01: Engineering Sciences and Fundamentals

To Use this Index: Scroll down or use the bookmarks in the left-hand frame to move to a new location in this index. Click on a blue paper title to view that paper. To return to this index after viewing a paper, click the PREVIOUS MENU bookmark in the left frame.

Session 79 - Self-Assembled Biomaterials I
Chair: Nily Dan
Vice Chair: Laura Suggs

79f Effect of Hydrodynamic Shear Stress on Biofilm Adhesion to Organosilane Self-Assembled Monolayers on Titanium
Rebecca M. Lennen and Robert A. Brizzolara

Session 84 - Self-Assembled Biomaterials II
Chair: Nily Dan
Vice Chair: Laura Suggs

84d Effect of Reverse Micelles on the Secondary Structure of a-chymotrypsin and Subtilisin Carlsberg by FTIR Spectroscopy
Liu Junguo, Xing Jianmin, Shen Rui, Yang Chengli and Liu Huizhou

84f Adsorption of Polylysine, Poly(glutamic) acid and their Block Copolymers on Polystyrene and on Carbon Nanotubes
Ritesh Jain and Daniel Forciniti

Session 151 - (Invited Session) The Future of Chemical Engineering Research I *
Chair: Pablo G Debenedetti
Vice Chair: Julio M Ottino

Session 152 - (Invited Session) The Future of Chemical Engineering Research II *
Chair: Arup Chakraborty
Vice Chair: Pablo G Debenedetti

Session 153 - (Invited Session) The Future of Chemical Engineering Research III *
Chair: Julio M Ottino
Vice Chair: Arup Chakraborty

Session 154 - Thermodynamics on the Nanoscale I *
Chair: Mikhail A Anisimov
Vice Chair: Hank Ashbaugh

Session 155 - Thermodynamics Under High Pressure
Chair: Michael A Matthews
Vice Chair: Jeffrey J Potoff

155e Measurement and modeling of the solubility of phosphatidylcholine in dimethylether and water
Stephen Tallon and Owen Catchpole

155f A Model for the Excess Gibbs Energy at High Pressures
Saidu M Waziri, Kazi Z Sumon and Esam Z Hamad

Session 156 - Thermodynamic Properties and Phase Behavior I
Chair: J. Ilja Siepmann
Vice Chair: Clare McCabe

156d Studies of the Thermodynamic Conditions for the Existence of a Stable Liquid Phase in Square Well Fluids
Nasir M. Tukur, Leslie V. Woodcock and Leo Lue

156f Detection and measurements of high pressure VLE and LLE - PvT data of binary mixtures through the vibrating tube densitometer technique
M. Barcenas Castaneda, C. Bouchot and L. A. Galicia Luna

Session 157 - Thermodynamics on the Nanoscale II *
Chair: Hank Ashbaugh
Vice Chair: Mikhail A Anisimov

Session 158 - Thermodynamic Properties and Phase Behavior II
Chair: Richard B McClurg
Vice Chair: Martha C Mitchell

158c Automated Isochoric Apparatus for pVT and Phase Equilibrium Studies of Natural Gas Mixtures
Jingjun Zhou, Kenneth R. Hall and James C. Holste

Session 159 - Supercooled Liquids and Glasses
Chair: Sharon C Glotzer
Vice Chair: Thomas M Truskett

159e An Energy Landscape Based Mean-Field Theory for the Thermal and Mechanical Behavior of Confined Amorphous Materials
Jeetain Mittal and Thomas M Truskett

Session 160 - Thermodynamic Properties and Phase Behavior IV *
Chair: Martha C Mitchell
Vice Chair: Richard B McClurg

Session 161 - Ionic Liquids: Thermodynamics and Transport Properties
Chair: Edward J Maginn
Vice Chair: Cor J Peters

161a Separation of Aromatic and Aliphatic Hydrocarbons with Ionic Liquids
G. Wytze Meindersma, Anita (J.G.) Podt, Marianne B. Klaren and André B. de Haan

Session 162 - Multiscale Modeling I: Thermodynamic and Mesoscale Properties
Chair: Hank Ashbaugh
Vice Chair: Mikhail A Anisimov

162b Intrinsic Stability Limits for Glassy Nanoscale Films: Insights from the Energy Landscape
Pooja Shah and Thomas M. Truskett

162c A Simple Coarse-Grained Model for Studying the Behavior of Proteins in Solution
Jason K. Cheung and Thomas M. Truskett

Session 163 - Teaching Thermodynamics and Statistical Mechanics at the Graduate Level *
Chair: Edward J Maginn
Vice Chair: Rolf Lustig

Session 164 - Thermodynamic Properties and Phase Behavior III *
Chair: Michael L. Greenfield
Vice Chair: J. Ilja Siepmann

Session 165 - Teaching Molecular Simulation *
Chair: David A Kofke
Vice Chair: Peter T Cummings

Session 166 - Monte Carlo and Molecular Dynamics Methods for Reactive Systems
Chair: Aidan P Thompson
Vice Chair: Phillip R Westmoreland

166d A Brand New Reactive Potential Made Molecular Dynamics on Chemical Reaction Possible
Kailiang Yin, Qing Xia, Duanjun Xu and Cheng-lung Chen

Session 167 - Poster Session: Thermodynamic and Transport Properties
Chair: Michael L. Greenfield
Vice Chair: Richard B McClurg

167am Direct Determination of the Reaction Volume of an Organometallic Reaction at Very High Dilution
Martin Tjahjono, Ayman D. Allian, Li Chuanzhao and Marc Garland

167an Simple Volume-Explicit Equation of State for Mixtures of Non-additive Hard-Spheres
Nasir M. Tukur

167ba Group-Contribution Method for Predicting Properties of Biochemical and Safety Interest and Temperature-Dependent Properties of Pure Components
Emmanuel Stefanis, Leonidas Constantinou and Costas Panayiotou

167bc Measurement of Z-Factors for Carbon Dioxide Sequestration
Paulus Adisoemarta, Scott M. Frailey and Akanni S. Lawal

Session 168 - Thermodynamics of Solid Phases: Crystals, Solvates, Clathrates and Amorphous Solids
Chair: Christopher J Roberts
Vice Chair: Dan Lacks

168f Molecular Crystal Global Phase Diagrams
J. Brandon Keith and Richard B. McClurg

Session 169 - Poster Session: Interfacial Phenomena
Chair: Michael Cheung
Vice Chair: Paschalis Alexandridis

169d A Study on the Interfacial Characteristics of Nitramine Explosive-Polymer Binder
Jung S. Shim, Hyoun S. Kim, Keun D. Lee and Jeong K. Kim

169f Optical Investigation of the Interfacial Phenomena during Coalescence of two Condensing Drops and Shape Evolution of the Coalesced Drop
Shripad J. Gokhale, Sunando DasGupta, Joel L. Plawsky and Peter C. Wayner Jr.

Session 170 - Self-Assembly in Solution I *
Chair: Srinivasa R Raghavan
Vice Chair: Orlin D Velev

Session 171 - Nanoparticle Synthesis and Stabilization I
Chair: Darrell Velegol
Vice Chair: Nickolas Kotov

171a Facile Synthesis and Colloidal Stabilization of Metal Nanoparticles in Aqueous Amphiphilic Block Copolymer Solutions
Toshio Sakai and Paschalis Alexandridis

Session 172 - Self-Assembly in Solution II
Chair: Srinivasa R Raghavan
Vice Chair: Orlin D Velev

172g Study of the Micellization Behavior of Pluronic L64 in Different Salt Solution by FTIR Spectroscopy
Lily Zheng, Chen Guo, Hui-zhou Liu, Jing wang and Xiangfeng Liang

Session 173 - Emulsions and Foams
Chair: Sandro R da Rocha
Vice Chair: Alejandro A Pe±a

173d A Combined Stochastic and Deterministic Simulation of the Polymer Foaming Process: Asymptotic Solution for the Initial Stages of Bubble Growth
Sudeep Punnathanam and Richard B. McClurg

Session 174 - Nanoparticle Synthesis and Stabilization II *
Chair: Darrell Velegol
Vice Chair: Nickolas Kotov

Session 175 - Fundamentals of Interfacial Phenomena I
Chair: Surita R Bhatia
Vice Chair: Jianzhong Wu

175i The New Fluorocarbon- Hydrocarbon Unsymmetrical Bolaform Surfactant: A Novel Anti-Foaming Agent
Nihal Aydogan and Nihan Aldis

Session 176 - Applications of Nanostructured Fluids
Chair: Raj Wallajapet
Vice Chair: Paschalis Alexandridis

176g Removal of Arsenic from Water Using Amphiphilic Molecules and Ultrafiltration Membranes
Erdogan Ergican and Hatice Gecol

Session 177 - Interfacial Phenomena in Environmental Systems *
Chair: Sekhar Sundaram
Vice Chair: Sotira Yiacoumi

Session 178 - Self-Assembly in Solution III *
Chair: Srinivasa R Raghavan
Vice Chair: Orlin D Velev

Session 179 - Fundamentals of Interfacial Phenomena II *
Chair: Surita R Bhatia
Vice Chair: Jianzhong Wu

Session 180 - Colloidal Dispersions I *
Chair: Maria M Santore
Vice Chair: Steven P Wrenn

Session 181 - Interfacial and Electrochemical Phenomena in Microfluidics and MEMS I
Chair: Sammy S Datwani
Vice Chair: Carlton F Brooks

181c Asymmetric-Polarization AC Electroosmotic Micropump
Jie Wu and Hsueh-Chia Chang

181d The Energy Equation in Microchemical Systems
Khaled A. Alfadhel and Mayuresh. V. Kothare

181e Homogenization of Drop Stain by Radial Electroosmotic Flow in an Evaporating Drop
Sung Jae Kim, Kwan Hyoung Kang, In Seok Kang and Byung Jun Yoon

Session 182 - Interfacial and Electrochemical Phenomena in Microfluidics and MEMS II
Chair: Sammy S Datwani
Vice Chair: Carlton F Brooks

182h Computational Analysis of Microfluidic Biofuel Cells
A.S. Bedekar, J.J. Feng, K. Lim, S. Krishnamoorthy, G.T.R. Palmore and S. Sundaram

Session 183 - Colloidal Dispersions II
Chair: Maria M Santore
Vice Chair: Steven P Wrenn

183h Electrorheological Properties of Polyaniline Suspensions
Piyanoot Hiamtup, Anuvat Sirivat and Alexander M. Jamieson

Session 184 - Fundamentals of Interfacial Phenomena III *
Chair: Surita R Bhatia
Vice Chair: Jianzhong Wu

Session 185 - Transport at Interfaces I *
Chair: Anuj Chauhan
Vice Chair: Anubhav Tripathi

Session 186 - Fundamentals of Interfacial Phenomena IV *
Chair: Surita R Bhatia
Vice Chair: Jianzhong Wu

Session 187 - Colloidal Dispersions III *
Chair: Maria M Santore
Vice Chair: Steven P Wrenn

Session 188 - Solid-Liquid Interfaces *
Chair: Vinay K Gupta, Guangzhao Mao
Vice Chair: Andrew C Hillier

Session 189 - Interfacial Phenomena in Multiphase Mixing
Chair: Costas Tsouris
Vice Chair: Ganesan Narsimhan

189e Hydrodynamics of Foaming Systems in Packed Towers
Thiele, R.; Wiehler, H.; Repke, J.-U.; Thielert, H. and Wozny, G.

Session 190 - Transport at Interfaces II *
Chair: Anuj Chauhan
Vice Chair: Dmitry I Kopelevich

Session 191 - Biomolecules at Interfaces I
Chair: James W Schneider
Vice Chair: Steven P Wrenn

191c Detection of Biomolecular Interactions at a Phospholipid Interface Using a Liquid Crystal Read-Out
Andrew Price and Daniel Schwartz

Session 192 - Interfacial Effects on Drug Delivery *
Chair: Anuj Chauhan
Vice Chair: S Patrick Walton

Session 193 - Interfacial Phenomena in Semiconductor Processing
Chair: Van N Truskett
Vice Chair: Sekhar Sundaram

193a Fabrication of sub-100nm thick Nanoporous silica thin films
M. Ojha, W. Cho, J. L. Plawsky and W. N. Gill

193g Inhibition of Galvanic Corrosion of Wnc Barrier Metal for Reliable Cu Cmp
D. Ernur, V. Terzieva, J. Schuhmacher and K. Maex

Session 194 - Characterization of Pharmaceutical Powders and Interfacial Phenomena
Chair: Robert D Tilton
Vice Chair: Todd M Przybycien

194g Image Based On-Line Particle Sizing Using Ethernet Controls
Tod Canty

Session 195 - Interfacial Instabilities *
Chair: Anuj Chauhan
Vice Chair: Michael Cheung

Session 196 - Biomolecules at Interfaces II *
Chair: James W Schneider
Vice Chair: Steven P Wrenn

Session 197 - Current Trends in Nanoscience in Chemical Engineering: Making the Transition From Materials and Phenomena to New Technologies
Chair: Brian A Korgel
Vice Chair: Lynn Loo

197g Batch and continuous hydrothermal synthesis of LiFePO4 micro- and nanoparticles
Jaewon Lee, Chunbao Xu and Amyn S. Teja

Session 198 - Fundamental Research in Transport Processes
Chair: Joel Plawsky
Vice Chair: Lealon L Martin

198a Broadening The Base of Transport Phenomena
Piet J.A.M. Kerkhof and Marcel A.M. Geboers

198b An Examination of the Validity of the Onsager Reciprocal Relations Applied to Flow in the Presence of Thermal Stresses and Thermal Slip
Aruna Mohan and Howard Brenner

198c Natural Convection Heat Transfer in Food Materials in Cylinders
S.Ramakrishna, S.N.L.Ramani, D.Jayaprakash and S.Subrahmaniyam

198e Heat Transfer to Viscous Solutions
Richard Bonner, John C. Chen and Kemal Tuzla

Session 199 - Transport and Reaction in Heterogeneous and Porous Materials I
Chair: Karsten E Thompson
Vice Chair: Kishore Mohanty

199a Lattice Boltzmann Simulation of Flow through Three-Dimensional Random Fiber Network with Considering of Quadratic Velocity Term
Xiaoying Rong and Dewei Qi

199e Is Gravity Drainage an Effective Alternative to WAG?
Madhav M. Kulkarni and Dandina N. Rao

Session 200 - Transport and Reaction in Heterogeneous and Porous Materials II *
Chair: Karsten E Thompson
Vice Chair: Joel Plawsky

Session 201 - Transport Processes in Nanophase and Nanoscale Systems *
Chair: Marc-Olivier Coppens
Vice Chair: Joel Plawsky

Session 202 - Mathematical Modeling of Transport Processes
Chair: Norman W Loney
Vice Chair: Nivedita Gupta

202d Analysis of the Novel Toe-To-Heel Air Injection (THAI) Process Using Simple Analytical Models
Madhav M. Kulkarni and Dandina N. Rao

202e Modeling of Bulk Delivery Systems for Supplying Electronic Specialty Gases at High Flow Rates
M. Usman Ghani, Richard Udischas, Valerie Nille and Derong Zhou

Session 203 - Supercritical Fluids in Pharmaceuticals and Foods *
Chair: David Suleiman
Vice Chair: Poongunran Muthukumaran

Session 204 - Reactions in Near Critical and Supercritical Fluids I
Chair: Bala Subramaniam
Vice Chair: Keith W Hutchenson

204f Production of H2 from Methanol by Supercritical Water Reforming: Strategies to Suppress Methanation
Jayant B. Gadhe and Ram B. Gupta

Session 205 - Polymerization and Polymer Processing in Supercritical Fluids *
Chair: Ruben Carbonell
Vice Chair: Ted Lee

Session 206 - Materials Synthesis and Processing with Supercritical Fluids I *
Chair: Mark C Thies
Vice Chair: Barbara L Knutson

Session 207 - Materials Synthesis and Processing with Supercritical Fluids II *
Chair: Ram B Gupta
Vice Chair: Raashina Humayun

Session 208 - Advances in Separations with Compressed and Supercritical Fluids *
Chair: Karen A Connery
Vice Chair: Matt Yates

Session 209 - Colloidal Phenomena in Supercritical Fluids *
Chair: Sandro R da Rocha
Vice Chair: Michael Cheung

Session 209 - Colloidal Phenomena in Supercritical Fluids *
Chair: Sandro R da Rocha
Vice Chair: Michael Cheung

Session 210 - Poster Session: High Pressure Group 1f *
Chair: Sudhir N Georgiou
Vice Chair: L. Antonio Estevez

Session 211 - Fundamentals of Surface Phenomena on Extended Solids and Nanomaterials
Chair: Alan E Nelson
Vice Chair: Hossein Toghiani

211e A Molecular Dynamics Simulation Study on Melting of Pd-Pt Nanoclusters
Subramanian KRSS, Venkat R. Bhethanabotla and Babu Joseph

Session 212 - Computational Modelling of Surfaces and Surface Phenomena *
Chair: Gyeong S Hwang
Vice Chair: Manos Mavrikakis

Session 213 - Fundamental Research in Fluid Mechanics: Novel Flows *
Chair: Ronald G Larson
Vice Chair: Kathleen J Stebe

Session 214 - Fundamental Research in Fluid Mechanics: Stability and Non-Linear Hydrodynamics
Chair: Satish Kumar
Vice Chair: Michael T Kezirian

214g Bubble Behavior in a Taylor Vortex
Rensheng Deng, Chi-Hwa Wang and Kenneth A. Smith

Session 215 - Fundamental Research in Fluid Mechanics: Microscale Flows *
Chair: Anubhav Tripathi
Vice Chair: Michael R King

Session 216 - Fundamental Research in Fluid Mechanics: Non-Newtonian Flows
Chair: Matteo Pasquali
Vice Chair: Graham M Harrison

216f Time-dependent development of flow instabilities of non-Newtonian melts and suspensions with rigid particles
H. S. Tang and D. M. Kalyon

216j Flow Enhancement and Reduction in Pulsatile Flow of Discotic Nematic Liquid Crystals
Luiz R.P. de Andrade Lima and Alejandro D. Rey

Session 217 - Fundamental Research in Fluid Mechanics: Microfluidic and Low-Reynolds-Number Flows *
Chair: Andrea Chow
Vice Chair: Anubhav Tripathi

Session 218 - Poster Session: Fundamental Research in Fluid Mechanics *
Chair: Nina C Shapley
Vice Chair: Victor M Ugaz

Session 219 - Fundamental Research in Fluid Mechanics: Turbulent Flows *
Chair: Eric Shaqfeh
Vice Chair: Radhakrishna Sureshkumar

Session 220 - Fundamental Research in Fluid Mechanics: Particulate & Multiphase Flows I
Chair: Michael J Solomon
Vice Chair: John Crocker

220g Laser Scanning Confocal Microscopy Applied to Multi-component Wetting
Anne M. Grillet, Benjamin J. Ash, Carlton F. Brooks and John A. Emerson

Session 221 - Fundamental Research in Fluid Mechanics: Particulate & Multi-Phase Flows II *
Chair: Michael J Solomon
Vice Chair: John Crocker

Session 222 - Fundamental Research in Fluid Mechanics: Interfacial Flows
Chair: Nivedita Gupta
Vice Chair: Shelley L Anna

222e Effect of surfactant on drop dynamics in linear flows
Petia M. Vlahovska, Jerzy Blawzdziewicz and Michael Loewenberg

Session 223 - Fundamental Research in Fluid Mechanics: Complex and Bio-Fluid Dynamics *
Chair: Michael R King
Vice Chair: Isidro E Zarraga

Session 224 - Interfacial Flows of Complex Fluids *
Chair: Graham M Harrison
Vice Chair: Shelley L Anna

Session 229 - Interfacial Crystallization
Chair: Alexander Couzis
Vice Chair: R Dennis Vigil

229e A Study of Protective Iron Carbonate Scale Formation in Co2 Corrosion
Wei Sun, Kunal Chokshi, Srdjan Nesic and Daniel A. Gulino

Session 240 - Modeling Transport through Membranes I *
Chair: Glenn Lipscomb
Vice Chair: Peter N Pintauro

Session 251 - Transport in Nanostructured Porous Materials
Chair: Edward J Maginn
Vice Chair: David S Sholl

251h Molecular Simulation of Water and Ion Motion in Lysozyme Crystals
Kourosh Malek, Theo Odijk and Marc-Olivier Coppens

Session 260 - Theories of Adsorption
Chair: Alexander V Neimark
Vice Chair: Randy Snurr

260e Modelling gas mixture adsorption in active carbons: DFT vs AST
M.B. Sweatman, N. Quirke, P. Pullumbi

Session 269 - Synthesis and Coating via Supercritical Processing *
Chair: Rajesh Dave
Vice Chair: Randy Weinstein

Session 338 - Polymer Thin Films and Interfaces I *
Chair: John Torkelson
Vice Chair: Rangaramanujam M Kannan

Session 339 - Structure and Properties of Polymers IV: Multiphase Polymers *
Chair: Lynn Loo
Vice Chair: Michael L. Greenfield

Session 341 - Polymer Thin Films and Interfaces II *
Chair: Clifford L Henderson
Vice Chair: Venkat Ganesan

Session 343 - Polymer Thin Films and Interfaces III : Microelectronics
Chair: Eric K Lin
Vice Chair: Clifford L Henderson

343a Electrically Induced Pillar Arrays Formed Using Photocurable Materials
Michael D. Dickey, Elizabeth Collister, Frank Palmieri, C. Grant Willson

Session 344 - Thermodynamics of Polymers I
Chair: Zhong-Ren Chen
Vice Chair: Carson Meredith

344c Multicomponent Transport in Swollen Networks
John R. Dorgan, Oluwasijibomi Okeowo

344f Expanded liquid model for phase equilibria in systems with specific CO2 … polymer interactions
Ibrahim A. Ozkan, Amyn S. Teja

Session 346 - Thermodynamics of Polymers II
Chair: Theo W de Loos
Vice Chair: Michael C Huang

346c Modeling Chain Stiffness and Attractive Interaction for Polymeric Systems in the NPT Ensemble
Saidu M Waziri, Nasiru M Tukur, Esam Z Hamad

Session 348 - Structure and Properties of Polymers I: Gels *
Chair: Lynn Loo
Vice Chair: Michael L. Greenfield

Session 359 - Biomembranes *
Chair: M. L Gilchrist
Vice Chair: Padma J Narayan

Session 367 - Semiconductor Surface Chemistry *
Chair: Katherine S Ziemer
Vice Chair: Jason F Weaver

Session 369 - Chemical Vapor Deposition
Chair: Daniel D Burkey
Vice Chair: Chih-hung (Alex) Chang

369e Deposition and characterization of ultra thin hafnium and zirconium silicate films on Si(100) using metal complexes of alkoxide and amido groups
Jaehyun Kim, Kijung Yong

Session 379 - Greenhouse Gas Sequestration Technology I
Chair: Nick D Hutson
Vice Chair: Jefferson W Tester

379g Novel Carbon Dioxide Solid Acceptors Using Sodium Containing Oxides
Collins-Martínez V., Lardizábal Gutiérrez D., Pérez Rivera N. G. and López-Ortiz A

Session 432 - Novel Numerical Methods in Fluid Mechanics *
Chair: Dimitrios V Papavassiliou
Vice Chair: Panagiotis Dimitrakopoulos

Session 463 - Novel Carriers for Drug and Cell Delivery *
Chair: Surya K Mallapragada
Vice Chair: Rebecca L Carrier

Session 500 - Advances in Drug Delivery: Focus on Biomaterials I *
Chair: David A Putnam
Vice Chair: Stavroula Sofou

Session 545 - Reactions in Near Critical and Supercritical Fluids II
Chair: Bala Subramaniam
Vice Chair: Rafael Hernandez

545a Investigation of reversible chemical reactions in compressed CO2 on the basis of production of methyl acetate
Stephan Schwinghammer, Rolf Marr, Matthäus Siebenhofer

545e Propylene hydration in high-temperature water
shimizu

Session 571 - Issues in Carbon Nanotubes I: Synthesis of Carbon Nanotubes and Nanotube-based Materials
Chair: Daniel E Resasco
Vice Chair: Michael S Strano

571f Synthesis, Characterization and Stability of Fe-MCM-41 for Production of Carbon Nanotubes by Acetylene Pyrolysis
Placidus Amama, Sangyun Lim, Dragos Ciuparu, Yanhui Yang, Lisa Pfefferle, Gary Haller

Session 573 - Issues in Carbon Nanotubes II: Characterization, Functionalization and Applications *
Chair: Michael S Strano
Vice Chair: Karl Johnson

Session 575 - Self and Directed Assembly at the Nanoscale I *
Chair: Hank Ashbaugh
Vice Chair: Kristen A Fichthorn

Session 576 - Issues in Carbon Nanotubes III: Adsorption and Transport
Chair: Karl Johnson
Vice Chair: Daniel E Resasco

576h Characterization of Single-Walled Carbon Nanotubes for Environmental Implications
Sandeep Agnihotri, Massoud Rostam-Abadi1, Mark. J. Rood

Session 581 - Self and Directed Assembly at the Nanoscale II
Chair: Hank Ashbaugh
Vice Chair: Kristen A Fichthorn

581f Equilibrium Microstructure of Complex Fluids
YoChan Kim, Charles A. Petty and André Bénard

Session 582 - Issues in Carbon Nanotubes IV
Chair: Daniel E Resasco
Vice Chair: Michael S Strano

582g Direct Synthesis of Carbon Nanotubes on Organic Polymer Substrates
Eun-Hwa Hong, Beom-Jin Yoon, Dae-Sup Shim and Kun-Hong Lee

Session 583 Nanotechnology and Nanobiotechnology for Sensors I *
Chair: Mark W Vaughn
Vice Chair: Venkat R Bhethanabotia

Session 584 - Self and Directed Assembly at the Nanoscale III
Chair: Hank Ashbaugh
Vice Chair: Kristen A Fichthorn

584f Permanently Linked Rigid Superparamagnetic Chains
Harpreet Singh, Paul E. Laibinis and T. Alan Hatton

Session 585 - Issues in Carbon Nanotubes V *
Chair: Karl Johnson
Vice Chair: Daniel E Resasco

Session 587 - Nanomaterials and Devices for Energy Applications
Chair: Levi T Thompson
Vice Chair: Hank Foley

587b Hydrogen Production from Simulated Gasoline using Nickel-Based Catalysts
Andrew Tadd, Ben Gould and Johannes Schwank

* These papers were unavailable at the time of publication.

