilomyces  
Sp. DG-3  
In-Jae Oh, Van-Nam Nguyen, Gyung-Hyun Jo, Ro-Dong Park
- P033** Characterisation of the Lactococcus lactis ssp. lactis IL1403 Chitinase and Chitin Binding  
Protein  
Gustav Vaaje-Kolstad, Anne Cathrine Bunæs, Geir Mathiesen, Vincent G.H. Eijsink
- P034** Characterization of Aromatic Mutants of Chitinase A from Serratia Marcescens Towards  
Chitooligosaccharide Substrates  
H. Zakariassen, B.B. Aam, M. Sørli, V.G.H. Eijsink
- P035** Chitosan degradation with chitinase G from Streptomyces coelicolor A3(2)  
E.B. Heggset, M. Kristoffersen, I.A. Alne, S.J. Horn, V.G.H Eijsink, K.M. Vårum
- P036** Diverse Mode Of Action In Enzymatic Hydrolysis Of Chitosan By Three Family 18  
Chitinases From Serratia Marcescens.  
P. Sikorski, A. Sørbotten, S.J. Horn, V.G. H. Eijsink, K.M. Vårum

### Chemical and Physical Aspects

- P037** Adsorption Kinetics Of Some Toxic Dyestuffs From Aqueous Solution By Chitin Derivatives  
Gülbahar Akkaya, Ilhan Uzun, Fuat Güzel
- P038** Chiqual A T-SAR guided Multi-dimensional Analysis for Quality Assessment of Chitosan  
N. Keddig, J. Sauvageau, M. Weinhold, Z. Kaczynski, M. Matzke, S. Stolte, D. Grotheer,  
K. Heppe, B. Tartsch, P. Clarke, J. Warrelmann, W. Heyser, B. Jastorff, J. Thöming

- P039** Preparation and Characterization of Chitosan-TPP Nanoparticles and Their Use for Nickel (Ni<sup>2+</sup>) Ion Sorption  
Serkan Keleşoğlu, Mürşide Kes, Didem Şen, Hürriyet Polat
- P040** Swelling Behaviors and Electric Response of Porous Chitosan Hydrogel  
Byung Ok Jung, Suk-Jin Chung, Sang Bong Lee, Jaesik Na
- P041** Study on the Physico-Mechanical Properties of Photo-cured Chitosan films with oligomer and Acrylic Monomers  
Mubarak A. Khan, Rashidul Alam, M. I. H. Mondal, Ruhul A. Khan, Sushanta Ghoshal
- P042** Characterization of the Products Formed During the Dry Heating of Chitosan  
M. Mengibar, A. Heras, B. Miralles
- P043** Mechanical and Functional Properties of Chitosan Composite Biobased Films  
O. Cota-Arriola, A. Jáuregui-Cornejo, A.P. Martínez-Camacho, M.O. Cortez-Rocha, M.M. Castillo-Ortega, M. Plascencia-Jatomea
- P044** Effect of Hydroxyethylation on Structure and Properties of Chitosan Fibers  
Yongle Liu, Zhaofeng Liu, Junrong Yu, Zuming Hu
- P045** Radiation Degradation of Chitosan in Solid State and in Solution  
M. Mahlous, S. Benamer, D. Tahtat, A. Nacer khodja, S. Larbi Youcef
- P046** Preparation and Characterization of Chitosan/Montmorillonite Biocomposites  
A. Altınışık, Y. Seki, K. Yurdakoç
- P047** Removal of Heavy Metal Ions from Aqueous Solution by Fe<sub>0</sub> Particles Supported on Chitosan  
Serkan Keleşoğlu, Mürşide Kes, Hürriyet Polat

### Sources, Isolation and Production

- P048** Synthesis and Characterisation of Chitosan Combs by ATRP  
Natasha H. Munro, Lyall R. Hanton, Stephen C. Moratti, Brian H. Robinson
- P049** Study On Hydrolysis Of Chitosan By Cellulase Combined With Gamma Irradiation  
Nguyen Anh Dzung, Pham Quang Anh, Pham Thi Anh Hong
- P050** Synthesis, Characterization and Properties of Chitosan Modified with Poly (ethylene glycol)-Polydimethylsiloxane Amphiphilic Block Copolymers  
Metha Rutnakornpituk, Paradon Ngamdee
- P051** Chitosan Oligomer as a Hopeful Adjuvant for H5N1 Bird Flu Vaccine  
Le Van Hiep, Mai Thi Thanh, Dang Thi Hong Van, Nguyen Anh Dzung
- P052** Combination Effect of Shrimp Chitosan with Fish Amino Acid and Bamboo Vinegar on Chick Pea Production in Myanmar  
Thazin Han, Nitar Nwe, Mya Mya Oo, Kyaw Nyein Aye
- P053** Partial Characterization Of Chitinolytic Bacterial Diversity In Soils From Chitosan Producing Company And Their Potential To Yield Chitin-Degrading/Modifying Enzymes  
Subha Narayan Das, Anil Kondreddy, Nanda Kishore Mamidi, Neeraja Chilukoti, P.V.S.R.N. Sarma, Purushotham Pallinti, Dominique Gillet, Bruno Moerschbacher, Appa Rao Podile