02: Separations Division

To Use this Index: Scroll down or use the bookmarks in the left-hand frame to move to a new location in this index. Click on a blue paper title to view that paper. To return to this index after viewing a paper, click the PREVIOUS MENU bookmark in the left frame.

Session 226 - Distillation: Advances in Process Modeling
Chair: Ross Taylor

226b On-line Parameter Estimation and Control for a Pilot Scale Distillation Column
Lina Rueda, Thomas F. Edgar and R. Bruce Eldridge

226d Analysis of the Flow Behavior of Single and Multiphase Liquid in Packed Columns
Andreas Hoffmann, Ilja Ausner, Jens-Uwe Repke and Günter Wozny

Session 227 - In Honor of Professor Johann Stichlmair
Chair: Nicholas F Urbanski
Vice Chair: Zarko Olujic

227f Recent advances in the internally heat-integrated distillation columns (HIDiC)
Koichi Iwakabe, Masaru Nakaiwa, Kejin Huang, Toshinari Nakanishi, Takao Ohmori, Akira Endo and Takuji Yamamoto

Session 229 - Interfacial Crystallization
Chair: Alexander Couzis
Vice Chair: R Dennis Vigil

229e A Study of Protective Iron Carbonate Scale Formation in Co2 Corrosion
Wei Sun, Kunal Chokshi, Srdjan Nesic and Daniel A. Gulino

Session 230 - Crystallization of Pharmaceutical and Biological Molecules I
Chair: Sridhar Desikan
Vice Chair: Piotr H Karpinski

230b Molecular interactions between solvent and pharmaceutical compounds in crystallization of polymorphic systems
Mahmoud Mirmehrabi and Sohrab Rohani

Session 231 - Crystallization of Pharmaceutical and Biological Molecules II *
Chair: Sridhar Desikan
Vice Chair: Piotr H Karpinski

Session 232 - Extractive Separations
Chair: Scott Husson
Vice Chair: Vincent Vanbrunt

232a Troubleshooting Liquid-Liquid Extraction Columns Evaluating Column Efficiency
Donald J Glatz and Wendy Parker

232d Experimental and numerical investigation of micromixing devices for application in liquid-liquid extraction
Tobias Haderer, Axel Wojik, Rolf Marr, Stefan Martens and Matthaus Siebenhofer

232e Design of Rotating Disc Contactors; Implementation of CFD Tools
Tobias Haderer, Rolf Marr, Stefan Martens and Matthäus Siebenhofer

232f Investigation of Methyl Acetate Production by Reactive Extraction
Christian Rohde, Rolf Marr and Matthäus Siebenhofer

Session 233 - Identification and Application of New Solvents in Extraction
Chair: Paul Scovazzo
Vice Chair: Scott Husson

233c Greener Solvent Selection, Solvent Recycling and Optimal Control for Pharmaceutical and Bio-Processing Industries
Saadet Ulas and Urmila M. Diwekar

Session 234 - Poster Session: Advances in Extractive Separations
Chair: Vincent Vanbrunt
Vice Chair: Frank Seibert

234b Effectiveness-Factor Analysis of Membrane Extraction through Parallel-Plate Mass Exchangers
Ho-Ming Yeh

Session 235 - Transport Phenomena in Membranes and Barriers Honoring Session for Don Paul's 65th Birthday
Chair: William J Koros
Vice Chair: Timothy Barbari

235f Influence of additives on CO2 transport in PEEK-WC membranes
Gabriele Clarizia, Anna Maria Torchia and Enrico Drioli

Session 236 - Membranes for Gas and Vapor Separations I *
Chair: Benny D Freeman
Vice Chair: Nurcan Bac

Session 237 - Membranes for Gas and Vapor Separations II
Chair: Benny D Freeman
Vice Chair: Nurcan Bac

237g Molecular Dynamics Simulation on Permeation of Acetone/Nitrogen Mixed Gas through Al2O3 Microporous Membranes
Kailiang Yin, Duanjun Xu and Jing Zhong

Session 238 - Poster Session: Membranes
Chair: Ranil Wickramasinghe
Vice Chair: Stephen M Ritchie

238p Fouling monitoring during microfiltration of humic acid by streaming potential measurement
Kazuho Nakamura and Kanji Matsumoto

Session 239 - Membrane Process Design and Scale-up Considerations
Chair: Glenn Lipscomb
Vice Chair: Robert A Cross

239a Study of membrane system performance and HAZOP analysis in gas separation and reaction
Gabriele Clarizia, Giovanni Chiappetta and Enrico Drioli

239d Reverse Osmosis to Concentrate Ammonium Nitrate in Condensates, from Laboratory Studies to Industrial Scale Design and Operation
Peter Eriksson

Session 240 - Modeling Transport through Membranes I *
Chair: Glenn Lipscomb
Vice Chair: Peter N Pintauro

Session 241 - Modeling Transport through Membranes II
Chair: Glenn Lipscomb
Vice Chair: Peter N Pintauro

241a Numerical Analysis of Medium Compression and Losses in Filtration Area in Pleated Cartridge Membrane Filters
A.N. Waghode, N.S.Hanspal, R.J. Wakeman and V. Nassehi

241b Computational Study of Particle/Liquid Flows in Curved/Coiled Membrane Systems
Prashant Tiwari, Steven P. Antal and Michael Z. Podowski

241f CO2 Transfer Across a Liquid Membrane Facilitated by Carbonic Anhydrase
Lihong Bao, Stefanie L. Goldman and Michael C. Trachtenberg

241h Modelling of mass transfer of Zn2+ through supported liquid membranes (SLM)
Christian Huber, Rolf Marr and Matthäus Siebenhofer

Session 242 - Advances in Inorganic and Nano-Composite Membranes I
Chair: Yi Ma
Vice Chair: Leland Vane

242d Probing the Depth-Dependence of Molecular Sieve Membrane Composition by Step-Scan Photoacoustic (SS-PAS) Spectroscopy
Weontae Oh and Sankar Nair

Session 243 - Fuel Cell Membranes
Chair: Winston Ho
Vice Chair: Santi Kulprathipanja

243b Properties and synthesis of ultra-thin SOFC structures
Jingyu Shi, Frank M. Zalar, Henk Verweij

Session 244 - Membrane Research Center Activities in U.S. and Other Countries I *
Chair: William Krantz
Vice Chair: Kamalesh K Sirkar

Session 245 - Advances in Inorganic and Nano-Composite Membranes II *
Chair: Yi Ma
Vice Chair: Leland Vane

Session 246 - Membrane Research Center Activities in U.S. and Other Countries II *
Chair: William Krantz
Vice Chair: Kamalesh K Sirkar

Session 247 - Advances in Inorganic and Nano-Composite Membranes III
Chair: D B Bhattacharyya
Vice Chair: Erik E Engwall

247d Highly permeable supported γ-alumina membranes for water purification
Di Yu, Matthew L. Mottern, Henk Verweij, John Bukowski and Jennifer A. Lewis

247f Carbon-Zeolite NaA Composite Membranes
Xiongfu Zhang, Haiou Liu, King Lun Yeung and Jinqu Wang

Session 248 - Fundamentals of Adsorption and Ion Exchange I *
Chair: Gino V Baron
Vice Chair: Stefano Brandani

Session 249 - Characterization of Porous Materials
Chair: Peter A Monson
Vice Chair: Kendall T Thomson

249g Pore Structures of Mesoporous ZSM-5 from Resorcinol-formaldehyde Aerogel and Carbon Aerogel Templating
Yousheng Tao, Hirofumi Kanoh and Katsumi Kaneko

Session 250 - Fundamentals of Adsorption and Ion Exchange II *
Chair: Gino V Baron
Vice Chair: Stefano Brandani

Session 251 - Transport in Nanostructured Porous Materials
Chair: Edward J Maginn
Vice Chair: David S Sholl

251h Molecular Simulation of Water and Ion Motion in Lysozyme Crystals
Kourosh Malek, Theo Odijk and Marc-Olivier Coppens

Session 252 - Molecular Modeling of Adsorption
Chair: Peter A Monson
Vice Chair: Mark A Plummer

252b Predicting the adsorption and isosteric heat of pure gases in active carbons with the slit-pore model, MC simulation and DFT
M.B. Sweatman, N. Quirke and P. Pullumbi

Session 253 - Trace Impurity Removal by Adsorption
Chair: Madhukar Rao
Vice Chair: Ravi Kumar

253a Preparation and Characterization of Immobilized Metal Affinity Media Based on Monodisperse Crosslinked Poly (glycidyl methacrylate-ethyleneglycol dimethacrylate) Microspheres
Zhiya Ma, Yueping Guan, Junguo Liu and Huizhou Liu

253b Novel chitosan-cellulose hydrogel adsorbents for lead adsorption
Nan Li and Renbi Bai

253e Synthesis and Characterization of Biopolymer Coated Particles for the Removal of Tungsten from Drinking Water
Parfait Miakatsindila, Hatice Gecol

Session 254 - Poster Session: New Developments in Adsorption and Ion Exchange
Chair: Giorgio Carta
Vice Chair: Armin D Ebner

254e Hydrogen storage in the carbonized conducting polymer
Gab-Jin HWANG, Sang-Ho LEE, Chu-Sik PARK, Chang-Hee KIM, Young-Seak LEE

Session 255 - Experimental Methods in Adsorption
Chair: Charles G Coe
Vice Chair: F. Handan Tezel

255a Tomographic investigation of the influence of wall effects on the breakthrough in a highly loaded packed bed adsorber
Karijm Salem, Witold Kwapinski, Evangelos Tsotsas, Dieter Mewes

255b High-Pressure Adsorption of Pure Coalbed Gases on Dry Coal Matrices
Arumugam A., Fitzgerald, J. E., Sudibandriyo, M. Robinson, Jr. R. L., Gasem K. A. M.

Session 256 - Reactive Separations I
Chair: Jeffrey R Hufton
Vice Chair: Kurt Vanden Bussche

256a From Reactive Distillation To Reactive Membrane Separation: A Generalized Approach For Feasibility Analysis
Yuan-Sheng Huang, Kai Sundmacher

Session 257 - Reactive Separations II
Chair: Jeffrey R Hufton
Vice Chair: Kurt M Vandenbussche

257c Absorption Equilibrium and Kinetics for Ethylene-Ethane Separation with a Novel Solvent
Travis A. Reine, R. Bruce Eldridge

Session 258 - Industrial Liquid Phase Adsorption
Chair: Santi Kulprathipanja
Vice Chair: Celio L. Cavalcante

258d ELUXYL(TM) Twin Raffinate Technology
Luc WOLFF, Philibert LEFLAIVE

Session 259 - PSA/TSA
Chair: M Douglas LeVan
Vice Chair: Paul A Webley

259b Optimization of Pressure Swing Adsorption and Fractionated Vacuum Pressure Swing Adsorption Processes for CO2 Sequestration
Daeho Ko, Ranjani Siriwardane, Lorenz T. Biegler

Session 260 - Theories of Adsorption
Chair: Alexander V Neimark
Vice Chair: Randy Snurr

260e Modelling gas mixture adsorption in active carbons: DFT vs AST
M.B. Sweatman, N. Quirke, P. Pullumbi

Session 261 - Gas Storage by Adsorption *
Chair: Jose P Mota
Vice Chair: Atanas Serbezov

Session 262 - Novel Adsorbent Forms and Their applications
Chair: Linda S Cheng
Vice Chair: Mark E Davis

262b Preparation and Surface Modification of Non-porous Micron-sized Magnetic Poly(methyl acrylate) Microspheres
Zhiya Ma, Yueping Guan, Xianqiao Liu, Huizhou Liu

262g Microfibrous & Micro-Structured Adsorbents and Catalysts Media: Enhancement in Effectiveness Caused by Static Mixing
Donald R. Cahela, Bong-Kyu Chang, Mukund Karanjikar, Eric A. Luna, Bruce J. Tatarchuk

Session 263 - Novel Developments in Adsorption
Chair: Ravi Jain
Vice Chair: Shuguang Deng

263a Novel modification of chitosan hydrogel beads for improved properties as an adsorbent
Nan Li, Renbi Bai

263d The Effect of Li as a Dopant in Na2ZrO3 High Temperature CO2 Acceptor
Barraza Jiménez D., Collins-Martínez V., Reyes Rojas A., Guzmán-Velderraín V., López-Ortiz A

263h Facile Regeneration vitreous microfibrous entrapped supported ZnO sorbent with high contacting efficiency for bulk H2S removal from reformate streams in fuel cell applications
Yong Lu, M. Karanjikar, N. Sathitsuksanoh, Hongyun Yang, B. K. Chang, Bruce J.Tatarchuk

Session 264 - Nanostructured Adsorbent Materials
Chair: Peter I Ravikovitch
Vice Chair: Stephen E Rankin

264f Preparation of Magnetic Silica Nanospheres with Metal Chelate Ligands and Application in Recovery of Protein
Zhiya Ma, Yueping Guan, Xianqiao Liu, Huizhou Liu

Session 265 - Poster Session: Fundamentals of Adsorption and Ion Exchange
Chair: Giorgio Carta
Vice Chair: Armin D Ebner

265e Chromatographic Adsorption Measurement of Chlorinated Hydrocarbons into Zeolite
Kazuyuki CHIHARA, Takuya TERAKADO, Yosuke KANEKO, Hisashi MIZUOCHI, Taro NINOMIYA

265f Experiment and Simulation of the Organic Solvent Recovery PSA Method
Kazuyuki CHIHARA, TADAHIRO AIKO, TAKASHI KANEKO, SHIREN ODA, HAMASHIMA SHINGOI

265h Column Adsorption of the Mixed Organic-Solvent by Y Type Zeolite
Kazuyuki CHIHARA, Kazunori HIJIKATA, Hideaki YAMAGUCHI

265j Adsorption Characteristics of Tannin for Heavy Metal Ions
Yoshitake SUZUKI, Kentaro SAWADA, Kazuyuki CHIHARA

Session 266 - Microdevices in Separations
Chair: Anup K Singh
Vice Chair: Mark A Burns

266f Nanofluidic Molecular Filters for Size-Separation of Biomolecules
Jongyoon Han, Jianping Fu

Session 267 - Smart Materials for Separations *
Chair: Stephen M Ritchie

Session 345 - Polymer Blends Honoring Session for Don Paul's 65th Birthday
Chair: Timothy Barbari
Vice Chair: William J Koros

345a Fracture Toughness of Blends of Nylon 6 with Maleated Elastomers
O. Okada, H. Keskkula, D. R. Paul

Session 347 - Diffusion in Polymers II
Chair: Balaji Narasimhan
Vice Chair: David Rethwisch

347e A New Kinetic Model for Interdiffusion at Semicrystalline Polymer Interfaces
Chieh-Tsung Lo, Balaji Narasimhan

Session 384 - Environmental Applications of Adsorption
Chair: Norberto Lemcoff
Vice Chair: Nick D Hutson

384c Comparison of Aqueous Phase Indices for Powdered Activated Carbon to Pore Size Distribution Measured Via Gas Adsorption
R. R. Jain, D. K. Ludlow and C. D. Adams

Session 391 - Membranes for Gas and Water Treatment Applications
Chair: Yoram Cohen
Vice Chair: John Pellegrino

391e Semiequilibrium Dialysis versus Ultrafiltration for the Separation of Arsenic from Water Using Cationic Amphiphilic Aggregates
Erdogan Ergican and Hatice Gecol

Session 392 - Catalytic/Biocatalytic Membrane Reactors
Chair: Theodore T Tsotsis
Vice Chair: Michael C Trachtenberg

392e CFD-simulation of membrane reactor for methane steam reforming
Takashi Takeuchi, Masahiko Aihara and Hitoshi Habuka

Session 394 - Novel Membranes and Membrane Processes for Recovery/Recycle
Chair: Eric M Hoek
Vice Chair: D B Bhattacharyya

394a Sodium Tripolyphosphate (TPP) Crosslinked Chitosan Membranes and Application in Humic Acid Removal
Chunxiu Liu, Renbi Bai and Li Nan

Session 405 - Separation System Design & Synthesis
Chair: Vivek Julka
Vice Chair: Raymond E Rooks

405f A Unified Modeling Framework for the Design of Complex Separation Processes
Natassa Dalaouti and Panos Seferlis

Session 477 - Advances in Bioseparations: Membrane Separations
Chair: Victor G. J. Rodgers
Vice Chair: R Scott Herbst

477b Protein bioseparation by membrane chromatography using polyelectrolyte gelcoated adsorptive membranes
Dharmeshkumar M Kanani, Elena Komkova, Alicja M Mika, Ron F Childs and Raja Ghosh

477c Characterization of Gel-Filled Membranes for Plasma Protein Fractionation
David R. Latulippe, Carlos D. M. Filipe, Raja Ghosh, Ron F. Childs and Alicja M. Mika

Session 482 - Advances in Bioseparations: Chromatographic Separations I *
Chair: Linda Wang
Vice Chair: Linda Wang

* These papers were unavailable at the time of publication.

04: Education

To Use this Index: Scroll down or use the bookmarks in the left-hand frame to move to a new location in this index. Click on a blue paper title to view that paper. To return to this index after viewing a paper, click the PREVIOUS MENU bookmark in the left frame.

Session 163 - Teaching Thermodynamics and Statistical Mechanics at the Graduate Level *
Chair: Edward J Maginn
Vice Chair: Rolf Lustig

Session 165 - Teaching Molecular Simulation *
Chair: David A Kofke
Vice Chair: Peter T Cummings

Session 292 - Networking Workshop: Assessing, Building, Enriching, and Drawing on Your Network for a Rich Life and To Get Things Done *
Chair: Donald R Woods
Vice Chair: Wallace B Whiting

Session 293 - Poster Session: Meet the Faculty Candidates *
Chair: Dana E Knox
Vice Chair: Sundararajan V Madihally

Session 294 - Free Forum on Engineering Education I
Chair: Timothy M Raymond
Vice Chair: Brian G Lefebvre

294d A Look Back at the Amundson Report
Richard G. Carranza

Session 295 - Poster Session: Educational Software Demonstrations I
Chair: Kevin D Dahm
Vice Chair: Laurent Simon

295g WebTA: Software for creating Web-based Problem Solving Tutorial in Engineering Courses
Stefan Cular, Venkat Bhethanabotla, Babu Joseph

Session 296 - Student Poster Session: Catalysis & Reaction Engineering *
Chair: Frank Bowman

Session 297 - Student Poster Session: Computing & Systems Technology *
Chair: Frank Bowman

Session 298 - Student Poster Session: Education *
Chair: Frank Bowman

Session 299 - Student Poster Session: Environmental *
Chair: Frank Bowman

Session 300 - Student Poster Session: Food, Pharmaceutical & Biotechnology *
Chair: Frank Bowman

Session 301 - Student Poster Session: Fuels & Petrochemicals *
Chair: Frank Bowman

Session 302 - Student Poster Session: Materials Engineering and Sciences *
Chair: Frank Bowman

Session 303 - Student Poster Session: Particle Technology/Transport & Energy Processes *
Chair: Frank Bowman

Session 304 - Student Poster Session: Process Development/Safety *
Chair: Frank Bowman

Session 305 - Student Poster Session: Separations *
Chair: Frank Bowman

Session 306 - Free Forum on Engineering Education II *
Chair: Dana E Knox
Vice Chair: Laurent Simon

Session 307 - Selling Chemical Engineering to K-12 Students and Parents *
Chair: Wallace B Whiting
Vice Chair: Angelo Perna

Session 308 - New Focus on Bio in the CHE Curriculum: Departmental Experiences *
Chair: Joseph J Biernacki
Vice Chair: Patrick Gilcrease

Session 309 - Poster Session: Educational Software Demonstrations II *
Chair: Kevin D Dahm
Vice Chair: Laurent Simon

Session 310 - Poster Session: Engineering Education Showcase
Chair: Jeff Csernica
Vice Chair: Jason M Keith

310e Understanding Fundamental Property Equations through 3D Phase Diagrams
Ríos-Casas,L.G., Alarcón-García,A., Chavela-Guerra,R.C., Márquez-Juárez,C.E. Gutiérrez-Vélez,J.X.

Session 311 - New Focus on Bio in the CHE Curriculum: Case Studies *
Chair: Patrick Gilcrease
Vice Chair: Joseph J Biernacki

Session 312 - Inductive Learning and Teaching Styles Workshop *
Chair: Stephanie Farrell
Vice Chair: Robert P Hesketh

Session 313 - Demonstrations & Experiments to Enhance the Learning Experience
Chair: C. Stewart Slater
Vice Chair: Jimmy L Smart

313b Poly(dimethyl siloxane) Reactor Experiments for the Unit Operations Laboratory
Gerard T. Caneba, Edward R. Fisher, David W. Caspary

Session 314 - Revitalizing the Chemical Engineering Curriculum *
Chair: Charles J Coronella
Vice Chair: Dana E Knox

Session 315 - Software and Simulations in the Chemical Engineering Curriculum *
Chair: Kevin D Dahm
Vice Chair: S Scott Moor

Session 316 - Open Forum for Korean and American Chemical Engineers: Chemical Engineering for the 21st Century *
Chair: Gyeong S Hwang

Session 317 - Novel Ways to Teach Design *
Chair: Mariano J Savelski
Vice Chair: David C Miller

Session 318 - NSF Workshop – I *
Chair: Robert Wellek
Vice Chair: Wallace B Whiting

Session 319 - Department Heads Forum *
Chair: Alec Scranton
Vice Chair: Nada M Assaf-Anid

Session 320 - National Student Paper Competition *
Chair: Joseph D Smith
Vice Chair: Douglas K Ludlow

Session 321 - National Student Design Competition *
Chair: Richard L Long
Vice Chair: W Roy Penney

Session 322 - Young Faculty Forum *
Chair: Donald P Visco
Vice Chair: Christopher W Jones

Session 386 - Green Engineering in the Chemical Engineering Curriculum *
Chair: Robert P Hesketh
Vice Chair: David R Shonnard

Session 529 - Incorporating New Technologies into Chemical Engineering Education
Chair: Jennifer S Curtis
Vice Chair: David L Silverstein

529a Applications of MathCAD in Undergraduate Process Control
James E. Smith, Jr.

529g Replacing Figures and Tables for Engineering Design with Simple In-House Developed Computer Software
YoonKook Park, Kyung C. Kwon, Nader Vahdat, Tamara M. Floyd

Session 600 - NSF Workshop – II *
Chair: Robert Wellek
Vice Chair: William Krantz

* These papers were unavailable at the time of publication.

05: Management Division

To Use this Index: Scroll down or use the bookmarks in the left-hand frame to move to a new location in this index. Click on a blue paper title to view that paper. To return to this index after viewing a paper, click the PREVIOUS MENU bookmark in the left frame.

145d Financial Risk Management for the Capacity Planning of Facilities Associated to New Products and Uncertain Contracts
Miguel J. Bagajewicz, Zack McGill, Ryan Posey

145e Adapting Project Management Principles and Tools for Research and Development
Eldon R. Larsen

Session 146 - Understanding the Corporate Structure and Your Place in It – Tutorial *
Chair: Eldon R Larsen
Vice Chair: Rosemarie D Wesson

Session 147 - Entrepreneurial R&D: SBIR/STTR-What Is It and What Can It Do For Me?
Chair: Rosemarie D Wesson
Vice Chair: Richard D Siegel Ph,D

147a Faculty New Entrepreneurial Venture Opportunities (University Spinoffs) through the STTR Program
Alan W. Weimer

147b Partnering of Small Business and University in the SBIR Program: Opportunities and Lessons Learned in Practice
Michael F Malone, Carl R Dupre and James R. Kittrell,

147c Transferring University Technology into Commercial Practice
R. F. Hicks and S. E. Babayan

147d SBIR Opportunities for University Research and Development
Jane P. Chang

147e Commercialization of Fluoropolymers for Integrated Optics and Other High Performance Applications: A Perspective on NSF SBIR Phase II Research from a Faculty Consultant / Entrepreneur
D.W. Smith, Jr, E.W. Wagener, J. Ballato and S. Foulger

147f SBIR Integrates Basic Research into Cost-effective Manufacture of Li-ion Batteries
Thomas D. Kaun and Jai Prakash

Session 148 - Six Sigma Usage in the CPI
Chair: Frank van Lier
Vice Chair: Bob Duggal

148e Use of Six Sigma Tools to Increase Ink Production and Delivery at TINTAS S.A.
Rodrigo Posada and Alberto Posada

Session 149 - New Product Development/Portfolio Management I Development Processes/Portfolio Management I
Chair: Frank van Lier
Vice Chair: Richard D Siegel Ph,D

149a FEI - SPI (Survey, Probe and Intervention of Effective Practices)
Lorette Pruden

149b Risk Optimization for R&D Project Portfolios
Dennis Butts

149c The Evolution of NPD at Lubrizol
Brian R. Cunningham

Session 150 - New Product Development/Portfolio Management II Development Processes/Portfolio Management II
Chair: Frank van Lier
Vice Chair: Richard D Siegel Ph,D

150a Facilitating New Product Introductions in Pharmaceutical Plants via Optimized Planning and Outsourcing
I. A. Karimi and Arul Sundaramoorthy

150b Financial Risk Management for New Products Considering Plant Location, Pricing and Budgeting
Javier Lavaja, Adam Adler, Jeremy Jones, Trung Pham, Kristin Smart, David Splinter, Michael Steele and Miguel J. Bagajewicz

150c Significance of IP protection in developing a vibrant product development portfolio
Chid S. Iyer, John T. Callahan and Abraham J. Rosner

150d Addressing Patent Protection in the Product Development Process
Steven Weseman

Session 587 - Nanomaterials and Devices for Energy Applications
Chair: Levi T Thompson
Vice Chair: Hank Foley

587b Hydrogen Production from Simulated Gasoline using Nickel-Based Catalysts
Andrew Tadd, Ben Gould and Johannes Schwank

Session 606 - CPI Management Topical Conference *

* These papers were unavailable at the time of publication.