- P054** Deproteinization of Crab Shell Waste by a Commercial Enzyme Delvolase®  
Gyung-Hyun Jo, Ro-Dong Park
- P055** Effects Of Food Components On The Inhibitory Activity Of Chitosan Against Staphylococcus Aureus  
Yun Hee Park, Y.F.Hong
- P056** Synthesis and Preliminary Biological Studies of O-Acyl and O-Alkyl Peptide Amio acid Chitosan at C-6 Hydroxyl Group as an Antibiotic Effect  
Soung-Ryual Ryu, Ga-youn Ryu, Toshihiko Watanabe, Takeshi Mikami, Tatsuji Matsumoto
- P057** Effects of Chitosan-Based Feed Supplement on Meat Quality of Broiler Chickens  
Kee Dal Nam, Yeon Su Kim, Tae Hyeoo Kim, Chong-Tai Kim
- P058** Chitosan And Its Uses In Textile Industry  
Asli Demir, Tulin Oktem
- P059** Managing Alkalinity in Earthen Intensive Shrimp Pond Using Chitosan  
Piyabutr Wanichpongpan, Wimolsiri Pridasawas, Wiwat Ruenglerpanyakul
- P060** Purification and characterization of N-acetyl- $\beta$ -D-hexosaminidase from wheat bran (*Triticum aestivum*)  
Wan-Taek Wu, Ro-Dong Park
- P061** Kinetic and Thermodynamic Studies of Adsorption Malachite Green on Chitosan Bead  
Zehra Bekçi, Yoldaş Seki, Coşan Özveri, Kadir Yurdakoç
- P062** Equilibrium Studies of Sorption Malachite Green on Chitosan Bead  
Zehra Bekçi, Yoldaş Seki, Coşan Özveri, Kadir Yurdakoç

## POSTER SESSION II

Monday, September 10

### Applications-Biomedical

- P063** L929 Fibroblastic Behavior On RGDS-Immobilized Chitosan Surfaces In Serum-Containing/Serum-Free Cultures  
Ayşe Karakeçili, T. Tolga Demirtaş, Menemşe Gümüşderelioğlu
- P064** Galactosylated Chitosan-graft-Polyethylenimine as a Gene Carrier for Hepatocyte Targeting  
Hu-Lin Jiang, You-Kyoung Kim, Rohidas Arote, Dhananjay Jere,  
Jung-Taek Kwon, Eun-Mi Kim, Hwan-Jeong Jeong, Myung-Haing Cho, Chong-Su Cho
- P065** Immune Stimulating Activities of Bordetella Bronchiseptica Antigens Containing Dermonecrotxin Loaded Mannosylated Chitosan Microspheres  
Hu-Lin Jiang, Mi Lan Kang, Ji-Shan Quan, Han Sang Yoo, Toshihiro Akaike,  
Chong-Su Cho

- P066** Antioxidant Activity Of Roselle Nanoparticles Loaded Chitosan-Hydroxypropylmethylcellulose Films  
Kwunchit Oungbho, Wipaporn Rojanarat, Namthip Jutipong, Nutthapon Rukworakit, Arunporn Itharat
- P067** Labeling of Diltiazem HCl Loaded Chitosan Microparticles With <sup>99m</sup>Tc  
Derya Ilem, Emel Öykü Çetin, Makbule Aşıkoğlu, Levent Kırılmaz
- P068** Preparation and Characterization of Cefadroxil-Loaded Chitosan Microspheres  
B.E. Güngör, E. Cevher, N. Bergişadi
- P069** Development and Validation of An Analytical Method for the Determination of PBN from Chitosan Nanoparticles  
Onur Pinarbasli, Yesim Aktas , Yilmaz Capan
- P070** Chitosan Nanoparticles for Targeted Cancer Therapy  
Eylem Öztürk, Doğa Kavaz, Çetin Kocaefe, Cem Bayram, Burcu Aslan, Emir Baki Denkbaş
- P071** Preparation and Modification of Chitosan-Polyvinylpyrrolidone Interpenetrated Microspheres for Biomedical Applications  
Taylan Özerkan, Nesrin Hasırcı
- P072** Nanostructure of Chitosan/DNA Nanoparticles Triggered by Added Salt and Hydrophobic Substituents  
Olga E. Philippova, Tatsuo Akitaya, Ildar R. Mullagaliev, Kenichi Yoshikawa, Alexei R. Khokhlov
- P073** In Situ Synthesis of Superparamagnetic Nanoparticles in Presence of Chitosan Hydrogel  
Yongliang Wang, Baoqiang Li, Yu Zhou, Dechang Jia
- P074** Immunology Effect Of Chitooligosaccharides In High-Fat-Diet Fed Rat  
Se-Young Choi, Yung-Jun Jang, Chi-Sun An, Pyo-Jam Park, Beong-Ou Lim
- P075** Effects Of Chitin Oligosaccharides On Production Of Reactive Oxygen Species And Matrix Metalloproteinases In Live Cells  
Nghiep Dai Ngo, Moon-Moo Kim, Se-Kwon Kim
- P076** Chitooligosaccharides Decreases Plasma Lipid Levels In Healthy Men  
Seung-Jae Lee, Eun-Kyung Kim, Jae-Young Je, Pyo-Jam Park
- P077** Explanation of the Extraordinary Effect of Chitinous Substance on Treatment of Various and Wide range of Diseases by the Cell Glycoside Chain Theory  
Yong-Beom Kim, Hang-Jin Kim
- P078** Assessment Of Chitosan Ascorbate Penetration Enhancement Properties Across Different Epithelia  
S. Rossi, M. Marciello, G. Sandri, M. C. Bonferoni, F. Ferrari, C. Caramella

- P079** Interaction/Entrapment Of Chitosan Associated SLN With Corneal Epithelium: Preliminary Ex Vivo Evaluation  
G. Sandri, M. C. Bonferoni, S Rossi, F Ferrari, Evren H. Gökçe, Carla Caramella
- P080** Inhibiting Action of Chitosan Citrate On Aminopeptidase: In Vitro And Ex Vivo Study On Vaginal Mucosa  
M.C. Bonferoni, G. Sandri, S. Rossi, F. Ferrari, C. Caramella
- P081** Preparation and Evaluation of Chitosan-based In Situ Gelling Ophthalmic Formulations Containing Ciprofloxacin  
Berrin Başaran, Asuman Bozkir
- P082** Preparation of Chitosan Coated Surgical gauze for Biomedical Applications  
Zinia Nasreen, Mubarak A. Khan, A. I. Mustafa, Ruhul A. Khan
- P083** Thermosensitive Chitosan-Pluronic Hydrogel for Tissue Engineering  
Yoon Ki Joung, Kyung Min Park, Sang Young Lee, Myung Chul Lee, Ki Dong Park
- P084** SaOs-2 Cell Proliferation on Micropatterned Chitosan Films  
Aysel Kızıltay, Mathildie Hindie, Nesrin Hasırcı, Vasif Hasırcı
- P085** New Fabrication Method for Tissue Engineering Chitosan Scaffold  
Chun-Ho Kim, Gun-Woo Kim, Yong Jae Gin, Insup Noh, Jaesik Na
- P086** Controlled Release And Penetration Of Arbutin From Water-In-Oil-In-Water Emulsions Containing Chitosan And Alginate  
Pawika Mahasawat, Sarunyoo Songkro, Kwunchit Oungbho
- P087** Synthesis and Antibacterial Activity of Quaternary Ammonium Chitosans Bearing Aromatic Moieties  
Warayuth Sajomsang, Supawan Tantayanon, Varawut Tangpasuthadol William H. Daly
- P088** Chitosan Gels Of Betamethasone-17-Valerate For Topical Delivery  
Taner Şenyiğit, Özgen Özer
- P089** In Vitro Evaluation of Compression Coated Ornidazole Tablets With Chitosan for Colon Specific Drug Delivery  
Mine Özyazıcı, Zeynep Ay
- P090** Chitosan as Gel Forming Excipient in Granule Formulations Containing an Anti-asthmatic Drug  
H. Eroglu, L. Oner
- P091** Nasal Administrations of Dimenhydrinate Chitosan Formulations : In Vitro, Ex Vivo and in Vivo Evaluation  
C.K. Özkan, Y. Özkan, U. Taşdemir, Ç. Taş , H. Erol, A. Savaşer, A. Turgut

- P092** Clinical Application Of UV-Curable Chitosan Derivative And Synthetic Resin Complex To Prevent Postoperative Pneumothorax In Diaphragmatic Hernia: A Case Report  
Eiko Renbutsu, Yasuhiko Okamura, Takeshi Tsuka, Yoshiharu Okamoto, Yoshihiko Omura, Saburo Minami
- P093** Chitosan/Glycerol Films Crosslinked With Genipin  
Susana Vílchez, Pilar Erra, Antonio Navarro
- P094** Immobilization of Candida Rugosa Lipase on Chitosan Beads and Its Hydrolysis Performance on Various Substrates  
Banu Ozturk Temur, Sebnem Harsa
- P095** Adhesion and Viability of Two Enterococcal Strains on Chitosan/k-carrageenan Multilayers  
S. Bratskaya, D. Marinin, F. Simon, A. Synytska, H.J. Busscher, D. Jager, H.C. van der Mei
- P096** Chitosan - Siloxane Hybrid Membranes. Synthesis and Physico-Chemical Characterization  
Daniela Enescu, Viorica Hamciuc, Lucia Pricop, Valeria Harabagiu Bogdan C. Simionescu
- P097** A Study To Improve Elastic Properties Of Di-Butyryl-Chitin (Dbc) Scaffolds  
Dicle Özdemir, Gustaaf Schoukens, Özer Göktepe, Fatma Göktepe
- P098** Applications of Chitosans With High Degree of Acetylation  
Robert Wahren