06: North American Mixing Forum

To Use this Index: Scroll down or use the bookmarks in the left-hand frame to move to a new location in this index. Click on a blue paper title to view that paper. To return to this index after viewing a paper, click the PREVIOUS MENU bookmark in the left frame.

330d Optimization of liquid-liquid extraction and multiphase flow in microstructured reactors
Axel Wojik, Tobias Haderer, Rolf Marr, Stefan Martens, Matthäus Siebenhofer

330e Ultrasound as a Process Intensification Tool
Mazen Bachir

Session 468 - Mixing Challenges in the Pharmaceutical and Biotechnology Industries *
Chair: Christopher L Burcham
Vice Chair: Subodh S Deshmukh

Session 533 - Computational Fluid Dynamics in Chemical Reaction Engineering I *
Chair: Anthony G Dixon
Vice Chair: Nitin H Kolhapure

* These papers were unavailable at the time of publication.

07: Energy and Transport Processes

To Use this Index: Scroll down or use the bookmarks in the left-hand frame to move to a new location in this index. Click on a blue paper title to view that paper. To return to this index after viewing a paper, click the PREVIOUS MENU bookmark in the left frame.

331e Kinetic Study of Biomass Pyrolysis at Moderate and High Heating Regimes
Claudia J. Gómez, Manuel Rivero, Enrique Velo, Luis Puigjaner

331g Investigation of Rapid ZnO Dissociation in an Aerosol Flow Reactor
Christopher M. Perkins, Chris J. Gump, A.W. Weimer

Session 332 - Renewable Energy Systems II
Chair: Virendra K Mathur
Vice Chair: R. Gerald Nix

332a Promises and Problems of PEM Fuel Cell Industry
Ralph Draper, V.K.Mathur

332b Composite anode material with mixed conductivity for solid state lithium ion battery
Uday S Kasavajjula, Chunsheng Wang

332c Solvent-free composite PEO-ceramic-fiber-mat electrolytes for lithium secondary cells
Chunsheng Wang, Uday S Kasavajjula, Xiangwu Zhang, A. John. Appleby

332d Evaluation of the activity of Pt…Ru electro catalysts based on LyFlex®Gas Diffusion Layer for the electro-oxidation of methanol
XiaoFeng Xie, Toby Hamblin, Virendra K. Mathur

Session 333 - Advancements in Hydrogen Production
Chair: Shashi Lalvani
Vice Chair: Virendra K Mathur, Paul Tripathi

333a Production of hydrogen from chemical hydrides via hydrolysis with steam
Michael A. Matthews, Thomas A. Davis, Jason Crews, Josh Manasco, Eyma Y. Marrero

333b Biomass steam-reforming in a low throughput fluidized bed reactor
Farid Aiouache, Kuniyuki Kitagawa

333d High Purity Hydrogen From Coal in a Single Step
Kanchan Mondal, Lubor Stonawski, Krzystoff Piotrowski, Tomasz Szymanski, Tomasz Wiltowski

Session 587 - Nanomaterials and Devices for Energy Applications
Chair: Levi T Thompson
Vice Chair: Hank Foley

587b Hydrogen Production from Simulated Gasoline using Nickel-Based Catalysts
Andrew Tadd, Ben Gould and Johannes Schwank

* These papers were unavailable at the time of publication.

08: Materials Engineering and Sciences Division

To Use this Index: Scroll down or use the bookmarks in the left-hand frame to move to a new location in this index. Click on a blue paper title to view that paper. To return to this index after viewing a paper, click the PREVIOUS MENU bookmark in the left frame.

Session 58 - Multiscale Modeling II: Multiscale Characterization and Modeling of Polymers
Chair: Sanat Kumar
Vice Chair: Cameron F Abrams

58c Characteristics of parameter reduction in multiscale simulations of polymer chains
Ahmed E. Ismail, George Stephanopoulos and Gregory C. Rutledge

Session 63 - Advances in Biomaterials Science and Engineering
Chair: Madeline Torres-Lugo
Vice Chair: Lonnie D Shea

63a Synthesis of Polyurethane Foam Scaffolds for Bone Tissue Engineering
SA Guelcher, V Patel, K Gallagher, S Connolly, JE Didier, J Doctor and JO Hollinger

63c Modeling of Poly(Ethylene Glycol) Hydrogel Multilayers by Surface Initiated Photopolymerization
Seda Kizilel, Fouad Teymour and Víctor H. Pérez-Luna

Session 65 - Nanostructured Biomaterials
Chair: Jeffrey D Carbeck
Vice Chair: Krishnendu Roy

65e Carbohydrate-Centered PAMAM Dendrimers for Growing Liver Cells
Jeremy D. Lease and Tong Yen Wah

65f More Efficient Capture of Bacteria on Nanophase Materials
Z. Zhong, and Margaret K. Banks and Thomas J. Webster

Session 68 - Injectable Biomaterials
Chair: Anthony M Lowman
Vice Chair: Jennifer H Elisseeff

68a Single Dose Tetanus Vaccine Based on Polyanhydride Microspheres
Matt J. Kipper , Jennifer Wilson, Michael Wannemuehler and Balaji Narasimhan

68b In Vitro Migration and Proliferation of Human Osteoblasts in Injectable In Situ Crosslinkable Poly(caprolactone fumarate) Scaffolds
Esmaiel Jabbari, Theresa E. Hefferan, Lichun Lu, Larry G. Pedersen, Bradford L. Currier and Michael J. Yaszemski

68d PLGA Microspheres Embedded in Porous Biodegradable Scaffold as a Delivery Vehicle for Sustained Release of Recombinant Human Bone Morphogenetic Protein-2 (rhBMP-2)
Esmaiel Jabbari, Anthony V. Florschutz, Lichun Lu, Nathan Liu, Larry G. Pedersen, Diederik H.R. Kempen, Bradford L. Currier and Michael J. Yaszemski

Session 71 - Tissue Engineering I
Chair: Guillermo A Ameer
Vice Chair: John P Fisher

71e Bone Tissue Engineering with Multiple-Factor Delivery Platform
Yen-Chen Huang, Darnell Kaigler, Kevin G. Rice and David J. Mooney

Session 74 - Tissue Engineering II
Chair: Guillermo A Ameer
Vice Chair: John P Fisher

74a Effects of Small Molecules on Cardiomyocyte DNA Synthesis and Proliferation
Serek J. Mortisen, Kip D. Hauch, Buddy D. Ratner

74b Significant fraction of cells (~2/3) in native myocardium are non-myocytes, majority of which are fibroblasts
Gordana Vunjak-Novakovic

74c A biphasic elastomeric scaffold for tissue engineering a small-diameter blood vessel
Jian Yang, Delara Motlagh, Antonio R. Webb and Guillermo A. Ameer

74f Deterministic Simulation of Growth Factor-Induced Angiogenesis
Shuyu Sun, Mary F. Wheeler, Mandri Obeyesekere and Charles Patrick Jr.

Session 78 - Tissue Engineering III
Chair: Guillermo A Ameer
Vice Chair: John P Fisher

78b Hydrogels for vocal fold tissue engineering and repair
Mariah Hahn, Benjamin Teply, Alisha Sieminski, Molly Stevens, Roger Kamm, Steven Zeitels and Robert Langer

78d Effect of Cell Environment on ECM Production and Gene Expression in Poly(ethylene glycol) / Chondroitin Sulfate Hydrogels
J.A. Arthur, S.J. Bryant, K.S. Anseth

78e Characterization of a Novel Decellularized Peripheral Nerve Graft
Scott Lundy, Curt Deister, Stephen Chen and Christine E. Schmidt

Session 79 - Self-Assembled Biomaterials I
Chair: Nily Dan
Vice Chair: Laura Suggs

79f Effect of Hydrodynamic Shear Stress on Biofilm Adhesion to Organosilane Self-Assembled Monolayers on Titanium
Rebecca M. Lennen and Robert A. Brizzolara

Session 82 - Biomaterials for Gene Therapy and Drug Delivery
Chair: Rebecca L Carrier
Vice Chair: Balaji Narasimhan

82a Complexation Hydrogels as Oral Delivery Vehicles for Insulin-Transferrin Conjugates
Nikhil J. Kavimamdan, Nicholas A. Peppas

82b Nitric Oxide-Generating Poly(ethylene glycol) Copolymers for Prevention of Restenosis
Elizabeth A. Lipke, Kristyn S. Masters and Jennifer L. West

82f Gene Carriers Modified with PEG Demonstrate Increased Transport and Stability in Mucus as Explored with High-Resolution Nanoparticle Tracking
Michelle Dawson, Denis Wirtz, Justin Hanes

Session 84 - Self-Assembled Biomaterials II
Chair: Nily Dan
Vice Chair: Laura Suggs

84d Effect of Reverse Micelles on the Secondary Structure of a-chymotrypsin and Subtilisin Carlsberg by FTIR Spectroscopy
Liu Junguo, Xing Jianmin, Shen Rui, Yang Chengli and Liu Huizhou

84f Adsorption of Polylysine, Poly(glutamic) acid and their Block Copolymers on Polystyrene and on Carbon Nanotubes
Ritesh Jain and Daniel Forciniti

Session 85 - Smart/Conducting Biomaterials
Chair: Christine E Schmidt
Vice Chair: Christopher S Brazel

85b Thermally gelling, thermally responsive elastin-mimetic triblock hydrogels
D. S. Hart, A. J. M. D'Souza, C. R. Middaugh, S. H. Gehrke

Session 89 - Advances in Biomaterials Design and Properties
Chair: Tom Dziubla
Vice Chair: Sundararajan V Madihally

89b Fundamental Studies of Degradable Thiol-Acrylate Photopolymeric Biomaterials as Tissue Engineering and Drug Delivery Scaffolds
Amber E. Rydholm, Sirish K. Reddy, Christopher N. Bowman and Kristi S. Anseth

89e Material Properties and Biocompatibility of Self-Crosslinkable Poly(caprolactone fumarate) copolymer as a Scaffold for Guided Tissue Regeneration
Esmaiel Jabbari, Lichun Lu, James A. Gruetzmacher, Syed Ameenuddin, Godard C. de Ruiter, Michael J. Moore, Bradford L. Currier, Robert J. Spinner, Anthony J. Windeban, Michael J. Yaszemski

89f Characterization of Natural and Synthetic Polymer Blend Scaffolds for Tissue Engineering
Sundararajan V Madihally, Aliakbar Moshfeghian

Session 90 - Biomimetic Interfaces
Chair: Efrosini Kokkoli
Vice Chair: James W Schneider

90d Oligosachharide modified biomimetic surfactant polymer for non-thrombogenic interface applications: Platelet Adhesion Studies
Anirban Sen Gupta, Emily Link, Shuwu Wang, Kandice Kottke-Marchant and Roger E. Marchant

90f Studies on Competitive Responses in Neurons to Extracellular Cues Using Microfabricated Systems
Natalia Gomez and Christine E. Schmidt

90g Fibronectin/polyelectrolyte multilayered assemblies: film formation and cell attachment studies
Corinne Wittmer and Paul R. Van Tassel

Session 191 - Biomolecules at Interfaces I
Chair: James W Schneider
Vice Chair: Steven P Wrenn

191c Detection of Biomolecular Interactions at a Phospholipid Interface Using a Liquid Crystal Read-Out
Andrew Price and Daniel Schwartz

Session 193 - Interfacial Phenomena in Semiconductor Processing
Chair: Van N Truskett
Vice Chair: Sekhar Sundaram

193a Fabrication of sub-100nm thick Nanoporous silica thin films
M. Ojha, W. Cho, J. L. Plawsky and W. N. Gill

193g Inhibition of Galvanic Corrosion of Wnc Barrier Metal for Reliable Cu Cmp
D. Ernur, V. Terzieva, J. Schuhmacher and K. Maex

Session 196 - Biomolecules at Interfaces II *
Chair: James W Schneider
Vice Chair: Steven P Wrenn

Session 235 - Transport Phenomena in Membranes and Barriers Honoring Session for Don Paul's 65th Birthday
Chair: William J Koros
Vice Chair: Timothy Barbari

235f Influence of additives on CO2 transport in PEEK-WC membranes
Gabriele Clarizia, Anna Maria Torchia and Enrico Drioli

Session 242 - Advances in Inorganic and Nano-Composite Membranes I
Chair: Yi Ma
Vice Chair: Leland Vane

242d Probing the Depth-Dependence of Molecular Sieve Membrane Composition by Step-Scan Photoacoustic (SS-PAS) Spectroscopy
Weontae Oh and Sankar Nair

Session 247 - Advances in Inorganic and Nano-Composite Membranes III
Chair: D B Bhattacharyya
Vice Chair: Erik E Engwall

247d Highly permeable supported γ-alumina membranes for water purification
Di Yu, Matthew L. Mottern, Henk Verweij, John Bukowski and Jennifer A. Lewis

247f Carbon-Zeolite NaA Composite Membranes
Xiongfu Zhang, Haiou Liu, King Lun Yeung and Jinqu Wang

Session 264 - Nanostructured Adsorbent Materials
Chair: Peter I Ravikovitch
Vice Chair: Stephen E Rankin

264f Preparation of Magnetic Silica Nanospheres with Metal Chelate Ligands and Application in Recovery of Protein
Zhiya Ma, Yueping Guan, Xianqiao Liu, Huizhou Liu

Session 270 - Multi-scale and Population Balance Modelling of Particle Technology for Materials Processing
Chair: Paul Mort
Vice Chair: Alon V McCormick

270a Multidimensional Population Balance Modeling of Barium Sulfate Precipitation in Microemulsions
Bjorn Niemann, Dendy Adityawarman, Kai Sundmacher

270b Modeling Crystallization in CMSMPR: Results of Validation Study on Population Balance Modeling in FLUENT
Bin Wan, Terry A. Ring, Kumar M. Dhanasekharan, Jayanta Sanyal

270e Modeling of Coarse Particle Shape Evolution During Attrition in a Stirred Vessel
Kumar Vedantham, Priscilla J. Hill

270h Self-Similarity of Particle Size Distribution from Pneumatic Conveying Attrition
Robert A. Hamilton, Jennifer S. Curtis, Doraiswami Ramkrishna

Session 273 - Molecular Modeling and Surface Interactions
Chair: Roger Place
Vice Chair: Alon V McCormick

273f Structure and Dynamics of Graphite Supported Bimetallic Transition Metal Clusters.
Subramanian KRSS, Venkat R. Bhethanabotla, Babu Joseph

Session 276 - Control of Particulate Material Assembly Through Surface Chemistry *
Chair: Stephen E Rankin
Vice Chair: Jan Sefcik

Session 281 - Nano Energetic Materials
Chair: Jan A Puszynski
Vice Chair: Hendrik J Viljoen

281b Effect of Aluminum Nanopowder Characteristics on Preparation and Performance of Al-Metal Oxide Nanoenergetic Mixtures
Christopher J Bulian, Tyler T Kerr, Jacek J Swiatkiewicz, Jan A Puszynski

281d A Study in Mechano-Chemistry: Pressure Induced Reactions and Nonequilibrium Phenomenon
Alexander Gordopolov, Hendrik J. Viljoen

281e In-Situ Polymer Grafting on Ultrafine Metal Powders
Charles DUBOIS, Patrick BROUSSEAU, Cedric ROY, Pierre LAFLEUR

281f Nanofuel/Oxidizers For Energetic Compositions
Randall J. Cramer

Session 334 - In Memory of Stratis Sotirchos I *
Chair: T J Mountziaris
Vice Chair: Alkiviades C Payatakes

Session 335 - In Memory of Stratis Sotirchos II *
Chair: T J Mountziaris
Vice Chair: Alkiviades C Payatakes

Session 336 - Materials Engineering and Science Division Plenary Session *
Chair: Dennis W Hess
Vice Chair: Douglass S Kalika

Session 337 - Poster Session: Materials
Chair: Giuseppe R Palmese
Vice Chair: Chih-hung (Alex) Chang

337ak Synthesis of Low Silica Zeolites Under the Water with Alcohols and the Surface Characterization of Gaseous adsorption
Takashi Yamada and Yoshinobu Otake

337al Preparation and characterization of carbon materials from phenol formaldehyde resin with pore forming substance
Katsuya Inomata, Yoshinobu Otake

337aq Preparation and Characterization of NiPd Nanoparticles
Hitesh G. Bagaria, David E. Nikles, Duane T. Johnson

337au Conformal Coating of Nanoparticles Using Atomic Layer Deposition in a Fluidized Bed Reactor
Luis F. Hakim, Julie L. Portman, Michelle D. Casper, Alan W. Weimer

337av Novel Processing to Produce Polymer/Ceramic Nanocomposites
Joe Spencer, Alan Weimer, Steve George, Karen Buechler, John Ferguson

337u New Materials From Flax Textile Fibers Preserving Native Cellulose Allomorph
Elena Vismara, Francesco Briatico, Andrea Pavan, Giangiacomo Torri, Maura Comoli, Sabrina Bertini, Rocco Di Modugno, Giorgio Rondi

Session 338 - Polymer Thin Films and Interfaces I *
Chair: John Torkelson
Vice Chair: Rangaramanujam M Kannan

Session 339 - Structure and Properties of Polymers IV: Multiphase Polymers *
Chair: Lynn Loo
Vice Chair: Michael L. Greenfield

Session 340 - Polymer Processing and Rheology I
Chair: U Sundararaj
Vice Chair: Sachin Velankar

340b Modeling and simulation of polymer melt spinning
Pankaj Doshi, Scott D. Phillip, Markus Hutter Robert A. Brown, Robert C. Armstrong

Session 341 - Polymer Thin Films and Interfaces II *
Chair: Clifford L Henderson
Vice Chair: Venkat Ganesan

Session 342 - Polymer Processing and Rheology II
Chair: Victor Breedveld
Vice Chair: Kurt W Koelling

342e Linear Viscoelasticity of Leslie-Ericksen Liquid Crystal Polymers
Luiz R.P. de Andrade Lima, Alejandro D. Rey

Session 343 - Polymer Thin Films and Interfaces III : Microelectronics
Chair: Eric K Lin
Vice Chair: Clifford L Henderson

343a Electrically Induced Pillar Arrays Formed Using Photocurable Materials
Michael D. Dickey, Elizabeth Collister, Frank Palmieri, C. Grant Willson

Session 344 - Thermodynamics of Polymers I
Chair: Zhong-Ren Chen
Vice Chair: Carson Meredith

344c Multicomponent Transport in Swollen Networks
John R. Dorgan, Oluwasijibomi Okeowo

344f Expanded liquid model for phase equilibria in systems with specific CO2 … polymer interactions
Ibrahim A. Ozkan, Amyn S. Teja

Session 345 - Polymer Blends Honoring Session for Don Paul's 65th Birthday
Chair: Timothy Barbari
Vice Chair: William J Koros

345a Fracture Toughness of Blends of Nylon 6 with Maleated Elastomers
O. Okada, H. Keskkula, D. R. Paul

Session 346 - Thermodynamics of Polymers II
Chair: Theo W de Loos
Vice Chair: Michael C Huang

346c Modeling Chain Stiffness and Attractive Interaction for Polymeric Systems in the NPT Ensemble
Saidu M Waziri, Nasiru M Tukur, Esam Z Hamad

Session 347 - Diffusion in Polymers II
Chair: Balaji Narasimhan
Vice Chair: David Rethwisch

347e A New Kinetic Model for Interdiffusion at Semicrystalline Polymer Interfaces
Chieh-Tsung Lo, Balaji Narasimhan

Session 348 - Structure and Properties of Polymers I: Gels *
Chair: Lynn Loo
Vice Chair: Michael L. Greenfield

Session 349 - Polymerization Kinetics, Catalysis and Reaction Engineering I
Chair: Joseph Schork
Vice Chair: Julie L Jessop

349d Characterization of the Initial Conditions in Emulsion Polymerization: Loci for Particle Nucleation
Vineet Shastry, Luis H Garcia-Rubio

349f ATRP of Ionic Liquid Monomers and CO2 Absorption of the Polymerized Ionic Liquids
Huadong Tang, Sijie Ding, Jianbin Tang, Maciej Radosz, Youqing Shen

Session 350 - Structure and Properties of Polymers II : Polymer Blends *
Chair: Brian P Grady
Vice Chair: Ronald C Hedden

Session 351 - Polymerization Kinetics, Catalysis and Reaction Engineering II *
Chair: Allan Guymon
Vice Chair: Joao BP Soares

Session 352 - Structures and Properties III: Dynamics in Glass Formers
Chair: Gregory B McKenna
Vice Chair: Jovan Mijovic

352f DNA Dynamics as studied by Dielectric Relaxation Spectroscopy (DRS) and Dynamic Mechanical Spectroscopy (DMS)
Mingyun Sun, Jovan Mijovic

Session 353 - Polymerization Kinetics, Catalysis and Reaction Engineering III
Chair: Allan Guymon
Vice Chair: Joao BP Soares

353b Multisite Model of Polyol Preparation in Continuous Processes Using Heterogeneous Double Metal Cyanide Catalysts
M. Zhang, C. Villa, L. Thompson, J. Weston

353c Kinetic Modeling and Parameter Estimation of Slurry Propylene Homopolymerization Using Rac-Et[Ind]2zrcl2/MAO
Bernabe Quevedo, Ramon A. Gonzalez-Ruiz, Robert L. Laurence, E. Bryan Coughlin, Michael A. Henson

353f Novel Sparse-Matrix Representation for Free-Radical Polymerization Simulations
Yadunandan L Dar, Vijay R. Tirumala, Gerard T. Caneba, Derrick C. Mancini5

Session 354 - Biofunctional Surfaces: From Fundamentals to Devices I Fundamentals to Devices I *
Chair: Rastislav Levicky
Vice Chair: Ben O' Shaughnessy

Session 355 - Modeling of Materials for Microelectronics *
Chair: Peter Ludovice
Vice Chair: Sankar Nair

Session 356 - Polymers for Photonics and Microelectronic Applications
Chair: Joseph L Lenhart
Vice Chair: Erin Jablonski

356a Fabrication of Multi-Functional Optical I/O Via Imprint Lithography
Sue Ann Bidstrup Allen, Ate He, Paul A. Kohl

Session 357 - Polymers from Renewable Resources *
Chair: John R Dorgan
Vice Chair: Yossef A Elabd

Session 358 - Biofunctional Surfaces: From Fundamentals to Devices II *
Chair: Rastislav Levicky
Vice Chair: Ben O' Shaughnessy

Session 359 – Biomembranes *
Chair: M. L Gilchrist
Vice Chair: Padma J Narayan

Session 360 - Nanoparticle Assemblies and Superlattices *
Chair: Yangchuan Xing
Vice Chair: Michael Z Hu

Session 361 - Nanostructured Thin Films for Energy Applications *
Chair: Hugh W Hillhouse
Vice Chair: Sankar Nair

Session 362 - Novel Catalytic Materials I
Chair: Vadim V Guliants
Vice Chair: Michael S Wong

362d Characteristics of Carbon-Based Catalysts for the Selective Catalytic Oxidation of Hydrogen Sulfide
Todd H. Gardner, Dushyant Shekhawat and David A. Berry

Session 363 - Novel Catalytic Materials II *
Chair: Vadim V Guliants
Vice Chair: Michael S Wong

Session 364 - Combinatorial Methods *
Chair: Andre Palmer
Vice Chair: Victor Breedveld

Session 365 - Liquid-Phase Synthesis of Nanoparticles *
Chair: Michael T Harris
Vice Chair: Michael S Wong

Session 366 - Reaction Kinetics in Electronic Materials Processing *
Chair: Brian G Willis
Vice Chair: Charles B Musgrave

Session 367 - Semiconductor Surface Chemistry *
Chair: Katherine S Ziemer
Vice Chair: Jason F Weaver

Session 368 - Atomic Layer Deposition *
Chair: John G Ekerdt
Vice Chair: Jane P Chang

Session 369 - Chemical Vapor Deposition
Chair: Daniel D Burkey
Vice Chair: Chih-hung (Alex) Chang

369e Deposition and characterization of ultra thin hafnium and zirconium silicate films on Si(100) using metal complexes of alkoxide and amido groups
Jaehyun Kim, Kijung Yong

Session 370 - Plasma Processing *
Chair: Edward A Evans
Vice Chair: Brett A Cruden

Session 371 - Transport Phenomena in Electronic Materials Processing *
Chair: Bridget R Rogers
Vice Chair: Brian G Willis

Session 372 - Plasma Processing in Electronic Materials Processing
Chair: Daniel D Burkey
Vice Chair: Katherine S Ziemer

372g Visualization and Control of Particulate Contamination Phenomena in a Plasma Enhanced CVD Reactor
Manabu Shimada, Kikuo Okuyama, Yutaka Hayashi, Heru Setyawan and Nobuki Kashihara

Session 373 - CVD and ALD in Electronic Materials Processing *
Chair: Charles B Musgrave
Vice Chair: Bridget R Rogers

Session 374 - Composites 1
Chair: John J La Scala
Vice Chair: Gautham Parthasarathy

374a Capillary Flow of Discotic Nematic Liquid Crystals□ Onion Textures
Luiz R.P. de Andrade Lima and Alejandro D. Rey

Session 375 - Composites 2 *
Chair: Giuseppe R Palmese
Vice Chair: Deepak Srinivasagupta

Session 376 - Processing of Polymeric Nanocomposites *
Chair: Giuseppe R Palmese
Vice Chair: Timothy D Fornes

Session 436 - Modeling and Design of Electronic Materials Processes
Chair: Ray Adomaitis
Vice Chair: Kostas Theodoropoulos

436e Simulation-based design and analysis of advanced CVD reactor systems
Jing Chen, Jae-Ouk Choo and Raymond A. Adomaitis

436g Modeling and Scheduling Stepper Operations in the Photolithography Process in Wafer Fabrication
Balla Ganesh and I.A. Karimi

Session 463 - Novel Carriers for Drug and Cell Delivery *
Chair: Surya K Mallapragada
Vice Chair: Rebecca L Carrier

Session 475 - Advances in Green Bioprocessing
Chair: Ching-An Peng
Vice Chair: David H Reeder

475b Biodiesel production by enzymatic transesterification of olive oil
Fernando Sanchez, Palligarnai T. Vasudevan and Michael Diamond

475d Enhanced Butyric Acid and Hydrogen Production by the Mutants of Clostridium tyrobutyricum
Xiaoguang Liu and Shang-Tian Yang

475e Preparation of Activated Carbon from Forest and Agricultural Residues Through Co2 Activation
Tengyan Zhang, Walter P. Walawender, L. T. Fan, Maohong Fan, Daren Daugaard And R. C. Brown

Session 500 - Advances in Drug Delivery: Focus on Biomaterials I *
Chair: David A Putnam
Vice Chair: Stavroula Sofou

Session 509 - Advances in Biosensors IV *
Chair: Kimberly W Anderson
Vice Chair: Vassilios I Sikavitsas

Session 564 - High Temperature Synthesis and Processing of Ceramics
Chair: Jorge E Gatica
Vice Chair: Jan A Puszynski

564b Combustion Synthesis of BN/AlN and BN/B4C Ceramic Composite Powders
Hayk H. Khachatryan, Suren L. Kharatyan, Jan A. Puszynski

564c Mathematical Modeling and Experimental Studies of Condensed-Phase Reaction in Ti-Mo-Si System in the Presence of Gas Pressure Gradient
G.K. Thich, I. Chaudhuri, J.A. Puszynski, M.M. Bichay, J.Rose

Session 569 - Nanofabrication and Nanoscale Processing I
Chair: Hank Foley
Vice Chair: Sharon C Glotzer

569a Fluidic Self-Assembly of Nanowires
Zhiyong Gu, Yiming Chen, David H. Gracias

Session 570 - Nanostructured Hybrid Organic/Inorganic Materials *
Chair: Sharon C Glotzer
Vice Chair: Clare McCabe

Session 572 - Nanofabrication and Nanoscale Processing II
Chair: Hank Foley
Vice Chair: Sharon C Glotzer

572b Sub-50 nm Imprint Lithography for Wafer-Scale Nano-Manufacturing
V. N. Truskett, F. Xu, I. McMackin, J. Choi, P. Schumaker, D. Babbs, E. Thompson, S. V. Sreenivasan, M. Watts, N. Schumaker

572f Conductive Copper Patterns by an Additive, Solventless, Contact Printing Technique
Kimberly Felmet,Yangming Sun, Yueh-Lin Loo

Session 574 - Nanoscale Structure in Polymers I: Self-organization of Polymers at Surfaces and Interfaces *
Chair: Carson Meredith
Vice Chair: Sanat Kumar

Session 575 - Self and Directed Assembly at the Nanoscale I *
Chair: Hank Ashbaugh
Vice Chair: Kristen A Fichthorn

Session 577 - Nanoscale Structure in Polymers II: Nanostructured Polymeric Materials
Chair: Rangaramanujam M Kannan
Vice Chair: Yossef A Elabd

577b Texture Formation in Multiphase Polymer-Liquid Crystal Materials
Susanta K. Das, Alejandro D. Rey

577f Preparation of Poly(vinyl alcohol)/TiO2 Nanofibers by Electrospinning
Yu-Hsun Nien, Po-Jung Lin, Lih-Yun Wu, Tzy-Harn Liou, Pey -I Wey

Session 579 - Nanoelectronic Materials
Chair: Brett A Cruden
Vice Chair: Michael Z Hu

579b Understanding the Assembly of Conjugated Dithiol Molecules on GaAs
Dmitry Krapchetov, Hong Ma, Daniel A. Fischer, Alex Jen and Yueh-Lin (Lynn) Loo

Session 580 - Nanoscale Structure in Polymers III: Polymer Nanocomposites
Chair: Robb M Winter
Vice Chair: Russell E Gorga

580d Nucleation Effects of Nanoparticles on Microcelluar Polystyrene Foams
Jiong Shen, Changchun Zeng and L. James Lee

Session 581 - Self and Directed Assembly at the Nanoscale II
Chair: Hank Ashbaugh
Vice Chair: Kristen A Fichthorn

581f Equilibrium Microstructure of Complex Fluids
YoChan Kim, Charles A. Petty and André Bénard

Session 583 - Nanotechnology and Nanobiotechnology for Sensors I *
Chair: Mark W Vaughn
Vice Chair: Venkat R Bhethanabotia

Session 584 - Self and Directed Assembly at the Nanoscale III
Chair: Hank Ashbaugh
Vice Chair: Kristen A Fichthorn

584f Permanently Linked Rigid Superparamagnetic Chains
Harpreet Singh, Paul E. Laibinis and T. Alan Hatton

Session 586 - Nanoscale Structure in Polymers IV *
Chair: Carson Meredith
Vice Chair: Sanat Kumar

Session 587 - Nanomaterials and Devices for Energy Applications
Chair: Levi T Thompson
Vice Chair: Hank Foley

587b Hydrogen Production from Simulated Gasoline using Nickel-Based Catalysts
Andrew Tadd, Ben Gould and Johannes Schwank

Session 588 - Nanotechnology and Nanobiotechnology for Sensors II *
Chair: Mark W Vaughn
Vice Chair: Venkat R Bhethanabotia

Session 589 - Nanoscale Structure in Polymers V
Chair: Rangaramanujam M Kannan
Vice Chair: Yossef A Elabd

589d Molecular dynamics simulation of thermal and mechanical properties of polyimide-carbon-nanotube composites
Dewei Qi and Jeffrey Hinkley

Session 597 - Nanotemplating of Polymers
Chair: Seong H Kim
Vice Chair: Allan Guymon

597b Nano-templated Silsesquioxanes for Electrical/Optical Applications
Sue Ann Bidstrup Allen, Jaseem Abdallah and Paul A. Kohl

* These papers were unavailable at the time of publication.

09: Environmental Division

To Use this Index: Scroll down or use the bookmarks in the left-hand frame to move to a new location in this index. Click on a blue paper title to view that paper. To return to this index after viewing a paper, click the PREVIOUS MENU bookmark in the left frame.

Session 14 - Fuel Cell Technology I

Chair: Godwin Igwe
Vice Chair: Ioannis (Yannis) P Androulakis

Session 27 - Chemicals and Materials from Renewable Feedstocks Plenary (Invited Papers)

Chair: James D McMillan
Vice Chair: Paul G Roessler

Session 35 - Developments in Bio-based Alternative Fuels

Chair: Brian Duff
Vice Chair: Gregory W Luli

Session 177 - Interfacial Phenomena in Environmental Systems *
Chair: Sekhar Sundaram
Vice Chair: Sotira Yiacoumi

Session 204 - Reactions in Near Critical and Supercritical Fluids I
Chair: Bala Subramaniam
Vice Chair: Keith W Hutchenson

204f Production of H2 from Methanol by Supercritical Water Reforming: Strategies to Suppress Methanation
Jayant B. Gadhe and Ram B. Gupta

Session 357 - Polymers from Renewable Resources *
Chair: John R Dorgan
Vice Chair: Yossef A Elabd

Session 377 - Poster Session: Chemical Engineering and the Environment
Chair: David R Shonnard
Vice Chair: Nick D Hutson

377ad Reaction Kinetics of ZnO Dissociation for a Solar-Thermal Zn/ZnO Water-Splitting Cycle
Christopher M. Perkins, Chris J. Gump and A.W. Weimer

377k Biotransformation of Tertiary Butyl Mercaptan in Soil Microcosms
S. Kalainesan, L.E. Erickson, S. L. L. Hutchinson and R. Karthikeyan

377s Redox characteristics of Cu-ferrite for thermochemical hydrogen production
Chu-Sik Park In-Tae Seo, Sang-Ho Lee, Gab-Jin Hwang and Hyun-Soo Yang

377v Development and Cost Estimation of Green Gas Reduction Process for Power Plant
Jiyong Kim, Dongwoon Kim and Il Moon

Session 378 - Homogeneous and Hetergeneous Atmospheric Chemistry
Chair: Neil M Donahue
Vice Chair: Athanasios Nenes

378a Toward a phenomenological theory of nucleation
Isamu Kusaka

Session 379 - Greenhouse Gas Sequestration Technology I
Chair: Nick D Hutson
Vice Chair: Jefferson W Tester

379g Novel Carbon Dioxide Solid Acceptors Using Sodium Containing Oxides
Collins-Martínez V., Lardizábal Gutiérrez D., Pérez Rivera N. G. and López-Ortiz A

Session 380 - Environmental Transport and Fate of Chemicals I
Chair: Danny D Reible
Vice Chair: Louis J Thibodeaux

380f Design of In Situ Caps for the Isolation of Contaminated Sediments
Volodymyr V. Tarabara and Mark R. Wiesner

Session 381 - Greenhouse Gas Sequestration Technology II
Chair: Jefferson W Tester
Vice Chair: Nick D Hutson

381f Mass Transfer Coefficient and Solubility of CO2 Drops and CO2 Hydrates under Simulated Deep Ocean Situations
Yi Zhang , Robert P. Warzinski, Ronald J. Lynn and Gerald D. Holder

Session 382 - Green Chemistry and Reaction Engineering
Chair: Martin Abraham
Vice Chair: Russell F Dunn

382a Kinetic Study of the Accelerated Carbonation of MSW Incinerator Air Pollution Control Residues
M. Fernández Bertos, A. Scuzzarella, S.R.J. Simons, C.D. Hills and P. Carey

Session 383 - Environmental Transport and Fate of Chemicals II
Chair: Danny D Reible
Vice Chair: Louis J Thibodeaux

383g Effects of San Diego Wildfire on Ambient Air Quality and Health of San Diego Residents
Shekar Viswanathan, Luis S. Eria, Nimal Diunugala, Jeffrey Johnson and Christopher McLean

Session 384 - Environmental Applications of Adsorption
Chair: Norberto Lemcoff
Vice Chair: Nick D Hutson

384c Comparison of Aqueous Phase Indices for Powdered Activated Carbon to Pore Size Distribution Measured Via Gas Adsorption
R. R. Jain, D. K. Ludlow and C. D. Adams

Session 385 - Applications of Environmental Catalysis I
Chair: Sibudjing (Jim) Kawi
Vice Chair: Raymond L Smith

385b Optimization of NOx Storage Performance through Modifying Catalyst Composition and Alumina Support
Xiaoyin Chen, Johannes Schwank, John Li, William F. Schneider, Christian T. Goralski, Jr. and Peter J. Schmitz

385c Global Kinetic Modeling of Lean NOx Traps
Louise Olsson and Richard J. Blint

Session 386 - Green Engineering in the Chemical Engineering Curriculum *
Chair: Robert P Hesketh
Vice Chair: David R Shonnard

Session 387 - Advanced Computations for Environmental Applications I *
Chair: Yoram Cohen
Vice Chair: Andreas A Linninger

Session 388 - Advanced Oxidation Processes in Environmental Applications I *
Chair: Mark Bricka
Vice Chair: Mark Zappi

Session 389 - Advanced Computations for Environmental Applications II
Chair: Yoram Cohen
Vice Chair: Andreas A Linninger

389e A 3-D Model for Oxygen Consumption in a River Using Computational Fluid Dynamics (Cfd)
M.B. Machado, L.T. Furlan, E. Tomaz and J.R Nunhez

389f Scheduling of a Paper Mill Process Considering Environment and Cost
Mijin Park, Dongwoon Kim, Jiyong Kim and Il Moon

389g Soil Biotechnology Process Simulation using Computational Fluid Dynamics
Umesh Yeole, Pattanaik B.R. and Shankar H.S.

Session 390 - Advanced Oxidation Processes in Environmental Applications II
Chair: Mark Bricka
Vice Chair: Rafael Hernandez

390b Effect of Oxygen Partial Pressure and Catalysts on the Rate of UV irradiated Oxidation of EDTA
Wolfgang Gangl, Rolf Marr and Matthäus Siebenhofer

390e New products from partial oxidation of glycerol
Martin Ernst, Rolf Marr, Edgar Ahn, Thomas Hilber and Matthäus Siebenhofer

390f Mercury Removal in Flue Gases by Dielectric Barrier Discharge Technique
Zongyuan Chen, Deenal P. Mannava and V.K. Mathur

Session 391 - Membranes for Gas and Water Treatment Applications
Chair: Yoram Cohen
Vice Chair: John Pellegrino

391e Semiequilibrium Dialysis versus Ultrafiltration for the Separation of Arsenic from Water Using Cationic Amphiphilic Aggregates
Erdogan Ergican and Hatice Gecol

Session 392 - Catalytic/Biocatalytic Membrane Reactors
Chair: Theodore T Tsotsis
Vice Chair: Michael C Trachtenberg

392e CFD-simulation of membrane reactor for methane steam reforming
Takashi Takeuchi, Masahiko Aihara and Hitoshi Habuka

Session 393 - Process Design for Sustainability
Chair: Russell F Dunn
Vice Chair: Paul Blowers

393c Decision Making for a Sustainable Chemical Process
Xun Jin and Karen A. High

393e A Multiscale and Multiobjective Approach for Environmentally Conscious Process Retrofitting
Jorge L. Hau and Bhavik R. Bakshi

Session 394 - Novel Membranes and Membrane Processes for Recovery/Recycle
Chair: Eric M Hoek
Vice Chair: D B Bhattacharyya

394a Sodium Tripolyphosphate (TPP) Crosslinked Chitosan Membranes and Application in Humic Acid Removal
Chunxiu Liu, Renbi Bai and Li Nan

Session 395 - Fundamentals of Environmental Catalysis *
Chair: Panagiotis (Peter) Smirniotis
Vice Chair: Robert W Peters

Session 396 - Reactions In and Other Applications of Benign Solvents *
Chair: Phillip E Savage
Vice Chair: Urmila Diwekar

Session 475 - Advances in Green Bioprocessing
Chair: Ching-An Peng
Vice Chair: David H Reeder

475b Biodiesel production by enzymatic transesterification of olive oil
Fernando Sanchez, Palligarnai T. Vasudevan and Michael Diamond

475d Enhanced Butyric Acid and Hydrogen Production by the Mutants of Clostridium tyrobutyricum
Xiaoguang Liu and Shang-Tian Yang

475e Preparation of Activated Carbon from Forest and Agricultural Residues Through Co2 Activation
Tengyan Zhang, Walter P. Walawender, L. T. Fan, Maohong Fan, Daren Daugaard And R. C. Brown

Session 514 - Fuel Cell Technology II
Chair: Trung V Nguyen
Vice Chair: Hossein Hariri

514b Operation of a PEM Stack with High Impurity Anode Feeds in a Recycle Mode
Wenhua H. Zhu, Robert U. Payne, Yong Lu, Bruce J. Tatarchuk

514e Model-based Control of Fuel Cells: Optimal Efficiency
J. Golbert and D.R. Lewin

514f Rigorous modeling and experimental validation of mass, charge and energy transport in a DMFC polymer electrolyte membrane
Thorsten Schultz, Kai Sundmacher

514g The electrochemical kinetics study of methanol at electrocatalyst Pt-Ru/C and the methanol diffusion in the modified proton exchange membranes
Ning-Yih Hsu ,Yu-Nong Chen, Shi-Chern Yen

514h Direct Methanol Fuel Cell Thermodynamic Simulation
S.S. Sandhu, R.O. Crowther, J.P. Fellner

Session 516 - Supercritical Fluids Applications - In Memory of Aydin Akgerman *
Chair: Rayford G Anthony
Vice Chair: Dragomir B Bukur

Session 539 - Reaction Engineering Fundamentals and Applications - In Memory of Aydin Akgerman *
Chair: Dragomir B Bukur
Vice Chair: Rayford G Anthony

Session 545 - Reactions in Near Critical and Supercritical Fluids II
Chair: Bala Subramaniam
Vice Chair: Rafael Hernandez

545a Investigation of reversible chemical reactions in compressed CO2 on the basis of production of methyl acetate
Stephan Schwinghammer, Rolf Marr, Matthäus Siebenhofer

545e Propylene hydration in high-temperature water
shimizu

Session 548 - Developments in Chemical-based Alternative Fuels *
Chair: Prasanna V Joshi
Vice Chair: Wei-Yin Chen

Session 569 - Nanofabrication and Nanoscale Processing I
Chair: Hank Foley
Vice Chair: Sharon C Glotzer

569a Fluidic Self-Assembly of Nanowires
Zhiyong Gu, Yiming Chen, David H. Gracias

Session 572 - Nanofabrication and Nanoscale Processing II
Chair: Hank Foley
Vice Chair: Sharon C Glotzer

572b Sub-50 nm Imprint Lithography for Wafer-Scale Nano-Manufacturing
V. N. Truskett, F. Xu, I. McMackin, J. Choi, P. Schumaker, D. Babbs, E. Thompson, S. V. Sreenivasan, M. Watts, N. Schumaker

572f Conductive Copper Patterns by an Additive, Solventless, Contact Printing Technique
Kimberly Felmet,Yangming Sun, Yueh-Lin Loo

Session 601 - Lawrence K. Cecil Environmental Award Lecture *
Chair: Jost O L Wendt

* These papers were unavailable at the time of publication.

10: Computing and Systems Technology Division

To Use this Index: Scroll down or use the bookmarks in the left-hand frame to move to a new location in this index. Click on a blue paper title to view that paper. To return to this index after viewing a paper, click the PREVIOUS MENU bookmark in the left frame.

Session 401 - Industrial Perspectives on Process Design
Chair: Mahmoud M El-Halwagi
Vice Chair: Dennis Spriggs

401c The ÉCLAIRS Process for Converting Natural Gas to Hydrocarbon Liquids
Sean C. Gattis, Edward R. Peterson and Marvin M. Johnson

Session 402 - Product and Process Design *
Chair: Gavin P Towler
Vice Chair: Sagar B Gadewar

Session 403 - Poster Session: Systems and Process Design
Chair: Vivek Julka
Vice Chair: Gavin P Towler

403a Value Analysis of Industrial Systems
Jhuma Sadhukhan, Nan Zhang, X. X. Zhu and Robin Smith

403aa Multi-Objective Optimization of Industrial Styrene Production Using a Process Simulator and a Genetic Algorithm
N. Bhutani, A. Tarafder, A. K. Ray and G. P. Rangaiah

403l Large-Scale Dynamic Optimization with the Directional Second Order Adjoint Method
Derya B. Ozyurt and Paul I. Barton

403o A simple design method for multicomponent distillation columns
D.P.Rao, Amit Kumar, Ashok Kumar, Devendra Agarwal and Abhishek Sinha

403z Steady State Analysis for the Synthesis of Reactive Distillation Column Control Structures
Nitin Kaistha, Bhanu P. Singh, M.V. Pavan Kumar and Ram Singh

Session 404 - Hybrid Systems: Simulation, Design and Control
Chair: Nikolas Kazantzis
Vice Chair: Nael H El-Farra

404c On Global Optimization of Hybrid Systems
Cha Kun Lee and Paul I. Barton

Session 405 - Separation System Design & Synthesis
Chair: Vivek Julka
Vice Chair: Raymond E Rooks

405f A Unified Modeling Framework for the Design of Complex Separation Processes
Natassa Dalaouti and Panos Seferlis

Session 406 - Operability & Process Design
Chair: Helen H Lou
Vice Chair: Randy Esposito

406g Simultaneous Design and Control of Polymerization Reactors
Mariano Asteasuain, Claudia Sarmoria, Adriana Brandolin and Alberto Bandoni

Session 407 - Design & Operations Under Uncertainty
Chair: Sridhar Ungarala
Vice Chair: Andreas A Linninger

407g Uncertainties in Parameter Estimation & Optimal Control in Batch Distillation
Saadet Ulas, Urmila M. Diwekar and Mark A. Stadtherr

407h Design of Plastics Separation Systems Under Uncertainty by the Sample Average Approximation Method
Jing Wei and Matthew J. Realff

Session 408 - Design & Analysis for Biological Systems *
Chair: Lealon L Martin
Vice Chair: Sundararajan V Madihally

Session 409 - Design of Reactive Systems
Chair: Patrick Linke
Vice Chair: Prasenjeet Ghosh

409c How to Start Up Reactive Distillation Towers
F. Reepmeyer, J.-U. Repke, F. Forner and G. Wozny

Session 410 - Modeling and Control for Microelectronics Manufacturing (Invited Session) *
Chair: Richard D Braatz
Vice Chair: S Jo Qin

Session 411 - APC for Microelectronics Manufacturing
Chair: Anthony Toprac
Vice Chair: Yoon Seongkyu

411b In-situ Measurement and Control for Photoresist Processing in Microlithography
Arthur Tay, Weng-Khuen Ho, Xiaodong Wu and Choon-Meng Kiew

411e Control Strategies for the Programmable Chemical Vapor Deposition Reactor System
Jae-Ouk Choo, Jing Chen and Raymond A. Adomaitis

411f Fault detection and estimation of wafer warpage profile during thermal processing in microlithography
Arthur Tay, Weng Khuen Ho, Ni Hu and Ying Zhou

Session 412 - Advances in Process Control
Chair: Mayuresh V Kothare
Vice Chair: Martha Gallivan

412b Estimation of Visual Quality of Injection-Molded Polymer Panels
J. Jay Liu and John F. MacGregor

Session 413 - Nonlinear Process Analysis and Control *
Chair: Panagiotis D Christofides
Vice Chair: Donald J Chmielewski

Session 414 - Poster Session: Systems and Process Control
Chair: Nidhi Bhandari
Vice Chair: Martha Gallivan

414k Modeling and Sensitivity Analysis for Molecular Weight Distribution in an Emulsion VAc/BuA Copolymerization Reactor
Myung-June Park, Mustafa T. Dokucu and Francis J. Doyle III

Session 415 - Advances in Industrial Model Predictive Control (Invited Session) *
Chair: Thomas A Badgwell
Vice Chair: Sridhar Ungarala

Session 416 - Industrial Control Applications
Chair: Kenneth A Debelak
Vice Chair: Edward P Gatzke

416b Nonlinear Reduced-Order Modeling of Double Column Air Separation Plants
Shoujun Bian, Suabtragool Khowinij, Michael A. Henson, Paul Belanger and Lawrence Megan

416e Automated Prediction of Anode Effects in Aluminium Reduction Cells
K. Hestetun and M. Hovd

416f Electroless Nickel Plating: Pcb Process Modelling and Estimation
R. Tenno, K. Kantola and H. Koivo

Session 417 - Order Reduction and Control of Distributed Systems II
Chair: Antonios Armaou
Vice Chair: Nael H El-Farra

417f Order Reduction of Large Scale Dae Models
John D. Hedengren and Thomas F. Edgar

417g Nonlinear Model Reduction of Differential Algebraic Equation (DAE) Systems
Chuili Sun and Juergen Hahn

Session 418 - Monitoring and Control of Polymerization Processes
Chair: John P Congalidis
Vice Chair: John R Richards

418f Early Detection of Agglomeration in Fluidized Bed Polymerisation Reactors
J. Ruud van Ommen, John Nijenhuis, Ton C.P.M. Backx, Freek Kapteijn and Jacob A. Moulijn

Session 419 - Modeling and Control of Biomedical Systems *
Chair: Robert S Parker
Vice Chair: Rajanikanth Vadigepalli

Session 420 - Advances in Biochemical Processing: Control and Optimization
Chair: Kenneth R Muske
Vice Chair: Radhakrishnan Mahadevan

420c A Kalman filter for estimating enzyme levels during biphasic growth
Ryan K. Hamilton, Anna I Casasús, Ben Koopman and Spyros A. Svoronos

420e Principles of Rapid Polymerase Chain Reaction: Mathematical Modeling and Experimental Verification
H. J. Viljoen, R.M. Nelson and S. Whitney

Session 421 - Supply Chain Management I
Chair: Shinji Hasebe
Vice Chair: Marianthi Ierapetritou

421a Decomposition Method for Complex Supply Chain Optimization with Flexible Operation and Delivery Schedule
Chong Chen and Jin-Kuk Kim

421c Integrated inventory and pricing policies for supply chain networks
Panos Seferlis and Lambros Pechlivanos

421d Regulatory Factors and Supply Chain Planning in Chemical Industry
Hong-Choon Oh and I.A. Karimi

Session 422 - Supply Chain Management II *
Chair: Shinji Hasebe
Vice Chair: Marianthi Ierapetritou