#### Enzymatic Aspects- Chitooligosaccharides

- P099** Isolation and Characterization of a Chitinolytic Enzyme Producing Microorganism, *Paenibacillus chitinolyticus* JK2 from Iran  
K. Jami al Ahmadi, J. Behravan, M. Tabatabaei yazdi, M. Fathi Najafi, AR. Shahverdi, M. A. Faramarzi, Gh. Zarrini
- P100** N-acetyl- $\beta$ -D-hexosaminidase Activity in Hen Egg White and Yolk  
Mi-Ra Kang, Na-Eh, Mo, Ji-Woon Park, Jong Kook Moon, Do Hyun Jo
- P101** Partial Characterization Of Chitinolytic Bacterial Diversity In Soils From Chitosan Producing Company And Their Potential To Yield Chitin-Degrading/Modifying Enzymes  
Subha Narayan Das, Anil Kondreddy, Nanda Kishore Mamidi, Neeraja Chilukoti, P.V.S.R.N. Sarma, Purushotham Pallinti, Dominique Gillet, Bruno Moerschbacher, Appa Rao Podile
- P102** Characterisation And Heterologous Expression Of Chitin-De-N-Acetylases From *Puccinia Graminis* And *Fusarium Graminearum*  
Andreas Schaaf, Beata Jasczuk, Christian Schulze Gronover, Aras Toker, Janina Hossbach, Bruno M. Moerschbacher



- P103** Chitosan – Soy Lecithin Mixed Vesicles: Rheological and Electrokinetic Behaviour  
S. Madrigal-Carballo, G. Porras, M. Manconi, S. Mura, D. Seyler, A. O. Vila, F. Molina
- P104** Inhibition Activity Of Lipases By Low-Molecular-Weight Chitosan From The Great Wax Moth, *Galleria Mellonella*  
E.S. Ostanina, V.P. Varlamov , G.I. Yakovlev
- P105** Inhibition Of A Glycoside Hydrolase Family 18 By Chitooligosaccharides: A Structure -And Function Analysis By MALDI-TOF/TOF MS  
F.H. Cederkvist, M.P. Parmer, K.M. Vårum, V.G.H. Eijsink, M. Sørlie
- P106** High-Resolution Mass Spectrometry For The Simultaneous Probing Of Multiple Competing Enzymatic Interactions  
F.H. Cederkvist, M. Mormann, M. Fröesch, V.C.H. Eijsink, M. Sørlie, J. Peter-Katalinic

### Diverse Applications- Food, Agriculture

- P107** Effect of Chitosan and Chitooligosaccharides on the Texture of Bread and Shelf Life of Noodles  
Aleksander Glonin, Garry Kerch
- P108** Chitosan Oligomer And Ascorbic Acid Salt in Compensation of Deficiency of Some Micronutrients  
Kirilenko Y.K., Cherkasova E.I., Sigilietov A.E., Dushkova Z.G.
- P109** Chitosan Oligomers Used As Prebiotics  
Kirilenko Y.K., Cherkasova E.I., Dushkova Z.G.
- P110** Chitosan Application in Natural Dyeing(I): Improving Dye Uptake of Cellulose Fibers with Safflower Yellow Colorants  
Younsook Shin, Dong Il Yoo, Kyunghee Son
- P111** Chitosan Application in Natural Dyeing(II): Improvement of Dye Uptake for Cotton and Ramie Fibers with Bamboo Colorants  
Dong Il Yoo, Younsook Shin, Arang Cho
- P112** Investigation of Treatment of Biomedical Wastewater with a Chitosan Adsorbent  
Jin Wook Kim, Je Jung Kim, Jae Sik Na
- P113** Synthesis and Evaluation of Chitosan–EDTA Derivative for Adsorption Study  
P.K.Dutta, S. Kumar
- P114** Effect of Sol-gel Reaction Conditions on Dehydration Performance of An Azeotrope of Ethanol /Water by Hybrid Membranes from Quaternized Chitosan and Tetraethoxysilane  
Tadashi Uragami\*, Takeshi Sugiyama, Takashi Miyata