Session 423 - Advances in Optimization: Methodologies
Chair: Jose Pinto
Vice Chair: Donald J Chmielewski

423f Global Solution of Mixed-Integer Dynamic Optimization Problems
Benoit Chachuat, Adam B. Singer and Paul I. Barton

423h Analytical Optimisation of Industrial Systems and Applications to Refineries, Petrochemicals
Jhuma Sadhukhan, Nan Zhang, X. X. Zhu and Robin Smith

Session 424 - Planning and Scheduling *
Chair: Ioannis (Yannis) P Androulakis
Vice Chair: Carl A Schweiger

Session 425 - Poster Session: Computers in Operations and Information Processing
Chair: Vipin Gopal
Vice Chair: Miguel J Bagajewicz

425aa Scheduling Tank Container Movements for Chemical Logistics
I.A. Karimi, M. Sharafali and H. Mahalingam

425b Design and Scheduling of Multi-Period and Multipurpose Batch Plants
Soon-Ki Heo and In-Beum Lee

425m A Comparison of Continuous-time Models for Scheduling Noncontinuous Plants
Suresh P. Sivanandam, Ganesh Balla, Arul Sundaramoorthy and I.A. Karimi

425n A Continuous-Time Formulation for Scheduling Multi-Stage Multi-product Batch Plants with Identical Parallel Units
Liu Yu and I. A. Karimi

425q Collaborative Decision Support During Process Operations Using Heterogeneous Software Agents
Y.S. Ng and R. Srinivasan

425t Neural Network Based Approach Applied to for Modeling and Optimization an Industrial Isoprene Unit Production
Rita M. B. Alves and Claudio A. O. Nascimento

425u Analysis and Detection of Outliers and Systematic Errors from an Industrial Data Plant
Rita M. B. Alves and Claudio A. O. Nascimento

425w Financial Risk Management in the Planning of Refinery Operations
Arkadej Pongsakdi, Pramoch Rangsunvigit, Kitipat Siemanond and Miguel J. Bagajewicz

Session 426 - Systems Engineering Approaches in Biology I
Chair: Luke E Achenie
Vice Chair: Shih-Hsie Pan

426g Discrete Event Based Dynamic Simulation of Algae Growth Bioreactor Considering Cyclic Light Effect
Wonjun Park and Il Moon

Session 427 - Data Analysis for Process Operations
Chair: Rajagopalan Srinivasan
Vice Chair: Gautham Parthasarathy

427f A Self-Organizing Map Approach for Process Fault Diagnosis During Process Transitions
Y.S. Ng and R. Srinivasan

Session 428 - Systems Engineering Approaches in Biology II *
Chair: Luke E Achenie
Vice Chair: Shih-Hsie Pan

Session 429 - Process Monitoring
Chair: Miguel J Bagajewicz
Vice Chair: Manabu Kano

429a Determining optimal sensor locations for parameter estimation via covariance matrices
Abhay K. Singh and Juergen Hahn

429c Data-Driven Approach for Product Quality/Yield Improvement: How to Specify Target of Qualitative Quality Variables
Manabu Kano, Koichi Fujiwara, Shinji Hasebe and Hiromu Ohno

429e Economic Design of Stateless Control Charts for Deteriorating Systems
Joshua D. Isom and Richard D. Braatz

429g A Systematic Decision Procedure to Identify Vital Few Causes of Variation in Largescale Petrochemical Process
Minjin Kim, Young-Hak Lee and Chonghun Han

429h A Novel Model Adaptation Method for Multivariate Statistical Process Control
Hyung Dae Jin, Young-Hak Lee and Chonghun Han

Session 430 - Operation of Micro-and Nano-systems
Chair: Vipin Gopal
Vice Chair: Claire Adjiman

430b Optimal Design and Operation of Micro Power Generation Processes
Benoit Chachuat, Alexander Mitsos and Paul I. Barton

430d Thermo-fluid Design Approach to Microreactors with Uniform Temperature and Residence Time Distribution
Osamu Tonomura, Masaru Noda, Manabu Kano and Shinji Hasebe

430g Evaluation of operational process parameters for nanoparticle precipitation in microemulsions using a Monte-Carlo Simulation approach
Andreas Voigt, Dendy Adityawarman and Kai Sundmacher

Session 431 - Advances in Optimization: Applications
Chair: Jose Pinto
Vice Chair: Donald J Chmielewski

431f An Improved Formulation For Scheduling Multipurpose Batch Plants Using Synchronous Slots
I.A.Karimi and Arul Sundaramoorthy

431g Simultaneous Modeling of Location, Advertisement and Competition in Investment/Capacity Planning with Risk Management
Nick Spencer, Jeff Godwin, Miguel Bagajewicz, Staci Powell and Sarah Hodge

431h A heuristic reactive scheduling strategy for recovering from refinery supply chain disruptions
Arief Adhitya, Rajagopalan Srinivasan and I.A. Karimi

Session 432 - Novel Numerical Methods in Fluid Mechanics *
Chair: Dimitrios V Papavassiliou
Vice Chair: Panagiotis Dimitrakopoulos

Session 433 - Poster Session: Applied Mathematics and Numerical Analysis
Chair: Panagiotis D Christofides
Vice Chair: Ray Adomaitis

433b One Important Element for the Calculation of High Pressure Gas Reaction Rate
H. Mishima

433j Branching analysis of T-periodic solutions in nonlinear biochemical systems using reductive perturbation method
B. Mohan Babu, Satish R. Inamdar, I.A. Karimi and B.D. Kulkarni

Session 434 - Order Reduction and Control of Distributed Systems I
Chair: Panagiotis D Christofides
Vice Chair: Antonios Armaou

434a Reduced-order observers for high dimensional chemical processes
Abhay K. Singh and Juergen Hahn

Session 435 - Computational Methods and Numerical Analysis I
Chair: Andrew Salinger
Vice Chair: Ray Adomaitis

435e A Dynamic, Adaptive, Locally Conservative and Nonconforming Solution Strategy for Transport Phenomena in Chemical Engineering
Shuyu Sun and Mary F. Wheeler

Session 436 - Modeling and Design of Electronic Materials Processes
Chair: Ray Adomaitis
Vice Chair: Kostas Theodoropoulos

436e Simulation-based design and analysis of advanced CVD reactor systems
Jing Chen, Jae-Ouk Choo and Raymond A. Adomaitis

436g Modeling and Scheduling Stepper Operations in the Photolithography Process in Wafer Fabrication
Balla Ganesh and I.A. Karimi

Session 437 - Computational Methods and Numerical Analysis II
Chair: Andrew Salinger
Vice Chair: Ray Adomaitis

437a An object-oriented framework for modular chemical process simulation
Jing Chen and Raymond A. Adomaitis

Session 438 - Nonlinear Dynamics and Pattern Formation *
Chair: Duane T Johnson
Vice Chair: Yannis G Kevrekidis

Session 439 - Multiscale Modeling and Simulation I
Chair: Dionisios G Vlachos
Vice Chair: Martha Gallivan

439a Simulation of Copper Nanostructure Formation by Coupling Kinetic Monte Carlo Simulation, Continuum Models, and the Level Set Method
Timothy O. Drews, Effendi Rusli, Yuan He, Xiaohai Li, Richard C. Alkire and Richard D. Braatz

439b Predictor-Corrector Methods for Dynamically Coupling Multiscale Simulation Codes
Yuan He, Joshua Gray, Richard C. Alkire and Richard D. Braatz

439g Design of an Optimal Overlap Algorithm for Dynamically Coupling Continuum and Noncontinuum Codes in Multiscale Simulation
Effendi Rusli and Richard D. Braatz

Session 440 - Applied Mathematics in Bioengineering I
Chair: Prodromos Daoutidis
Vice Chair: Nikos V Mantzaris

440a Sensitivity Analysis of Discrete Stochastic Biological Systems
Rudiyanto Gunawan, Yang Cao, Linda Petzold and Francis J. Doyle III

440c Monte-Carlo Simulation Models of Pooling to Increase the Efficiency of Directed Evolution
Andreas Bommarius, Anshul Dubey, Cody Spencer, Jay Lee, Karen Polizzi and Matthew Realff

Session 441 - Multiscale Modeling and Simulation II *
Chair: Dionisios G Vlachos
Vice Chair: Martha Gallivan

Session 442 - Applied Mathematics in Bioengineering II
Chair: Prodromos Daoutidis
Vice Chair: Nikos V Mantzaris

442c Superagonistic Activation of Epidermal Growth Factor Receptor (EGFR) by EGF-related Growth Factors: An In-silico Study
Kapil Mayawala, Dionisios G. Vlachos and Jeremy S. Edwards

442e Incorporating Cellular Metabolism into Growth Models of Multicellular Tumor Spheroids
Raja Venkatasubramanian, Neil S. Forbes and Michael A. Henson

* These papers were unavailable at the time of publication.

12: Process Development Division

To Use this Index: Scroll down or use the bookmarks in the left-hand frame to move to a new location in this index. Click on a blue paper title to view that paper. To return to this index after viewing a paper, click the PREVIOUS MENU bookmark in the left frame.

145b Seeing the Forest for the Trees: Strategic Planning and the Balanced Scorecard
Lorette Pruden

145d Financial Risk Management for the Capacity Planning of Facilities Associated to New Products and Uncertain Contracts
Miguel J. Bagajewicz, Zack McGill, Ryan Posey

145e Adapting Project Management Principles and Tools for Research and Development
Eldon R. Larsen

Session 147 - Entrepreneurial R&D: SBIR/STTR-What Is It and What Can It Do For Me?
Chair: Rosemarie D Wesson
Vice Chair: Richard D Siegel

147a Faculty New Entrepreneurial Venture Opportunities (University Spinoffs) through the STTR Program
Alan W. Weimer

147b Partnering of Small Business and University in the SBIR Program: Opportunities and Lessons Learned in Practice
Michael F Malone, Carl R Dupre and James R. Kittrell,

147c Transferring University Technology into Commercial Practice
R. F. Hicks and S. E. Babayan

147d SBIR Opportunities for University Research and Development
Jane P. Chang

147e Commercialization of Fluoropolymers for Integrated Optics and Other High Performance Applications: A Perspective on NSF SBIR Phase II Research from a Faculty Consultant / Entrepreneur
D.W. Smith, Jr, E.W. Wagener, J. Ballato and S. Foulger

147f SBIR Integrates Basic Research into Cost-effective Manufacture of Li-ion Batteries
Thomas D. Kaun and Jai Prakash

Session 148 - Six Sigma Usage in the CPI
Chair: Frank van Lier
Vice Chair: Bob Duggal

148e Use of Six Sigma Tools to Increase Ink Production and Delivery at TINTAS S.A.
Rodrigo Posada and Alberto Posada

Session 149 - New Product Development/Portfolio Management I Development Processes/Portfolio Management I
Chair: Frank van Lier
Vice Chair: Richard D Siegel

149a FEI - SPI (Survey, Probe and Intervention of Effective Practices)
Lorette Pruden

149b Microsoft Word - AIChE Annual Meeting.doc
dbut

149c The Evolution of NPD at Lubrizol
Brian R. Cunningham

Session 150 - New Product Development/Portfolio Management II Development Processes/Portfolio Management II
Chair: Frank van Lier
Vice Chair: Richard D Siegel

150a Facilitating New Product Introductions in Pharmaceutical Plants via Optimized Planning and Outsourcing
I. A. Karimi and Arul Sundaramoorthy

150b Financial Risk Management for New Products Considering Plant Location, Pricing and Budgeting
Javier Lavaja, Adam Adler, Jeremy Jones, Trung Pham, Kristin Smart, David Splinter, Michael Steele and Miguel J. Bagajewicz

150c Significance of IP protection in developing a vibrant product development portfolio
Chid S. Iyer, John T. Callahan and Abraham J. Rosner

150d Addressing Patent Protection in the Product Development Process
Steven Weseman

Session 239 - Membrane Process Design and Scale-up Considerations
Chair: Glenn Lipscomb
Vice Chair: Robert A Cross

239a Study of membrane system performance and HAZOP analysis in gas separation and reaction
Gabriele Clarizia, Giovanni Chiappetta and Enrico Drioli

239d Reverse Osmosis to Concentrate Ammonium Nitrate in Condensates, from Laboratory Studies to Industrial Scale Design and Operation
Peter Eriksson

Session 443 - Pilot Plant Benchmarking Study Results *
Chair: Bob Duggal
Vice Chair: David Edwards

Session 444 - Process Analytical Technologies (PAT) for Pharmaceutical and Biopharmaceutical Applications I
Chair: John F Peragine
Vice Chair: Henry Y Wang

444a On-line Process Control and Process Analytical Technology: Integration of Chemical Engineering Practice into Semiconductor and Pharmaceutical Industries
Huiquan Wu, Ph.D., Ajaz S. Hussain, Ph.D.

Session 445 - Process Analytical Technologies (PAT) for Pharmaceutical and Biopharmaceutical Applications II
Chair: John F Peragine
Vice Chair: Henry Y Wang

445e Abnormal Situation Detection in Batch Processes utilizing Projection Methods. Challenges for Pharmaceutical Applications
Theodora Kourti

445g NIR Modeling for Potency of a NTI Drug Product
Seetha Ananthaiah and John Peragine

* These papers were unavailable at the time of publication.

15: Food, Pharmaceutical & Bioengineering Division

To Use this Index: Scroll down or use the bookmarks in the left-hand frame to move to a new location in this index. Click on a blue paper title to view that paper. To return to this index after viewing a paper, click the PREVIOUS MENU bookmark in the left frame.

35f Experience of truck fleets with BioDiesel made from animal fats as compared to rapeseed oil methyl ester
Edgar Ahn, Thomas Hilber, Martin Mittelbach and Eberhard Schmidt

Session 36 - Advances in Biosensors I
Chair: Stephen P Beaudoin
Vice Chair: Jeffrey Chalmers

36a Voltammetric Analysis of Carbon Microelectrode Measurements based on the Hilbert Transform: A Theoretical and Experimental Study
Costas A. Anastassiou, Martin Arundell, Kim H. Parker and Danny O'Hare

36d Detection of Label-Free Biomolecules by Wavelength-Scanning Reflective Interferometric Sensing
Jinghui Lu, Tingjuan Gao and Lewis J. Rothberg

Session 37 - Advances in Biosensors II
Chair: Heidi B Martin
Vice Chair: C C Liu

37b Acoustic Wave Sensors: Application to Biological Sensing in Liquid Environments
Stefan Cular, Steven K. Showalter, Venkat Bhethanabotla and Richard W. CernoseK

37d Detection of Group A Streptococcus and Model Protein Using Self-Excited PZT-Glass Microcantilever
Gossett A. Campbell and Raj Mutharasan

37f Surface Enhancements of Polymer-Based Microfluidic Enzyme-Linked Immunosorbent Assay
Yunling Bai, Chee Guan Koh, Yi-Je Juang, James Lee, and Shang-Tian Yang

Session 38 - Advances in Biosensors III
Chair: Daniel W Tedder
Vice Chair: Heidi B Martin

38e Electroenzymatic Glutamate Microbiosensor in the Study of Parkinson's Disease
Jianjun Wang, Eric Walker, Harold G. Monbouquette, Nigel Maidment

Session 49 - Simulation of Biomolecules I: Computational Nepresentation of Genomics and Proteomics
Chair: Grant S Heffelfinger
Vice Chair: Charles M Roth

49c MicroarrayCAKE: a simulation and analysis framework to guide experimental design and gene expression data analysis
Rajanikanth Vadigepalli, Rishi Khan,Guang Gao and James Schwaber

49d Support Vector Clustering of Microarray Data
Ozlem Yilmaz, Luke.E.K.Achenie and Ranjan Srivastava

49e Integrative Data-Driven Mathematical Models Predict Novel Genomescale Correlation Between Dna Replication Initiation and Rna Transcription During the Cell Cycle in Yeast
Orly Alter, Gene H. Golub, Patrick O. Brown and David Botstein

Session 52 - Simulation of Biomolecules II: Computational Biology *
Chair: Abraham D Stroock
Vice Chair: Grant S Heffelfinger

Session 54 - Simulation of Biomolecules III: Computational Biology
Chair: Vassily Hatzimanikatis
Vice Chair: Kris Chan

54a DNA Synthesis Efficiency and Fidelity Mechanisms
Ravi Radhakrishnan

Session 65 - Nanostructured Biomaterials
Chair: Jeffrey D Carbeck
Vice Chair: Krishnendu Roy

65e Carbohydrate-Centered PAMAM Dendrimers for Growing Liver Cells
Jeremy D. Lease and Tong Yen Wah

65f More Efficient Capture of Bacteria on Nanophase Materials
Z. Zhong, and Margaret K. Banks and Thomas J. Webster

Session 71 - Tissue Engineering I
Chair: Guillermo A Ameer
Vice Chair: John P Fisher

71e Bone Tissue Engineering with Multiple-Factor Delivery Platform
Yen-Chen Huang, Darnell Kaigler, Kevin G. Rice and David J. Mooney

Session 72 - Stem Cell Engineering I
Chair: David V Schaffer
Vice Chair: Ram Mandalam

72b Selectable marker lines elucidate design rules for oligonucleotide gene targeting in mouse stem cells
B. Murphy, E. Pierce and S. Diamond

72g In vitro expansion of embryonic stem cells in a fibrous bed bioreactor
Anli Ouyang and Shang-Tian Yang

Session 74 - Tissue Engineering II
Chair: Guillermo A Ameer
Vice Chair: John P Fisher

74a Effects of Small Molecules on Cardiomyocyte DNA Synthesis and Proliferation
Serek J. Mortisen, Kip D. Hauch, Buddy D. Ratner

74b Significant fraction of cells (~2/3) in native myocardium are non-myocytes, majority of which are fibroblasts
Gordana Vunjak-Novakovic

74c A biphasic elastomeric scaffold for tissue engineering a small-diameter blood vessel
Jian Yang, Delara Motlagh, Antonio R. Webb and Guillermo A. Ameer

74f Deterministic Simulation of Growth Factor-Induced Angiogenesis
Shuyu Sun, Mary F. Wheeler, Mandri Obeyesekere and Charles Patrick Jr.

Session 75 - Stem Cell Engineering II
Chair: David V Schaffer
Vice Chair: Ram Mandalam

75a Lineage plasticity and determinism in ex vivo differentiation of hematopoietic stem cells examined by large-scale transcriptional analysis
Huang, L.T., Chen, C., Papoutsakis, E.T., Miller, W.M.

Session 76 - Nanotechnology in Bioengineering
Chair: Christina Chan
Vice Chair: Krishnendu Roy

76c Functionalized ZnSe Quantum Dots as Luminescent Tags in High-Throughput Biological Assays
Jun Wang, Stelios Andreadis and T.J. Mountziaris

76e Self-assembly of Pure Nanotubes from a Single-Chain Diacetylene Amine Salt
Sang Beom Lee, Richard Koepsel, Donna B. Stolz, Heidi E. Warriner and Alan J. Russell

76f Selective Primary Hepatocyte Adhesion on Polyelectrolyte Multilayer : Template for Patterned Cell Co-Culture
Srivatsan Kidambi, Ilsoon Lee, Christina Chan

76g Towards Single-Walled Carbon Nanotubes as an Integrated Component of Conductive Biomaterials: The Effect of Production Contaminants on in vitro Cell Viability and Metabolic Activity
Aditya Nimmagadda and Peter S. McFetridge

Session 78 - Tissue Engineering III
Chair: Guillermo A Ameer
Vice Chair: John P Fisher

78b Hydrogels for vocal fold tissue engineering and repair
Mariah Hahn, Benjamin Teply, Alisha Sieminski, Molly Stevens, Roger Kamm, Steven Zeitels and Robert Langer

78d Effect of Cell Environment on ECM Production and Gene Expression in Poly(ethylene glycol) / Chondroitin Sulfate Hydrogels
J.A. Arthur, S.J. Bryant, K.S. Anseth

78e Characterization of a Novel Decellularized Peripheral Nerve Graft
Scott Lundy, Curt Deister, Stephen Chen and Christine E. Schmidt

Session 82 - Biomaterials for Gene Therapy and Drug Delivery
Chair: Rebecca L Carrier
Vice Chair: Balaji Narasimhan

82a Complexation Hydrogels as Oral Delivery Vehicles for Insulin-Transferrin Conjugates
Nikhil J. Kavimamdan, Nicholas A. Peppas

82b Nitric Oxide-Generating Poly(ethylene glycol) Copolymers for Prevention of Restenosis
Elizabeth A. Lipke, Kristyn S. Masters and Jennifer L. West

82f Gene Carriers Modified with PEG Demonstrate Increased Transport and Stability in Mucus as Explored with High-Resolution Nanoparticle Tracking
Michelle Dawson, Denis Wirtz, Justin Hanes

Session 85 - Smart/Conducting Biomaterials
Chair: Christine E Schmidt
Vice Chair: Christopher S Brazel

85b Thermally gelling, thermally responsive elastin-mimetic triblock hydrogels
D. S. Hart, A. J. M. D'Souza, C. R. Middaugh, S. H. Gehrke

Session 90 - Biomimetic Interfaces
Chair: Efrosini Kokkoli
Vice Chair: James W Schneider

90d Oligosachharide modified biomimetic surfactant polymer for non-thrombogenic interface applications: Platelet Adhesion Studies
Anirban Sen Gupta, Emily Link, Shuwu Wang, Kandice Kottke-Marchant and Roger E. Marchant

90f Studies on Competitive Responses in Neurons to Extracellular Cues Using Microfabricated Systems
Natalia Gomez and Christine E. Schmidt

90g Fibronectin/polyelectrolyte multilayered assemblies: film formation and cell attachment studies
Corinne Wittmer and Paul R. Van Tassel

Session 120 - Tools
Chair: Glen W Wheeler
Vice Chair: Milan Maric

120a A Right First Time Approach to Early Process Development
Dr. Linas Mockus and Dr. Prabir Basu

120b Industry Specific Benchmark Metrics -- Integration into Land use Choices
Earl R. Beaver

120c Integrated Multiscale Process Units with Locally Structured Elements
Michael Matlosz

120d A Dynamic Self-Optimizing PFR Embedded within a Steady-State Process Simulation
James E Smith, Jr. and Anh Nguyen

Session 192 - Interfacial Effects on Drug Delivery *
Chair: Anuj Chauhan
Vice Chair: S Patrick Walton

Session 194 - Characterization of Pharmaceutical Powders and Interfacial Phenomena
Chair: Robert D Tilton
Vice Chair: Todd M Przybycien

194g Image Based On-Line Particle Sizing Using Ethernet Controls
Tod Canty

Session 230 - Crystallization of Pharmaceutical and Biological Molecules I
Chair: Sridhar Desikan
Vice Chair: Piotr H Karpinski

230b Molecular interactions between solvent and pharmaceutical compounds in crystallization of polymorphic systems
Mahmoud Mirmehrabi and Sohrab Rohani

Session 231 - Crystallization of Pharmaceutical and Biological Molecules II *
Chair: Sridhar Desikan
Vice Chair: Piotr H Karpinski

Session 275 - Dynamics and Modeling of Particulate Systems Part I, Fundamental
Chair: Maureen A Howley
Vice Chair: Michael Choi

275c Comparison of 2-D and 3-D CFD simulations of bubbling fluidized beds with x-ray fluoroscopy and imaging experiments
Glenn Price, Blake Chandrasekaran, Ian Hulme, Apostolos Kantzas

275d Detection of Inelastic Collapse in 3-D Shear Flow
Michael E. Lasinski, Joseph F. Pekny, Jennifer S. Curtis

275h Modeling the Nonlinear Dynamics of Circulating Fluidized Beds Using Neural Networks
Wei Chen, Atsushi Tsutsumi, Haiyan Lin, Kentaro Otawara

Session 287 - Mixing and Segregation in Particulate Systems
Chair: Benjamin J Glasser
Vice Chair: Christopher L Burcham

287a Investigating the Effect of Bidispersity and Number of Particles on Stress
Michael E. Lasinski, Joseph F. Pekny, Jennifer S. Curtis

287d Prediction of Cone-in-cone Blender Efficiencies and Scale-up Parameters From Knowledge of Basic Material Properties
Kerry Johanson

Session 308 - New Focus on Bio in the CHE Curriculum: Departmental Experiences *
Chair: Joseph J Biernacki
Vice Chair: Patrick Gilcrease

Session 311 - New Focus on Bio in the CHE Curriculum: Case Studies *
Chair: Patrick Gilcrease
Vice Chair: Joseph J Biernacki

Session 354 - Biofunctional Surfaces: From Fundamentals to Devices I Fundamentals to Devices I *
Chair: Rastislav Levicky
Vice Chair: Ben O' Shaughnessy

Session 357 - Polymers from Renewable Resources *
Chair: John R Dorgan
Vice Chair: Yossef A Elabd

Session 358 - Biofunctional Surfaces: From Fundamentals to Devices II *
Chair: Rastislav Levicky
Vice Chair: Ben O' Shaughnessy

Session 408 - Design & Analysis for Biological Systems *
Chair: Lealon L Martin
Vice Chair: Sundararajan V Madihally

Session 419 - Modeling and Control of Biomedical Systems *
Chair: Robert S Parker
Vice Chair: Rajanikanth Vadigepalli

Session 420 - Advances in Biochemical Processing: Control and Optimization
Chair: Kenneth R Muske
Vice Chair: Radhakrishnan Mahadevan

420c A Kalman filter for estimating enzyme levels during biphasic growth
Ryan K. Hamilton, Anna I Casasús, Ben Koopman and Spyros A. Svoronos

420e Principles of Rapid Polymerase Chain Reaction: Mathematical Modeling and Experimental Verification
H. J. Viljoen, R.M. Nelson and S. Whitney

Session 426 - Systems Engineering Approaches in Biology I
Chair: Luke E Achenie
Vice Chair: Shih-Hsie Pan

426g Discrete Event Based Dynamic Simulation of Algae Growth Bioreactor Considering Cyclic Light Effect
Wonjun Park and Il Moon

Session 440 - Applied Mathematics in Bioengineering I
Chair: Prodromos Daoutidis
Vice Chair: Nikos V Mantzaris

440a Sensitivity Analysis of Discrete Stochastic Biological Systems
Rudiyanto Gunawan, Yang Cao, Linda Petzold and Francis J. Doyle III

440c Monte-Carlo Simulation Models of Pooling to Increase the Efficiency of Directed Evolution
Andreas Bommarius, Anshul Dubey, Cody Spencer, Jay Lee, Karen Polizzi and Matthew Realff

Session 442 - Applied Mathematics in Bioengineering II
Chair: Prodromos Daoutidis
Vice Chair: Nikos V Mantzaris

442c Superagonistic Activation of Epidermal Growth Factor Receptor (EGFR) by EGF-related Growth Factors: An In-silico Study
Kapil Mayawala, Dionisios G. Vlachos and Jeremy S. Edwards

442e Incorporating Cellular Metabolism into Growth Models of Multicellular Tumor Spheroids
Raja Venkatasubramanian, Neil S. Forbes and Michael A. Henson

Session 444 - Process Analytical Technologies (PAT) for Pharmaceutical and Biopharmaceutical Applications I
Chair: John F Peragine
Vice Chair: Henry Y Wang

444a On-line Process Control and Process Analytical Technology: Integration of Chemical Engineering Practice into Semiconductor and Pharmaceutical Industries
Huiquan Wu, Ph.D., Ajaz S. Hussain, Ph.D.

Session 446 - FPBE Division Forum *
Chair: Todd M Przybycien
Vice Chair: Kenneth F Reardon

Session 447 - FPBE Division Plenary Lectures *
Chair: Todd M Przybycien
Vice Chair: Kenneth F Reardon

Session 448 - Poster Session: Engineering Treatment of Diseases
Chair: Todd M Przybycien
Vice Chair: Kenneth F Reardon

448k DNA-array based transcriptional analysis elucidates granulocytic differentiation of human stem cells
Huang, L.T., Miller, W.M. and Papoutsakis, E.T.

Session 449 - Poster Session: Cell Migration and Adhesion *
Chair: Todd M Przybycien
Vice Chair: Kenneth F Reardon

Session 450 - Poster Session: Biomaterials and Tissue Engineering *
Chair: Todd M Przybycien
Vice Chair: Kenneth F Reardon

Session 451 - Poster Session: Drug Delivery *
Chair: Todd M Przybycien
Vice Chair: Kenneth F Reardon

Session 452 - Poster Session: Biocatalysis & Protein Engineering
Chair: Todd M Przybycien
Vice Chair: Kenneth F Reardon

452b Development of new periplasmic fluorescent reporter protein and its application in high-throughput membrane protein topology analysis
Ki Jun Jeong, Yasuaki Kawarasaki, Jong Sik Gam, Barrett R. Harvey, Brent L. Iverson and George Georgiou

Session 453 - Poster Session: Animal & Plant Cell Culture
Chair: Todd M Przybycien
Vice Chair: Kenneth F Reardon

453e Direct Inoculations of Plant Cell Cultures with a Plant Viral Vector
Masaru Shiratori, Bryce W. Falk, Alan P. Jackman and Karen A. McDonald

Session 454 - Poster Session: Upstream Bioprocessing
Chair: Todd M Przybycien
Vice Chair: Kenneth F Reardon

454a Optimization of medium composition for the production of nattokinase by Bacillus natto NLSSE
Jun-Guo Liu, Jian-Min Xing, Tian-Shi Chang, Zhi-Ya Ma, Cheng-Li Yang, Hui-Zhou Liu and Jia-Yong Chen

Session 455 - Poster Session: Downstream Bioprocessing *
Chair: Todd M Przybycien
Vice Chair: Kenneth F Reardon

Session 456 - Poster Session: Biosensors *
Chair: Todd M Przybycien
Vice Chair: Kenneth F Reardon

Session 457 - Poster Session: Metabolic Engineering & Systems Biology
Chair: Todd M Przybycien
Vice Chair: Kenneth F Reardon

457b Using large scale, multi-cellular pathway modeling to understand cellular differentiation
Richard L. Schiek and Elebeoba E. May

457w A Modular Model of Cyclic AMP Signaling in Yeast: Linking Cell Cycle Progression and Energy Metabolism
D. Müller, L. Aguilera-Vázquez, H. Diaz-Cuervo, E. Guerrero-Martín, J. O. Marquetand, P.K. Murugan, M.A. Henson and M. Reuss

Session 458 - Poster Session: Pharmaceutical Technology
Chair: Todd M Przybycien
Vice Chair: Kenneth F Reardon

458h Assessing and Accelerating New Product Introductions in a Pharmaceutical Plant
I.A. Karimi and Arul Sundaramoorthy

Session 459 - Advances in Food Engineering *
Chair: Kasiviswanathan Muthukumarappan
Vice Chair: Gustavo Barbosa-Canovas

Session 460 - Advances in Drug Delivery: Targeting via External Stimuli *
Chair: Tao L Lowe
Vice Chair: Marylee Z Southard

Session 461 - Advances in Drug Delivery: Sustained Release *
Chair: Tao L Lowe
Vice Chair: Marylee Z Southard

Session 462 - Advances in Bioreactors and Cell Culture: Design and Utilization I *
Chair: Gregory Frank
Vice Chair: Sanjeev Katti

Session 463 - Novel Carriers for Drug and Cell Delivery *
Chair: Surya K Mallapragada
Vice Chair: Rebecca L Carrier

Session 464 - Pharmaceutical & Biopharmaceutical Separations *
Chair: Andreas A Linninger
Vice Chair: Sanjeev Katti

Session 465 - Advances in Bioreactors and Cell Culture: Design and Utilization II
Chair: Gregory Frank
Vice Chair: Sanjeev Katti

465b Influence of microbial cultivation during bio-reduction with in-situ product crystallization (ISPC)
Evelyn M. Buque-Taboada, Adrie J.J. Straathof, Joseph J. Heijnen and Luuk A.M. van der Wielen

Session 466 - Advances in Protein Structure, Function, and Stability I *
Chair: Jeffrey J Gray
Vice Chair: Christopher J Roberts

Session 467 - Synthesis and Separation in the Pharmaceutical and Fine Chemical Industries *
Chair: Shekhar K Viswanath
Vice Chair: Linda Wang

Session 468 - Mixing Challenges in the Pharmaceutical and Biotechnology Industries *
Chair: Christopher L Burcham
Vice Chair: Subodh S Deshmukh

Session 469 - Advances in Protein Structure, Function, and Stability II *
Chair: Christopher J Roberts
Vice Chair: Jeffrey J Gray

Session 470 - Process Development Tools for the Pharmaceutical and Fine Chemical Industries
Chair: Shailendra Bordawekar
Vice Chair: Mayur Lodaya

470f Integrating Design and Control with Six-Sigma for Bioprocessing Applications
Eyal Dassau, Daniel R. Lewin

Session 471 - Advances in Protein Structure, Function, and Stability III
Chair: Christopher J Roberts
Vice Chair: Jeffrey J Gray

471f Investigating the use of molecular modeling in site-directed protein mutagenesis
Lakshmi P. Pathange, David R. Bevan, Timothy J. Larson and Chenming Zhang

Session 472 - Innovations in Pharmeceutical Development: Fast to Market, Short on Time I *
Chair: Gregory Frank
Vice Chair: Shih-Hsie Pan

Session 473 - Innovations in Pharmeceutical Development: Fast to Market, Short on Time II
Chair: Gregory Frank
Vice Chair: Shih-Hsie Pan

473c Modeling of the FDA Approval Process: Connections between Financial Risk, Early Decision Making and Future Pricing
Miguel J. Bagajewicz, Holap Tang, Ian Klink, Benjamin Fairbanks, Patrick Williams, Joseph Azzarello, Tiwalade Ashaye, Brandon Shaw, Mitch Hargis, Shahryar Gilani and Vassilios Sikavitsas

Session 474 - Extremophile Bioprocessing
Chair: Vicki S Thompson
Vice Chair: Tonya L Peeples

474b Bioconversion of Corn Stover Pyrolysates Using a Coculture of Thermotoga Martima and Methanococcus Jannaschii
T. Akim Nilausen, Stephen Fischer and Dr. Tonya L. Peeples

474g Characterization of an extracellular thermoacidophilic xylanase from Alicyclobacillus acidocaldarius
Vicki S Thompson, William A Apel and Kastli D Schaller

Session 475 - Advances in Green Bioprocessing
Chair: Ching-An Peng
Vice Chair: David H Reeder

475b Biodiesel production by enzymatic transesterification of olive oil
Fernando Sanchez, Palligarnai T. Vasudevan and Michael Diamond

475d Enhanced Butyric Acid and Hydrogen Production by the Mutants of Clostridium tyrobutyricum
Xiaoguang Liu and Shang-Tian Yang

475e Preparation of Activated Carbon from Forest and Agricultural Residues Through Co2 Activation
Tengyan Zhang, Walter P. Walawender, L. T. Fan, Maohong Fan, Daren Daugaard And R. C. Brown

Session 476 - Biological Conversions and Transformations
Chair: Robert Wooley
Vice Chair: Arthur J Ragauskas

476b Understanding the Metabolic Capabilities of Desulfovibrio vulgaris Hildenborough
Kenneth J. Kauffman and Jay D. Keasling

476f A Mathematical Model for the Kinetics of Hydrolysis of Bacterial Microcrystalline Cellulose by Cellulase Enzymes
A. Brad Anton, Tina Jeoh and Larry P. Walker

Session 477 - Advances in Bioseparations: Membrane Separations
Chair: Victor G. J. Rodgers
Vice Chair: R Scott Herbst

477b Protein bioseparation by membrane chromatography using polyelectrolyte gelcoated adsorptive membranes
Dharmeshkumar M Kanani, Elena Komkova, Alicja M Mika, Ron F Childs and Raja Ghosh

477c Characterization of Gel-Filled Membranes for Plasma Protein Fractionation
David R. Latulippe, Carlos D. M. Filipe, Raja Ghosh, Ron F. Childs and Alicja M. Mika

Session 478 - Advances in Bioreactors and Cell Culture: Animal and Insect Cells *
Chair: William M Miller
Vice Chair: Michael Betenbaugh

Session 479 - Advances in Agricultural Biotechnology and Plant Cell Culture
Chair: Susan C Roberts
Vice Chair: Mike (Chenming) Zhang

479b Metabolic Control of Taxane Accumulation at the mRNA Level
Michael C. Naill, Nathan Ezekiel Nims, Elsbeth L. Walker and Susan C. Roberts

479e Chemically-Regulated Cucumber Mosaic Virus Amplicon for the Expression of Foreign Genes/Proteins in Plants and Plant Cell Cultures
Mysore Sudarshana, Sandra L. Uratsu, Bryce Falk, Abhaya M. Dandekar, Alan P. Jackman and Karen A. McDonald

479f Enhanced production of recombinant proteins from plant cells by the application of osmotic stress and protein stabilization
Ryan G. Soderquist and James M. Lee

479g Effects of a nutrient mist bioreactor system on growth kinetics and secondary metabolism of transformed roots of Artemisia annua
Melissa J. Towler and Pamela J. Weathers

Session 480 - Advances in Metabolic Engineering I *
Chair: Huimin Zhao
Vice Chair: Francois Berthiaume

Session 481 - Advances in Biocatalysis and Protein Engineering I
Chair: William A Apel
Vice Chair: Andreas S Bommarius

481b Tailoring Toluene para-Monooxygenase of Ralstonia pickettii PKO1 for Regiospecific Oxidation of Aromatics Using Active Site Engineering
A. Fishman, Y. Tao, W. E. Bentley, T. K. Wood

481c Tailoring Toluene para-Monooxygenase of Ralstonia pickettii PKO1 for Regiospecific Oxidation of Aromatics Using Active Site Engineering
A. Fishman, Y. Tao, W. E. Bentley, T. K. Wood

481d Biochemical Characterization of Dihydroflavonol 4-Reductase from Plant and Microbial Species
Joseph E. Leonard, Simone Witte, Yajun Yan, Yvonne Gebhardt, Stefan Martens and Mattheos Koffas

481g Production of Anthocyanins from Escherichia Coli Containing an Artificial Gene Cluster
Yajun Yan, Joseph E. Leonard, Joseph Chemler and Mattheos Koffas

Session 482 - Advances in Bioseparations: Chromatographic Separations I *
Chair: Linda Wang
Vice Chair: Yi Xie

Session 483 - Advances in Bioreactors
Chair: Jeffrey Chalmers
Vice Chair: Sa Ho

483b Astaxanthin Production by H. pluvialis in Sequential Batch Followed by Fed-Batch Culture Illuminated by LED Lamps
Abdolmajid Lababpour, Tomohisa Katsuda, Shigeo Katoh

Session 484 - Advances in Metabolic Engineering II *
Chair: Huimin Zhao
Vice Chair: Francois Berthiaume

Session 485 - Advances in Biocatalysis and Protein Engineering II
Chair: William A Apel
Vice Chair: Andreas S Bommarius

485c Selecting folded protein using an improved red fluorescent protein
Bernard Loo, Matthew Swisher and Andreas S Bommarius

Session 486 - Advances in Bioseparations: Chromatographic Separations II *
Chair: Linda Wang
Vice Chair: Yi Xie

Session 487 - Advances in Metabolic Engineering III *
Chair: Huimin Zhao
Vice Chair: Francois Berthiaume

Session 488 - Advances in Biocatalysis and Protein Engineering III
Chair: William A Apel
Vice Chair: Andreas S Bommarius

488e Poly(ethylene glycol)-lipase complex highly active in ionic liquids
Masahiro Goto, Tatsuo Maruyama, Noriho Kamiya

488g Protease production from marine microorganism by immobilized cells
Usama Beshay, Antonio Moreira

Session 489 - Systems Biology "Omics" Technology Development *
Chair: George S Michaels
Vice Chair: Matthew P DeLisa

Session 490 - Systems Biology "Omics" Technology Application I
Chair: Arul Jayaraman
Vice Chair: Charles M Roth

490c Maturation and Death in Terminal Megakaryocytic Differentiation: Phenotypic and DNA-Microarray Characterization
Peter G. Fuhrken, Chi Chen, Lisa M. Giammona, William M. Miller, Eleftherios T. Papoutsakis

Session 491 - Systems Biology "Omics" Technology Application II
Chair: Arul Jayaraman
Vice Chair: Charles M Roth

Session 492 - Biotechnology in the Petroleum Industry
Chair: Gregory A Bala
Vice Chair: Kerry L Sublette

492a Biosurfactants can mobilize substantial amounts of entrapped hydrocarbons
Michael J. Mclnemey, Saikrishna Maudgalya, Martha J. Folmsbee, Roy M. Knapp and David P. Nagle

492b Permeability Modification Using a Reactive Alkaline-Soluble Biopolymer
S. L. Fox, X. Xie, G. A. Bala

Session 493 - Advances in Protein Expression and Post-Translational Modification
Chair: Eric Shusta
Vice Chair: Aaron Kelley

493a Structure-Function and De novo Design of Protein Disulfide Isomerases
Laura Segatori, Silvia Arredondo, George Georgiou

493b Reprogramming the bacterial Tat system for monitoring protein folding directly in cells
Adam C. Fisher, Elizabeth A. Fogarty, Matthew P. DeLisa

493c Development of a Novel Expression Vector for High Throughput Screening of Mutants from Directed Evolution
Karen M Polizzi, Augustin Luna, Phillip R Gibbs and Andreas S Bommarius

493d Development of an expression system in E. coli for overproduction and proper posttranslational modification of multiheme cytochromes c
Yuri Y. Londer, P. Raj Pokkuluri, Frank R. Collart, Marianne Schiffer

Session 494 - Advances in Drug Delivery: Targeted Delivery *
Chair: Rangaramanujam M Kannan
Vice Chair: Moriah Nof

Session 495 - Biotransport Processes
Chair: Harihara Baskaran
Vice Chair: Arul Jayaraman

495e Oxygen distribution in channeled cardiac constructs perfused with oxygen carrier supplemented culture medium
Milica Radisic, William Deen, Robert Langer, Gordana Vunjak-Novakovic

Session 496 - Intracellular Processes: Signal Transduction
Chair: Andrew J Putnam
Vice Chair: Kimberly Forsten-Williams

496f Mathematical modeling of neuronal response to neuropeptides: Angiotensin II signaling via G-protein coupled receptor
Rajanikanth Vadigepalli, Thomas Sauter, Haiping Hao, James Schwaber

Session 497 - Intracellular Processes: Mathematical Modeling I *
Chair: Chetan J Gadgil
Vice Chair: Stas Shvartsman

Session 498 - Advances in Metabolic Engineering: Biomedical Applications *
Chair: Kyongbum Lee
Vice Chair: Kris Chan

Session 499 - Intracellular Processes: Mathematical Modeling II
Chair: Stas Shvartsman
Vice Chair: Andrew J Putnam

499c Modeling and Identification of the Gene Regulatory Network Describing the Liver Response to Corticosteroids
Gregory M. Miller, Daniel E. Zak, James S. Schwaber, Babatunde A. Ogunnaike

Session 500 - Advances in Drug Delivery: Focus on Biomaterials I *
Chair: David A Putnam
Vice Chair: Stavroula Sofou

Session 501 - Advances in Drug Delivery: Focus on Biomaterials II *
Chair: David A Putnam
Vice Chair: Rebecca L Carrier

Session 502 - Advances in Gene Therapy and Viral Vaccines I *
Chair: Stelios T Andreadis
Vice Chair: E Tzanakakis

Session 503 - Engineering Treatment of Cancer, Cardiovascular and Other Diseases I *
Chair: Edgar O Rear
Vice Chair: Anand R Asthagiri

Session 504 - Advances in Gene Therapy and Viral Vaccines II
Chair: Stelios T Andreadis
Vice Chair: E Tzanakakis

504g Immobilization of Gene Vectors in Perinuclear Region as Potential Intracellular Barrier to Efficient Gene Delivery
J. Suh and J. Hanes

Session 505 - Engineering Treatment of Cancer, Cardiovascular and Other Diseases II
Chair: Edgar O Rear
Vice Chair: Anand R Asthagiri

505g Analysis and Optimization of Cell-Cycle Specific Cancer Chemotherapy
Marc R. Birtwistle, Babatunde A. Ogunnaike, Thomas Lombardo

Session 506 - Receptor Mediated Phenomena
Chair: Kristina D Rinker
Vice Chair: Jeffrey Chalmers

506a Soluble Mediators Released by Flow- and Pressure-Exposed Vascular Endothelial Cells Induce Functional Changes in Endothelial and Smooth Muscle Cells
Jennifer A. McCann, Thomas J. Webster, Karen M. Haberstroh

Session 507 - Engineering Treatment of Cancer, Cardiovascular and Other Diseases III *
Chair: Edgar O Rear
Vice Chair: Anand R Asthagiri

Session 508 - Cell Migration and Adhesion I
Chair: Sundararajan V Madihally
Vice Chair: Harihara Baskaran

508e Intrinsic Mechanical Properties of the Extracellular Matrix Regulate Smooth Muscle Cell Migration, Cytoskeletal Assembly, and Intracellular Signaling
Shelly R Peyton, Andrew J. Putnam

Session 509 - Advances in Biosensors IV *
Chair: Kimberly W Anderson
Vice Chair: Vassilios I Sikavitsas

Session 510 - Biocomplexity: Multiscale Behavior in Biological Systems
Chair: Theodore F Wiesner
Vice Chair: Kenneth J Kauffman

510d Biochemical Network Identification: Considerations of Experimental Design, Data Requirements, Noise and Scalability for Linear and S-System Model Structures
Kenneth J. Kauffman, Ryan E. Altenbaugh, Jeremy S. Edwards

Session 511 - Cell Migration and Adhesion II *
Chair: Sundararajan V Madihally
Vice Chair: Harihara Baskaran

Session 512 - Biocomplexity: Cellular Systems Biology
Chair: Kenneth J Kauffman
Vice Chair: Theodore F Wiesner

512e Propionate response in Salmonella enterica serovar typhimurium: integration of metabolomics and biosensor data for model development
Kenneth J. Kauffman, Jack Newman, Matthew Garcia, Jay D. Keasling

Session 534 - Microreactors and Microbioreactors: Fundamentals and Applications
Chair: Richard I Masel
Vice Chair: Marcel A Liauw

534b Design of Feed Segments in Microreactors: Influences of Arrangements and Shapes of Segments on Product Composition for Multiple Reactions
Nobuaki Aoki, Shinji Hasebe, Kazuhiro Mae

Session 568 - Nanotechnology for Biotechnology and Pharmaceuticals Industries
Chair: Henry Y Wang
Vice Chair: Shuichi Takayama

568f Highly Stable Core-Surface-Crosslinked Micelles as Drug Carriers for Cancer Chemotherapy
Peisheng Xu, Huadong Tang, Shiyan Li, Jun Ren, Van Kirk, Edward., Murdoch, William. J., Maciej Radosz, Youqing Shen

Session 575 - Self and Directed Assembly at the Nanoscale I *
Chair: Hank Ashbaugh
Vice Chair: Kristen A Fichthorn

Session 581 - Self and Directed Assembly at the Nanoscale II
Chair: Hank Ashbaugh
Vice Chair: Kristen A Fichthorn

581f Equilibrium Microstructure of Complex Fluids
YoChan Kim, Charles A. Petty and André Bénard

Session 583 - Nanotechnology and Nanobiotechnology for Sensors I *
Chair: Mark W Vaughn
Vice Chair: Venkat R Bhethanabotia

Session 584 - Self and Directed Assembly at the Nanoscale III
Chair: Hank Ashbaugh
Vice Chair: Kristen A Fichthorn

584f Permanently Linked Rigid Superparamagnetic Chains
Harpreet Singh, Paul E. Laibinis and T. Alan Hatton

Session 588 - Nanotechnology and Nanobiotechnology for Sensors II *
Chair: Mark W Vaughn
Vice Chair: Venkat R Bhethanabotia

Session 596 - Nanobiotechnology
Chair: Nicholas A Peppas
Vice Chair: Joerg Lahann

596b A Microfluidic Chip for Bio-Bar-Code-Based Detection of Proteins
Edgar D. Goluch, Jwa-Min Nam, Thomas N. Chiesl, Kashan A. Shaikh, Kee Suk Ryu, Annelise E. Barron, Chad A. Mirkin, and Chang Liu

* These papers were unavailable at the time of publication.

16: Fuels and Petrochemicals Division

To Use this Index: Scroll down or use the bookmarks in the left-hand frame to move to a new location in this index. Click on a blue paper title to view that paper. To return to this index after viewing a paper, click the PREVIOUS MENU bookmark in the left frame.

Session 17 - Topics in Fuel Cell Technology
Chair: Ravindra Datta
Vice Chair: Tom R Marrero

17a Effects of Alumina Phase and Loading Amount on Catalytic Methane Combustion Activity of Pd- and Pt-Based Catalysts
Kraikul, N. and Jitkarnka, S.

Session 18 - Novel Electrochemistry and Materials for Fuel Cells I
Chair: Michael J Antal
Vice Chair: Richard Rocheleau

18a Study of Gas Diffusion Layers in Pem Fuel Cells
Karuna S. Koppula, Michael C. Johnston and Virendra K. Mathur

18b Novel inorganic/organic hybrid membranes for proton exchange
Zhiwei Yang, Decio Coutinho, Duck Joo Yang, John P. Ferraris and Kenneth J. Balkus Jr.

Session 19 - Fuel Cell Technology: Fuel Processing I
Chair: Michael P Harold
Vice Chair: Galen J Suppes

19d Fuel Processing for Pem Fuel Cells: In-Line Adsorbent Filters for Mea Protection
Bong-Kyu Chang, Mukund Karanjikar, Yong Lu, Donald R. Cahela and Bruce J. Tatarchuk

19e Copper and Lanthanum Doped Cerium Oxide for Hot Reformate Gas Desulfurization
Zheng Wang, Mann Sakbodin, Scott West and Maria Flytzani-Stephanopoulos

Session 20 - Novel Electrochemistry and Materials for Fuel Cells II
Chair: Michael J Antal
Vice Chair: Richard Rocheleau

20a Development of Liquid Fuel Reformer Using Low Energy Pulse (LEP) Discharge at Room Temperature
Yasushi Sekine, Masahiko Matsukata, Eiichi Kikuchi and Shigeru Kado

20b Investigation of Fuel Cell Anode at Higher Temperature with Reformate Fuel by AC Impedance Spectroscopy
Ruichun Jiang, H. Russell Kunz and James M. Fenton

20c System under Investigation
Alexander Mukasyan

20f Synthesis of Novel Proton Conducting Mesoporous Silica (Ms) Films for High Temperature Pem Fuel Cells
Fangxia Feng, Zhiwei Yang, Decio H. Coutinho, John P. Ferraris and Kenneth J. Balkus, Jr.

Session 21 - Poster Session: Fuel Cell Technology
Chair: Tom R Marrero
Vice Chair: Galen J Suppes

21a Development of Simultaneous Measurement of Water Vapor Adsorption and Proton Conductivity to PEM for PEFC
Masayuki Yoshida

21d Natural Gas Odorants Desulfurization
Dushyant Shekhawat, Todd H. Gardner and David A. Berry

21f An Improved Pemfc Model with Plug Flow in Channels
Valeri A. Danilov, Il Moon and Jong-Koo Lim and Kyoung Hwan Choi

21g Partial Oxidation of n-Tetradecane over Lanthanum Ni-Hexaaluminate
Todd H. Gardner, Dushyant Shekhawat, David A. Berry and Maria D. Salazar-Villapando and Edwin L. Kugler

Session 22 - Environmental Impact of Fuel Cell Technology
Chair: Tapas K Das
Vice Chair: Robert W Peters

22a Environmental Impact of Fuel Cell Technology for Electric Power Generation: An Overview and Case Studies
Jaimini Upadhyaya, Robert W. Peters, Fouad H. Fouad, Rajesh K. Ahluwalia, Ezzat Danial Doss, Tapas Das

22b Performance of a Ford F-150 Using Various Fuel Blends of Compressed Natural Gas and Hydrogen
Samrat Dutta, Robert W. Peters, Fouad H. Fouad, Henry Ng and Michael Duoba

22f Heat and Power Integration Opportunities in Methane Reforming based Hydrogen Production with PSA separation
Alberto Posada and Vasilios Manousiouthakis

Session 23 - Fuel Processing Session I: Modeling and System Integration
Chair: Ioannis (Yannis) P Androulakis
Vice Chair: Urmila Diwekar

23a Dynamic Modeling and Analysis of PEM Fuel Cells for Startup from Subfreezing Temperatures
Mallika Gummalla, Nikunj Gupta, Shubhro Ghosh, Sergei Burlatsky, Patrick Hagans and Cynthia Rice

23b Dynamic Modelling for Control of Fuel Cells
Federico Zenith and Sigurd Skogestad

23d A Breakthrough Process for the Production of Hydrogen
Frank Hershkowitz, Paul J. Berlowitz, Harry W. Deckman, Elise Marucchi-Soos, Chris S. Gurciullo, Jeffrey W. Frederick, Nick Rados and Rajeev Agnihotri

23g Integrated Framework for Fuel Cell Based Auxiliary Power Units: from Fuel Processing and System Performance, to Health, Ecological Impacts and Life Cycle Analysis
Francesco Baratto, Urmila M. Diwekar

Session 24 - Fuel Processing Session II: Catalysis and Kinetics
Chair: Ravindra Datta
Vice Chair: Susan M Stagg-Williams

24a Water gas shift activity of noble metals and promoted noble metals supported on ceria-zirconia oxides
Rakesh Radhakrishnan, R.R. Willigan, C.A. Newman, Y. She, F. Feng, F. Wijzen, X. Tang, S.M. Opalka, H. Cordatos, Z. Dardas, T.H. Vanderspurt

24d High-Temperature Water-Gas Shift Reaction over Cr-Free Fe-Al Catalysts Promoted with First Row Transition Metals
Sittichai Natesakhawat, Xueqin Wang and Umit S. Ozkan

24e Fuel Processing Session II: Catalysis and Kinetics: Characterization of PROX Catalysts on Structured Supports
Paul Chin, George W. Roberts, Xiaolei Sun, and James J. Spivey

24f Selective CO Oxidation over Au Supported On Mixed Oxides: Effect of Preparation on Activity and Selectivity
Abhishek Jain and Susan M. Stagg-Williams

24g Microfibrous Entrapment of Small Catalyst Particulates for High Contacting Efficiency Removal of Trace Co from Reformates at Low Temperatures for Pem Fuel Cells
Bong-Kyu Chang and Bruce J. Tatarchuk

Session 25 - Fuel Processing Session III: Reactor Development and Modeling
Chair: Yushan Yan
Vice Chair: Urmila Diwekar

25c A Reformer Performance Model for Fuel Cell Applications
S.S. Sandhu, Y.A. Saif and J.P. Fellner

Session 26 - Fuel Cell Technology: Systems
Chair: Maria Flytzani-Stephanopoulos
Vice Chair: Levi T Thompson

26a Man-Portable Power Generation Based on Fuel-Cell Systems
Alexander Mitsos-MIT, Michael M. Hencke-MIT and Paul I. Barton

26d Systematic Optimization of a H2 PEMFC Power Generation System with Heat Integration
Cong Xu, Lorenz T. Biegler and Myung S. Jhon

26e Modeling, Simulation and Optimization of a Cross Flow Molten Carbonate Fuel Cell
P. Heidebrecht , M. Mangold , M. Gundermann , A. Kienle , K. Sundmacher

26f Hydrogen Production from Water using Polymer Electrolyte Membrane
Chang-Hee Kim, Kyu-Sung Sim and Ki-Bae Park

Session 261 - Gas Storage by Adsorption *
Chair: Jose P Mota
Vice Chair: Atanas Serbezov

Session 475 - Advances in Green Bioprocessing
Chair: Ching-An Peng
Vice Chair: David H Reeder

475b Biodiesel production by enzymatic transesterification of olive oil
Fernando Sanchez, Palligarnai T. Vasudevan and Michael Diamond

475d Enhanced Butyric Acid and Hydrogen Production by the Mutants of Clostridium tyrobutyricum
Xiaoguang Liu and Shang-Tian Yang

475e Preparation of Activated Carbon from Forest and Agricultural Residues Through Co2 Activation
Tengyan Zhang, Walter P. Walawender, L. T. Fan, Maohong Fan, Daren Daugaard And R. C. Brown

Session 492 - Biotechnology in the Petroleum Industry
Chair: Gregory A Bala
Vice Chair: Kerry L Sublette

492A Biosurfactants can mobilize substantial amounts of entrapped hydrocarbons
Michael J. McInemey, Saikrishna Maudgalya, Martha J. Folmsbee, Roy M. Knapp and David P. Nagle

492b Permeability Modification Using a Reactive Alkaline-Soluble Biopolymer
S. L. Fox, X. Xie, G. A. Bala

Session 513 - Fuel Cell Tutorial - FrontierÆs Session *
Chair: Trung V Nguyen
Vice Chair: Ravindra Datta

Session 514 - Fuel Cell Technology II
Chair: Trung V Nguyen
Vice Chair: Hossein Hariri

514b Operation of a PEM Stack with High Impurity Anode Feeds in a Recycle Mode
Wenhua H. Zhu, Robert U. Payne, Yong Lu, Bruce J. Tatarchuk

514e Model-based Control of Fuel Cells: Optimal Efficiency
J. Golbert and D.R. Lewin

514f Rigorous modeling and experimental validation of mass, charge and energy transport in a DMFC polymer electrolyte membrane
Thorsten Schultz, Kai Sundmacher

514g The electrochemical kinetics study of methanol at electrocatalyst Pt-Ru/C and the methanol diffusion in the modified proton exchange membranes
Ning-Yih Hsu ,Yu-Nong Chen, Shi-Chern Yen

514h Direct Methanol Fuel Cell Thermodynamic Simulation
S.S. Sandhu, R.O. Crowther, J.P. Fellner

Session 515 - Fuel Cells KEYNOTE PRESENTATIONS SESSION
Chair: Galen J Suppes
Vice Chair: Ken S Chen

515a The Federal Role in Fuel-cell Research and Development
Geoffrey Prentice

515b Direct Fuel Cell Power Plants for Distributed Generation
H. C. Maru

Session 516 - Supercritical Fluids Applications - In Memory of Aydin Akgerman *
Chair: Rayford G Anthony
Vice Chair: Dragomir B Bukur

Session 517 - Alternative and Renewable Fuels *
Chair: Hossein Hariri

Session 518 - Fuel Cell Technology: Fuel Processing II
Chair: Michael P Harold
Vice Chair: Tom R Marrero

518b Development of Reaction Kinetics for Diesel-Based Fuel Cell Reformers
David A. Berry, Dushyant Shekhawat and Todd H. Gardner

518g High Pressure Fuel Processing in Regenerative Fuel Cells
G. J. Suppes, J. F. White, Kiran Yerrakondreddygari

Session 539 - Reaction Engineering Fundamentals and Applications - In Memory of Aydin Akgerman *
Chair: Dragomir B Bukur
Vice Chair: Rayford G Anthony

Session 548 - Developments in Chemical-based Alternative Fuels *
Chair: Prasanna V Joshi
Vice Chair: Wei-Yin Chen

* These papers were unavailable at the time of publication.

17: Forest Products Division

To Use this Index: Scroll down or use the bookmarks in the left-hand frame to move to a new location in this index. Click on a blue paper title to view that paper. To return to this index after viewing a paper, click the PREVIOUS MENU bookmark in the left frame.

Session 27 - Chemicals and Materials from Renewable Feedstocks Plenary (Invited Papers)

Chair: James D McMillan
Vice Chair: Paul G Roessler

27a The Role of U.S. DOE Laboratories in the Evolution of the U.S. Bioenergy Industry
Michael A. Pacheco

27b Biomass Refining in Response to Sustainability and Security Challenges
Lee R. Lynd

27c Envisioning Wood Biomass Based Biorefineries and Integration Into Existing Industries
Thomas E. Amidon

27d Progress Towards the Commercialization of PHA Bioplastics
Oliver P. Peoples and James Barber

27e Enabling the Renewable Chemical Industry: Cargill's Perspective
Jim Millis

Session 475 - Advances in Green Bioprocessing

Chair: Ching-An Peng
Vice Chair: David H Reeder

475b Biodiesel production by enzymatic transesterification of olive oil
Fernando Sanchez, Palligarnai T. Vasudevan and Michael Diamond

475d Enhanced Butyric Acid and Hydrogen Production by the Mutants of Clostridium tyrobutyricum
Xiaoguang Liu and Shang-Tian Yang

475e Preparation of Activated Carbon from Forest and Agricultural Residues Through Co2 Activation
Tengyan Zhang, Walter P. Walawender, L. T. Fan, Maohong Fan, Daren Daugaard And R. C. Brown

Session 476 - Biological Conversions and Transformations

Chair: Robert Wooley
Vice Chair: Arthur J Ragauskas

476b Understanding the Metabolic Capabilities of Desulfovibrio vulgaris Hildenborough
Kenneth J. Kauffman and Jay D. Keasling

476f A Mathematical Model for the Kinetics of Hydrolysis of Bacterial Microcrystalline Cellulose by Cellulase Enzymes
A. Brad Anton, Tina Jeoh and Larry P. Walker

Session 479 - Advances in Agricultural Biotechnology and Plant Cell Culture

Chair: Susan C Roberts
Vice Chair: Mike (Chenming) Zhang

479b Metabolic Control of Taxane Accumulation at the mRNA Level
Michael C. Naill, Nathan Ezekiel Nims, Elsbeth L. Walker and Susan C. Roberts

479e Chemically-Regulated Cucumber Mosaic Virus Amplicon for the Expression of Foreign Genes/Proteins in Plants and Plant Cell Cultures
Mysore Sudarshana, Sandra L. Uratsu, Bryce Falk, Abhaya M. Dandekar, Alan P. Jackman and Karen A. McDonald

479f Enhanced production of recombinant proteins from plant cells by the application of osmotic stress and protein stabilization
Ryan G. Soderquist and James M. Lee

479g Effects of a nutrient mist bioreactor system on growth kinetics and secondary metabolism of transformed roots of Artemisia annua
Melissa J. Towler and Pamela J. Weathers

Session 519 - Green Materials: Forest and Biobased Products – I *
Chair: Amar K Mohanty
Vice Chair: Joseph V Kurian

Session 520 - Green Materials: Forest and Biobased Products – II *
Chair: Amar K Mohanty
Vice Chair: Joseph V Kurian

Session 521 - Recycling of Forest and Biobased Products
Chair: Yulin Deng
Vice Chair: Junyong Zhu

521a Limiting the Impact of Pressure Sensitive Adhesives on Paper Recycling by Controlling their Fragmentation during Repulping
Steve Severtson

* These papers were unavailable at the time of publication.

18: Liaison Functions

To Use this Index: Scroll down or use the bookmarks in the left-hand frame to move to a new location in this index. Click on a blue paper title to view that paper. To return to this index after viewing a paper, click the PREVIOUS MENU bookmark in the left frame.

Session 20 - Novel Electrochemistry and Materials for Fuel Cells II
Chair: Michael J Antal
Vice Chair: Richard Rocheleau

20a Development of Liquid Fuel Reformer Using Low Energy Pulse (LEP) Discharge at Room Temperature
Yasushi Sekine, Masahiko Matsukata, Eiichi Kikuchi and Shigeru Kado

20b Investigation of Fuel Cell Anode at Higher Temperature with Reformate Fuel by AC Impedance Spectroscopy
Ruichun Jiang, H. Russell Kunz and James M. Fenton

20c System under Investigation
Alexander Mukasyan

20f Synthesis of Novel Proton Conducting Mesoporous Silica (Ms) Films for High Temperature Pem Fuel Cells
Fangxia Feng, Zhiwei Yang, Decio H. Coutinho, John P. Ferraris and Kenneth J. Balkus, Jr.

Session 21 - Poster Session: Fuel Cell Technology
Chair: Tom R Marrero
Vice Chair: Galen J Suppes

21a Development of Simultaneous Measurement of Water Vapor Adsorption and Proton Conductivity to PEM for PEFC
Masayuki Yoshida

21d Natural Gas Odorants Desulfurization
Dushyant Shekhawat, Todd H. Gardner and David A. Berry

21f An Improved Pemfc Model with Plug Flow in Channels
Valeri A. Danilov, Il Moon and Jong-Koo Lim and Kyoung Hwan Choi

21g Partial Oxidation of n-Tetradecane over Lanthanum Ni-Hexaaluminate
Todd H. Gardner, Dushyant Shekhawat, David A. Berry and Maria D. Salazar-Villapando and Edwin L. Kugler

Session 22 - Environmental Impact of Fuel Cell Technology
Chair: Tapas K Das
Vice Chair: Robert W Peters

22a Environmental Impact of Fuel Cell Technology for Electric Power Generation: An Overview and Case Studies
Jaimini Upadhyaya, Robert W. Peters, Fouad H. Fouad, Rajesh K. Ahluwalia, Ezzat Danial Doss, Tapas Das

22b Performance of a Ford F-150 Using Various Fuel Blends of Compressed Natural Gas and Hydrogen
Samrat Dutta, Robert W. Peters, Fouad H. Fouad, Henry Ng and Michael Duoba

22f Heat and Power Integration Opportunities in Methane Reforming based Hydrogen Production with PSA separation
Alberto Posada and Vasilios Manousiouthakis

Session 23 - Fuel Processing Session I: Modeling and System Integration
Chair: Ioannis (Yannis) P Androulakis
Vice Chair: Urmila Diwekar

23a Dynamic Modeling and Analysis of PEM Fuel Cells for Startup from Subfreezing Temperatures
Mallika Gummalla, Nikunj Gupta, Shubhro Ghosh, Sergei Burlatsky, Patrick Hagans and Cynthia Rice

23b Dynamic Modelling for Control of Fuel Cells
Federico Zenith and Sigurd Skogestad

23d A Breakthrough Process for the Production of Hydrogen
Frank Hershkowitz, Paul J. Berlowitz, Harry W. Deckman, Elise Marucchi-Soos, Chris S. Gurciullo, Jeffrey W. Frederick, Nick Rados and Rajeev Agnihotri

23g Integrated Framework for Fuel Cell Based Auxiliary Power Units: from Fuel Processing and System Performance, to Health, Ecological Impacts and Life Cycle Analysis
Francesco Baratto, Urmila M. Diwekar

Session 24 - Fuel Processing Session II: Catalysis and Kinetics
Chair: Ravindra Datta
Vice Chair: Susan M Stagg-Williams

24a Water gas shift activity of noble metals and promoted noble metals supported on ceria-zirconia oxides
Rakesh Radhakrishnan, R.R. Willigan, C.A. Newman, Y. She, F. Feng, F. Wijzen, X. Tang, S.M. Opalka, H. Cordatos, Z. Dardas, T.H. Vanderspurt

24d High-Temperature Water-Gas Shift Reaction over Cr-Free Fe-Al Catalysts Promoted with First Row Transition Metals
Sittichai Natesakhawat, Xueqin Wang and Umit S. Ozkan

24e Fuel Processing Session II: Catalysis and Kinetics: Characterization of PROX Catalysts on Structured Supports
Paul Chin, George W. Roberts, Xiaolei Sun, and James J. Spivey

24f Selective CO Oxidation over Au Supported On Mixed Oxides: Effect of Preparation on Activity and Selectivity
Abhishek Jain and Susan M. Stagg-Williams

24g Microfibrous Entrapment of Small Catalyst Particulates for High Contacting Efficiency Removal of Trace Co from Reformates at Low Temperatures for Pem Fuel Cells
Bong-Kyu Chang and Bruce J. Tatarchuk

Session 25 - Fuel Processing Session III: Reactor Development and Modeling
Chair: Yushan Yan
Vice Chair: Urmila Diwekar

25c A Reformer Performance Model for Fuel Cell Applications
S.S. Sandhu, Y.A. Saif and J.P. Fellner

Session 27 - Chemicals and Materials from Renewable Feedstocks Plenary (Invited Papers)
Chair: James D McMillan
Vice Chair: Paul G Roessler

27a The Role of U.S. DOE Laboratories in the Evolution of the U.S. Bioenergy Industry
Michael A. Pacheco

27b Biomass Refining in Response to Sustainability and Security Challenges
Lee R. Lynd

27c Envisioning Wood Biomass Based Biorefineries and Integration Into Existing Industries
Thomas E. Amidon

27d Progress Towards the Commercialization of PHA Bioplastics
Oliver P. Peoples and James Barber

27e Enabling the Renewable Chemical Industry: Cargill's Perspective
Jim Millis

Session 28 - Chemical and Catalytic Conversions for Renewable Feedstocks
Chair: Brent H Shanks
Vice Chair: Susan M Stagg-Williams

28e Transesterification of Glycerol Triacetate with nd Base Catalysts
Dora E. Lopez, James Goodwin Jr. , Edgar Lotero and David Bruce

28f Biodegradable Polymers from Renewable Resources: Lactide Polymerization with a Potentially Recyclable Immobilized Zn beta-Diiminate Complex
Christopher W. Jones, Benn C. Wilson and Kunquan Yu

Session 29 - Biological Conversions and Processes for Renewable Feedstocks
Chair: David N Thompson
Vice Chair: Bruce S Dien

29a Kinetic And ATP Maintenance Studies of a Metabolically Engineered Zymomonas Mobilis Fermenting Glucose and Xylose
Juan Carlos Sáez-Miranda, Lorenzo Saliceti-Piazza and James D. McMillan

29d A Novel Biological Process to Convert Renewable Biomass to Acetone and Butanol (AB)
Qureshi N, Ezeji TC, Blaschek HP, Cotta MA

Session 30 - Separation of Processing Streams Derived from Renewable Feedstocks
Chair: Michael Ladisch
Vice Chair: Ranil Wickramasinghe

30b Adsorptive Membranes vs. Resins for Acetic Acid Removal from Biomass Hydrolysates
Binbing Han , Walter Carvalho, Larissa Canilha, Silvio Silverio da Silva, Joao Batista Almeida e Silva, James D. McMillan and Ranil Wickramasinghe

30c Isolation of Polyhydroxyalkanoates from Fermentation Broth
H. Frühwirth-Smounig, R. Marr and M. Siebenhofer

30f Evaluation of process configurations to produce hydrogen from black liquor
Tobias Richards and Jim Frederick

Session 31 - Pretreatment of Lignocellulosic Biomass: Update on Biomass Refining CAFI Studies I
Chair: Charles E Wyman
Vice Chair: Tim Eggeman

31a Dilute Acid Pretreatment and Elevated-Temperature Washing of Corn Stover and Poplar
Richard Elander, Melvin Tucker, Edward Jennings and Nick Nagle

31b Using Xylooligomers to Study the Effects of Dilute Acid in Biomass Pretreatment
Todd A. Lloyd, Charles E. Wyman

31d Optimization of pH Controlled Liquid Hot Water Pretreatment of Corn Stover
Nathan Mosier, Richard Hendrickson, Nancy Ho, Miroslav Sedlak and Michael R. Ladisch

Session 32 - Pretreatment of Lignocellulosic Biomass: Update on Biomass Refining CAFI Studies II
Chair: Charles E Wyman
Vice Chair: Tim Eggeman

32b Initial Data and Models for Enzymatic Hydrolysis of Cellulose Prepared by Leading Pretreatment Technologies
Rajeev Kumar and Charles E. Wyman

32c Developing a Fundamental Understanding of Biomass Structural Features Responsible for Enzymatic Digestibility
Jonathan O'Dwyer, Li Zhu and Mark T. Holtzapple

32d Application of Lignin Blockers and Inactive Cellulase to Understand Enzymatic Hydrolysis Kinetics of Pretreated Cellulose
Bin Yang and Charles E. Wyman

Session 33 - Reactor Engineering for Biomass Feedstocks
Chair: Michael J Antal
Vice Chair: Bruce Dale

33f Acidic Sugar Degradation Pathways -- An ab initio Molecular Dynamics Study
Xianghong Qian, Mark R. Nimlos, David K. Johnson and Michael E. Himmel

Session 34 - Life Cycle Analysis of Renewable Feedstock-Based Processes
Chair: Robert P Anex
Vice Chair: John Sheehan

34a Sunlight Ancient and Modern: The Relative Energy Efficiency of Hydrogen and Fertilizer from Coal and Current Biomass
Dr Matthew J. Realff, Ling Zhang

34b Pulp-mill integrated biorefineries: a framework for assessing net CO2 emission consequences
E. Andersson, S. Harvey

34d Life Cycle Analysis of Products made with Bio-Based 1,3-Propanediol
Carl F Muska, Carina Maria Alles, Susanne Veith, Robin E Jenkins and Robert W Sylvester

34f Cradle to farm gate lifecycle inventory and water quality impacts associated with nutrients used for corn, soy, and stover biomass feedstocks
Susan E. Powers

Session 36 - Advances in Biosensors I
Chair: Stephen P Beaudoin
Vice Chair: Jeffrey Chalmers

36a Voltammetric Analysis of Carbon Microelectrode Measurements based on the Hilbert Transform: A Theoretical and Experimental Study
Costas A. Anastassiou, Martin Arundell, Kim H. Parker and Danny O'Hare

36d Detection of Label-Free Biomolecules by Wavelength-Scanning Reflective Interferometric Sensing
Jinghui Lu, Tingjuan Gao and Lewis J. Rothberg

Session 37 - Advances in Biosensors II
Chair: Heidi B Martin
Vice Chair: C C Liu

37b Acoustic Wave Sensors: Application to Biological Sensing in Liquid Environments
Stefan Cular, Steven K. Showalter, Venkat Bhethanabotla and Richard W. CernoseK

37d Detection of Group A Streptococcus and Model Protein Using Self-Excited PZT-Glass Microcantilever
Gossett A. Campbell and Raj Mutharasan

37f Surface Enhancements of Polymer-Based Microfluidic Enzyme-Linked Immunosorbent Assay
Yunling Bai, Chee Guan Koh, Yi-Je Juang, James Lee, and Shang-Tian Yang

Session 38 - Advances in Biosensors III
Chair: Daniel W Tedder
Vice Chair: Heidi B Martin

38e Electroenzymatic Glutamate Microbiosensor in the Study of Parkinson's Disease
Jianjun Wang, Eric Walker, Harold G. Monbouquette, Nigel Maidment

Session 39 - Sensors for Process Control and for the Chemical Industry
Chair: Heidi B Martin
Vice Chair: C C Liu

39b Integrated Process Sensor Network Design
Miguel J. Bagajewicz, Donald Chmielewski and Raghunathan Rengaswamy

39c The Value of Sensor Networks for Advanced Process Control
Jui-Kun Peng and Donald J. Chmielewski

39d Characterization of Value for Sensor Networks for Process Fault Diagnosis
Sridharakumar Narasimhan and Raghunathan Rengaswamy

39e You've re-invented what? Yes, that's right, the Type K thermocouple
Daniel A. Barberree

39g Hydrogen-Selective Sensors for Industrial Applications
Dongmei Li, J.W. Medlin, A.H. McDaniel, R. Bastasz

Session 40 - Design, Fabrication and Application of Microsensors
Chair: C C Liu
Vice Chair: Heidi B Martin

40e A Microfluidic Method for Sensor Fabrication on Curved Surfaces
Edgar D. Goluch, Kashan A. Shaikh, Kee Ryu, Jack Chen, Jonathan M. Engel and Chang Liu

40f Organic Vapor Sensing with Enhanced Sensitivity using Polymer-coated Thickness Shear Mode Devices
Randolph D. Williams, Anant K. Upadhyayula and Venkat R. Bhethanabotla

40g Surface Acoustic Wave Sensors using Nanocrystalline Palladium for Hydrogen Gas Detection
Amol V. Chaudhari, Stefan Cular, Deepak Srinivasagupta, Venkat R. Bhethanabotla, Babu Joseph

40h Pd/Cr Gates for a MIS Type Hydrogen Sensor
Linfeng Zhang, Erik F. McCullen, M.H. Rahman, Ron J. Baird, Ratna Naik, Lajos Rimai, Greg W. Auner and K. Y. Simon Ng

Session 41 - Environmental Sensors
Chair: C C Liu
Vice Chair: Heidi B Martin

41a Homeland Security, Olfactory Images, and Virtual Chemical Sensors
Edward J. Staples and Shekar Viswanathan

41c Continuous Tapered Fibers as Sensors for Cellular Growth and Pathogen Detection
Angela S.Y. Leung, Kishan Rijal, Gregory J. Thomas, Raj Mutharasan and P. Mohana Shankar

41e Morphological Design of Nanoparticle Assemblies: Application to Environmental Sensing
Volodymyr V. Tarabara and Mark R. Wiesner

41f Modeling Chemiresistor Sensors 1: Conductivity Model
Hua Lei, William G. Pitt, Lucas K. McGrath and Clifford K. Ho

Session 91 - Recent Advances in Chemical Mechanical Planarization I
Chair: SV Babu

91c Tribological, Thermal and Kinetic Attributes of Copper and Silicon Dioxide CMP Processes
Y. Zhuang, Z. Li, J. Sorooshian and A. Philipossian and L. Borucki

91d Theoretical and Experimental Investigation of ILD Removal Rates, Coefficient of Friction, and Pad Flattening Ratio
Len Borucki, H. Lee, Y. Zhuang and A. Philipossian

Session 92 - Recent Advances in Chemical Mechanical Planarization II
Chair: Ara Philipossian

92c Evaluation of High Pressure Micro Jet Technology as an Alternative Pad Conditioning Method for Silicon Dioxide Chemical Mechanical Planarization
Hyo-Sang Lee, Masano Sugiyama, Ara Philipossian, Yoshiyuki Seike, Mineo Takaoka, Keiji Miyachi,

Session 93 - Electropolishing and Chemical Mechanical Polishing (CMP)
Chair: Robert Opila
Vice Chair: Uzi Landau

93c Electrochemical Polishing of Patterned Copper Films
J. Huo, R. Solanki and J. McAndrew

93e Surface Texture Measurements of CMP Pads Using a Flow-Based Characterization Test
Ravi Palaparthi and Gregory P. Muldowney

Session 125 - Recognizing Opportunity
Chair: Anu Subramanian
Vice Chair: Prantik Mazumder

125a Taking a Journey down the Career Path
F. K. Wood-Black

125b Disparity in Female Faculty Hiring and Retention Across Science Disciplines
Donna J Nelson

Session 126 - Managing Science, Managing Scientiests
Chair: Stanley I Proctor
Vice Chair: Sujata K Bhatia

126a Opening the Doors for Women in the Chemical Sciences and Engineering: Why We Need Keys to the Doors
Madeleine Jacobs

126b Building the Leadership Pipeline
F. K. Wood-Black

126d Lessons Learned from Interviewing Project Managers
R. Anthony (Tony) MAI and Eldon R. Larsen

Session 127 - Teaching and Training for Diverse Leadership
Chair: Surita R Bhatia
Vice Chair: Richard D Siegel

127b Improving Team Results by Understanding Social Style and Problem Solving Diversity
Jack Hipple

127c Evaluation of creativity and problem solving in chemical engineering education
Neil S. Forbes

Session 140 - New Developments in Information Technology & Cyber Infrastructure: Session & Roundtable Discussion *
Chair: Jimmy L Humphrey
Vice Chair: Vince Milito

Session 141 - The Smart Plant Fundamentals & Opportunities: Session & Roundtable Discussion *
Chair: Jimmy L Humphrey
Vice Chair: Iliana E Stefanova-Petkova

Session 142 - IT Cyber Infrastructure to Enable Frontier Technologies: Session & Roundtable Discussion
Chair: Jim F Davis
Vice Chair: Maria Burka

142e Cyber Infrastructure for Effective Deployment of Environmental Management Systems
Andy Srinivasan, Tim Aldredge and Jeremiah O'Brien

Session 143 - IT Applications in Frontier Technologies: Session & Roundtable Discussion
Chair: Vincent G Grassi
Vice Chair: Gary K Stenerson

143a Processes to Manage Knowledge for High Growth Businesses
Dr. Vincent G. Grassi and Dan Rivard

Session 144 - IT in Chemical Engineering Education: Session & Roundtable Discussion
Chair: Ku Yen Li
Vice Chair: Thomas F Edgar

144b Solutions for Information Overload from Process Control Systems: Real-Time Process & Enterprise Information Validation for Making Plants Smarter and Safer
Douglas H. Lenz, Richard J. Fickelscherer and Daniel L. Chester

144e Observations on the Use of Library Information Systems by Chemical Engineering Undergraduates
Jeanne Davidson and David Hackleman

Session 478 - Advances in Bioreactors and Cell Culture: Animal and Insect Cells *
Chair: William M Miller
Vice Chair: Michael Betenbaugh

Session 482 - Advances in Bioseparations: Chromatographic Separations I *
Chair: Linda Wang
Vice Chair: Yi Xie

Session 522 - Grogan Financial Services Seminar *
Chair: Larry Grogan

Session 523 - Grogan Financial Services Seminar *
Chair: Larry Grogan

Session 524 - Grogan Financial Services Seminar *
Chair: Larry Grogan

Session 525 - Grogan Financial Services Seminar *
Chair: Larry Grogan

Session 527 - Alpha Chi Sigma Symposium *
Chair: Vassily Hatzimanikatis
Vice Chair: Doraiswami Ramkrishna

Session 528 - New Technologies For Experimentation Over The Internet
Chair: Oscar D Crisalle
Vice Chair: Denis Gillet

528a Integrating Virtual Laboratory Exercises into Chemical Engineering Curricula
B. Unlusu, A. K. Sunol and B. Joseph

528e Internet-based interactive remote laboratory for educational experiments
Zoltán K. Nagy, Serban P. Agachi,

Session 529 - Incorporating New Technologies into Chemical Engineering Education
Chair: Jennifer S Curtis
Vice Chair: David L Silverstein

529a Applications of MathCAD in Undergraduate Process Control
James E. Smith, Jr.

529g Replacing Figures and Tables for Engineering Design with Simple In-House Developed Computer Software
YoonKook Park, Kyung C. Kwon, Nader Vahdat, Tamara M. Floyd

Session 602 - Institute Lecture *
Chair: Adam Heller

Session 603 - Progress Award Lecture *
Chair: George Georgiou

* These papers were unavailable at the time of publication.

20: Catalysis and Reaction Engineering Division

To Use this Index: Scroll down or use the bookmarks in the left-hand frame to move to a new location in this index. Click on a blue paper title to view that paper. To return to this index after viewing a paper, click the PREVIOUS MENU bookmark in the left frame.

Session 19 - Fuel Cell Technology: Fuel Processing I
Chair: Michael P Harold
Vice Chair: Galen J Suppes

19d Fuel Processing for Pem Fuel Cells: In-Line Adsorbent Filters for Mea Protection
Bong-Kyu Chang, Mukund Karanjikar, Yong Lu, Donald R. Cahela and Bruce J. Tatarchuk

19e Copper and Lanthanum Doped Cerium Oxide for Hot Reformate Gas Desulfurization
Zheng Wang, Mann Sakbodin, Scott West and Maria Flytzani-Stephanopoulos

Session 26 - Fuel Cell Technology: Systems
Chair: Maria Flytzani-Stephanopoulos
Vice Chair: Levi T Thompson

26a Man-Portable Power Generation Based on Fuel-Cell Systems
Alexander Mitsos-MIT, Michael M. Hencke-MIT and Paul I. Barton

26d Systematic Optimization of a H2 PEMFC Power Generation System with Heat Integration
Cong Xu, Lorenz T. Biegler and Myung S. Jhon

26e Modeling, Simulation and Optimization of a Cross Flow Molten Carbonate Fuel Cell
P. Heidebrecht , M. Mangold , M. Gundermann , A. Kienle , K. Sundmacher

26f Hydrogen Production from Water using Polymer Electrolyte Membrane
Chang-Hee Kim, Kyu-Sung Sim and Ki-Bae Park

Session 27 - Chemicals and Materials from Renewable Feedstocks Plenary (Invited Papers)
Chair: James D McMillan
Vice Chair: Paul G Roessler

27a The Role of U.S. DOE Laboratories in the Evolution of the U.S. Bioenergy Industry
Michael A. Pacheco

27b Biomass Refining in Response to Sustainability and Security Challenges
Lee R. Lynd

27c Envisioning Wood Biomass Based Biorefineries and Integration Into Existing Industries
Thomas E. Amidon

27d Progress Towards the Commercialization of PHA Bioplastics
Oliver P. Peoples and James Barber

27e Enabling the Renewable Chemical Industry: Cargill's Perspective
Jim Millis

Session 28 - Chemical and Catalytic Conversions for Renewable Feedstocks
Chair: Brent H Shanks
Vice Chair: Susan M Stagg-Williams

28e Transesterification of Glycerol Triacetate with nd Base Catalysts
Dora E. Lopez, James Goodwin Jr. , Edgar Lotero and David Bruce

28f Biodegradable Polymers from Renewable Resources: Lactide Polymerization with a Potentially Recyclable Immobilized Zn beta-Diiminate Complex
Christopher W. Jones, Benn C. Wilson and Kunquan Yu

Session 35 - Developments in Bio-based Alternative Fuels
Chair: Brian Duff
Vice Chair: Gregory W Luli

35a Lignocellulosic Feedstocks for Ethanol Production: The Ultimate Renewable Energy Source
Philip W. Madson and Charles D. Tereck

35b Biomass Cogeneration Demonstration Plant at Central MN Ethanol Coop
Cecil T. Massie PE and Amit Shukla

35c Options for Combining Pervaporation Membrane Systems with Fermentors for Efficient Production of Alcohols from Biomass
Leland M. Vane

35d Continuous Conversion of MSW-derived Waste Paper to Bio-Ethanol Using a 1L 6-stage Continuous Stirred Reactor Separator
M. Clark Dale, Daniel Musgrove

35f Experience of truck fleets with BioDiesel made from animal fats as compared to rapeseed oil methyl ester
Edgar Ahn, Thomas Hilber, Martin Mittelbach and Eberhard Schmidt

Session 204 - Reactions in Near Critical and Supercritical Fluids I
Chair: Bala Subramaniam
Vice Chair: Keith W Hutchenson

204f Production of H2 from Methanol by Supercritical Water Reforming: Strategies to Suppress Methanation
Jayant B. Gadhe and Ram B. Gupta

Session 205 - Polymerization and Polymer Processing in Supercritical Fluids *
Chair: Ruben Carbonell
Vice Chair: Ted Lee

Session 256 - Reactive Separations I
Chair: Jeffrey R Hufton
Vice Chair: Kurt Vanden Bussche

256a From Reactive Distillation To Reactive Membrane Separation: A Generalized Approach For Feasibility Analysis
Yuan-Sheng Huang, Kai Sundmacher

Session 257 - Reactive Separations II
Chair: Jeffrey R Hufton
Vice Chair: Kurt M Vandenbussche

257c Absorption Equilibrium and Kinetics for Ethylene-Ethane Separation with a Novel Solvent
Travis A. Reine, R. Bruce Eldridge

Session 326 - Mixing and Chemical Reaction *
Chair: David S Dickey
Vice Chair: Enrique Galindo

Session 349 - Polymerization Kinetics, Catalysis and Reaction Engineering I
Chair: Joseph Schork
Vice Chair: Julie L Jessop

349d Characterization of the Initial Conditions in Emulsion Polymerization: Loci for Particle Nucleation
Vineet Shastry, Luis H Garcia-Rubio

349f ATRP of Ionic Liquid Monomers and CO2 Absorption of the Polymerized Ionic Liquids
Huadong Tang, Sijie Ding, Jianbin Tang, Maciej Radosz, Youqing Shen

Session 351 - Polymerization Kinetics, Catalysis and Reaction Engineering II *
Chair: Allan Guymon
Vice Chair: Joao BP Soares

Session 353 - Polymerization Kinetics, Catalysis and Reaction Engineering III
Chair: Allan Guymon
Vice Chair: Joao BP Soares

353b Multisite Model of Polyol Preparation in Continuous Processes Using Heterogeneous Double Metal Cyanide Catalysts
M. Zhang, C. Villa, L. Thompson, J. Weston

353c Kinetic Modeling and Parameter Estimation of Slurry Propylene Homopolymerization Using Rac-Et[Ind]2zrcl2/MAO
Bernabe Quevedo, Ramon A. Gonzalez-Ruiz, Robert L. Laurence, E. Bryan Coughlin, Michael A. Henson

353f Novel Sparse-Matrix Representation for Free-Radical Polymerization Simulations
Yadunandan L Dar, Vijay R. Tirumala, Gerard T. Caneba, Derrick C. Mancini5

Session 362 - Novel Catalytic Materials I
Chair: Vadim V Guliants
Vice Chair: Michael S Wong

362d Characteristics of Carbon-Based Catalysts for the Selective Catalytic Oxidation of Hydrogen Sulfide
Todd H. Gardner, Dushyant Shekhawat and David A. Berry

Session 382 - Green Chemistry and Reaction Engineering
Chair: Martin Abraham
Vice Chair: Russell F Dunn

382a Kinetic Study of the Accelerated Carbonation of MSW Incinerator Air Pollution Control Residues
M. Fernández Bertos, A. Scuzzarella, S.R.J. Simons, C.D. Hills and P. Carey

Session 385 - Applications of Environmental Catalysis I
Chair: Sibudjing (Jim) Kawi
Vice Chair: Raymond L Smith

385b Optimization of NOx Storage Performance through Modifying Catalyst Composition and Alumina Support
Xiaoyin Chen, Johannes Schwank, John Li, William F. Schneider, Christian T. Goralski, Jr. and Peter J. Schmitz

385c Global Kinetic Modeling of Lean NOx Traps
Louise Olsson and Richard J. Blint

Session 388 - Advanced Oxidation Processes in Environmental Applications I *
Chair: Mark Bricka
Vice Chair: Mark Zappi

Session 392 - Catalytic/Biocatalytic Membrane Reactors
Chair: Theodore T Tsotsis
Vice Chair: Michael C Trachtenberg

392e CFD-simulation of membrane reactor for methane steam reforming
Takashi Takeuchi, Masahiko Aihara and Hitoshi Habuka

Session 395 - Fundamentals of Environmental Catalysis *
Chair: Panagiotis (Peter) Smirniotis
Vice Chair: Robert W Peters

Session 396 - Reactions In and Other Applications of Benign Solvents *
Chair: Phillip E Savage
Vice Chair: Urmila Diwekar

Session 409 - Design of Reactive Systems
Chair: Patrick Linke
Vice Chair: Prasenjeet Ghosh

409c How to Start Up Reactive Distillation Towers
F. Reepmeyer, J.-U. Repke, F. Forner and G. Wozny

Session 439 - Multiscale Modeling and Simulation I
Chair: Dionisios G Vlachos
Vice Chair: Martha Gallivan

439a Simulation of Copper Nanostructure Formation by Coupling Kinetic Monte Carlo Simulation, Continuum Models, and the Level Set Method
Timothy O. Drews, Effendi Rusli, Yuan He, Xiaohai Li, Richard C. Alkire and Richard D. Braatz

439b Predictor-Corrector Methods for Dynamically Coupling Multiscale Simulation Codes
Yuan He, Joshua Gray, Richard C. Alkire and Richard D. Braatz

439g Design of an Optimal Overlap Algorithm for Dynamically Coupling Continuum and Noncontinuum Codes in Multiscale Simulation
Effendi Rusli and Richard D. Braatz

Session 441 - Multiscale Modeling and Simulation II *
Chair: Dionisios G Vlachos
Vice Chair: Martha Gallivan

Session 467 - Synthesis and Separation in the Pharmaceutical and Fine Chemical Industries *
Chair: Shekhar K Viswanath
Vice Chair: Linda Wang

Session 481 - Advances in Biocatalysis and Protein Engineering I
Chair: William A Apel
Vice Chair: Andreas S Bommarius

481b Tailoring Toluene para-Monooxygenase of Ralstonia pickettii PKO1 for Regiospecific Oxidation of Aromatics Using Active Site Engineering
A. Fishman, Y. Tao, W. E. Bentley, T. K. Wood

481c Tailoring Toluene para-Monooxygenase of Ralstonia pickettii PKO1 for Regiospecific Oxidation of Aromatics Using Active Site Engineering
A. Fishman, Y. Tao, W. E. Bentley, T. K. Wood

481d Biochemical Characterization of Dihydroflavonol 4-Reductase from Plant and Microbial Species
Joseph E. Leonard, Simone Witte, Yajun Yan, Yvonne Gebhardt, Stefan Martens and Mattheos Koffas

481g Production of Anthocyanins from Escherichia Coli Containing an Artificial Gene Cluster
Yajun Yan, Joseph E. Leonard, Joseph Chemler and Mattheos Koffas

Session 483 - Advances in Bioreactors
Chair: Jeffrey Chalmers
Vice Chair: Sa Ho

483b Astaxanthin Production by H. pluvialis in Sequential Batch Followed by Fed-Batch Culture Illuminated by LED Lamps
Abdolmajid Lababpour, Tomohisa Katsuda, Shigeo Katoh

Session 492 - Biotechnology in the Petroleum Industry
Chair: Gregory A Bala
Vice Chair: Kerry L Sublette

492A Biosurfactants can mobilize substantial amounts of entrapped hydrocarbons
Michael J. Mclnemey, Saikrishna Maudgalya, Martha J. Folmsbee, Roy M. Knapp and David P. Nagle

492b Permeability Modification Using a Reactive Alkaline-Soluble Biopolymer
S. L. Fox, X. Xie, G. A. Bala

Session 514 - Fuel Cell Technology II
Chair: Trung V Nguyen
Vice Chair: Hossein Hariri

514b Operation of a PEM Stack with High Impurity Anode Feeds in a Recycle Mode
Wenhua H. Zhu, Robert U. Payne, Yong Lu, Bruce J. Tatarchuk

514e Model-based Control of Fuel Cells: Optimal Efficiency
J. Golbert and D.R. Lewin

514f Rigorous modeling and experimental validation of mass, charge and energy transport in a DMFC polymer electrolyte membrane
Thorsten Schultz, Kai Sundmacher

514g The electrochemical kinetics study of methanol at electrocatalyst Pt-Ru/C and the methanol diffusion in the modified proton exchange membranes
Ning-Yih Hsu ,Yu-Nong Chen, Shi-Chern Yen

514h Direct Methanol Fuel Cell Thermodynamic Simulation
S.S. Sandhu, R.O. Crowther, J.P. Fellner

Session 516 - Supercritical Fluids Applications - In Memory of Aydin Akgerman *
Chair: Rayford G Anthony
Vice Chair: Dragomir B Bukur

Session 518 - Fuel Cell Technology: Fuel Processing II
Chair: Michael P Harold
Vice Chair: Tom R Marrero

518b Development of Reaction Kinetics for Diesel-Based Fuel Cell Reformers
David A. Berry, Dushyant Shekhawat and Todd H. Gardner

518g High Pressure Fuel Processing in Regenerative Fuel Cells
G. J. Suppes, J. F. White, Kiran Yerrakondreddygari

Session 530 - In Honor of the Wilhelm Award Recipient I *
Chair: Sebastian C Reyes
Vice Chair: Alexis T Bell

Session 531 - Multiphase Reaction Engineering
Chair: Muthanna H Al-Dahhan
Vice Chair: Patrick L Mills

531d Calcium Carbonate Decomposition under External Pressure Pulsations
Patil, K., Jain, S., Gandi, R.K., Shankar, H.S.

Session 532 - Rational Catalyst Design: Theory and Experiment I *
Chair: Manos Mavrikakis
Vice Chair: Matthew Neurock

Session 533 - Computational Fluid Dynamics in Chemical Reaction Engineering I *
Chair: Anthony G Dixon
Vice Chair: Nitin H Kolhapure

Session 534 - Microreactors and Microbioreactors: Fundamentals and Applications
Chair: Richard I Masel
Vice Chair: Marcel A Liauw

534b Design of Feed Segments in Microreactors: Influences of Arrangements and Shapes of Segments on Product Composition for Multiple Reactions
Nobuaki Aoki, Shinji Hasebe, Kazuhiro Mae

Session 535 - In Honor of the Wilhelm Award Recipient II *
Chair: Alexis T Bell
Vice Chair: Sebastian C Reyes

Session 536 - Computational Fluid Dynamics in Chemical Reaction Engineering II
Chair: Anthony G Dixon
Vice Chair: Nitin H Kolhapure

536f Multi-fluid model applied to calculate backmixing and mass transfer in bubble columns
D. Wiemann and D. Mewes

Session 537 - Rational Catalyst Design: Theory and Experiment II
Chair: Manos Mavrikakis
Vice Chair: Matthew Neurock

537a Fourier Transform Combinatorial Chemistry applied to the Discovery of Novel Catalysts for the Water-Gas-Shift Reactions
Karin Yaccato, Christopher J. Brooks, Ray Carhart, Alfred Hagemeyer, Anthony F. Volpe, Howard W. Turner, W. Henry Weinberg

Session 538 - Reaction Path Analysis
Chair: Preetinder S Virk
Vice Chair: Linda Broadbelt

538a Synthesis of Reaction Pathways via Systematic Integration
Mingheng Li

538b Reaction pathways of hydroxylamine decomposition in the presence of acid/base
Chunyang Wei, William J. Rogers, M. Sam Mannan

538f In Situ Infrared Study of the Catalytic Ignition of Methane on Pt/Al2O3
A. Bourane, C. Cao, J. R. Schlup, K. L. Hohn

538g Reaction path analysis as a tool for scaling up steam cracking coils
K.M. Van Geem, M.F. Reyniers, G.B. Marin

Session 539 - Reaction Engineering Fundamentals and Applications - In Memory of Aydin Akgerman *
Chair: Dragomir B Bukur
Vice Chair: Rayford G Anthony

Session 540 - Multiphase Reaction Engineering: In Honor of Mike Dudukovic I *
Chair: Muthanna H Al-Dahhan
Vice Chair: Patrick L Mills

Session 541 - Perspectives in Industrial Practice of Catalysis and Reaction Engineering *
Chair: Hugh Stitt
Vice Chair: Concetta LaMarca

Session 542 - Chemical Reactor Dynamics
Chair: Jason M Keith
Vice Chair: Vemuri Balakotaiah

542f Complex Dynamic Behavior during Polyol Preparation in Continuous Processes Using Heterogeneous Double Metal Cyanide Catalysts
C. Villa, L. Thompson, J. Masy, J. Weston

Session 543 - Novel Computational Techniques for Catalysis
Chair: Marc Garland
Vice Chair: Kendall T Thomson

543f A General Exploratory Chemometrics Methodology For Catalytic System Identification
Wee Chew

543g Massively Parallel Entropy Based Pattern Recognition for System Identification in Catalytic Binuclear Elimination Reaction
Chuanzhao Li, Li Chen, Effendi Widjaja, Huajun Zhang, Liangfeng Guo. Wee Chew

Session 544 - Process Intensification and Multifunctional Reactors
Chair: Frits Dautzenberg
Vice Chair: Nick Collins

544b Low Temperature CO Oxidation Using High Contacting Efficiency Microfibrous Entrapped Catalyst: Qualitative Model
Mukund Karanjikar, Bruce Tatarchuk

544c Use of Compact Heat Exchanger as Flexible Reactor
Maulik R. Shelat, Paul. N. Sharratt

Session 545 - Reactions in Near Critical and Supercritical Fluids II
Chair: Bala Subramaniam
Vice Chair: Rafael Hernandez

545a Investigation of reversible chemical reactions in compressed CO2 on the basis of production of methyl acetate
Stephan Schwinghammer, Rolf Marr, Matthäus Siebenhofer

545e Propylene hydration in high-temperature water
shimizu

Session 546 - Multiphase Reaction Engineering: In Honor of Mike Dudukovic II *
Chair: Patrick L Mills
Vice Chair: Muthanna H Al-Dahhan

Session 547 - Aerosol Reactors and Reactions
Chair: Sotiris Pratsinis
Vice Chair: Gregory B Raupp

547a Production of fine nickel metal powders from the thermal decomposition of nickel oxalate via an aerosol flow reactor
Casey Carney, Christopher Gump, Alan W. Weimer

547b Noble Metal/Ceramic Composites in Flame Processes
Heiko Schulz, Lutz Mädler, Rainer Jossen, Reto Strobel, Tue Johannessenb,Sotiris E. Pratsinis

547e Bivariate Moment Methods for Simultaneous Coagulation, Coalescence and Breakup
Dr. R. Bertrum Diemer Jr., Prof. Jon H. Olson

Session 548 - Developments in Chemical-based Alternative Fuels *
Chair: Prasanna V Joshi
Vice Chair: Wei-Yin Chen

Session 549 - Multiphase Reaction Engineering: In Honor of Mike Dudukovic III
Chair: Patrick L Mills
Vice Chair: Muthanna H Al-Dahhan

549a Process Intensification in Multiphase Reactors
J. Ruud van Ommen, Marc-Olivier Coppens, Michiel T. Kreutzer, Freek Kapteijn, Jacob A. Moulijn

Session 550 - Combustion Reaction Engineering I
Chair: S S Kumaran
Vice Chair: William H Green

550b Optical Diagnostics of a Turbulent Pulverized Coal Combustion Flame
Hirofumi TSUJI, Seung min HWANG, Fumiteru AKAMATSU, Ryoichi KUROSE, Hisao MAKINO, Masashi KATSUKI

Session 551 - Catalysis for Pharmaceuticals and Fine Chemicals *
Chair: Christopher W Jones
Vice Chair: Agnes Ostafin

Session 552 - Fundamental of Oxide Catalysis I *
Chair: Israel E Wachs
Vice Chair: Joseph H Holles

Session 553 - Catalysis with Microporous and Mesoporous Materials *
Chair: Christopher W Jones
Vice Chair: Michael S Wong

Session 554 - Novel Reactor Design
Chair: Johannes Khinast
Vice Chair: Hugh Stitt

554d Novel Dual Bed Reactors: Utilization of Hydrogen Spillover in Reactor Design
John C. Weigle, Hugo R. Zea, Jonathan Phillips

554e Ranque-Hilsch Vortex Tube Thermocycler for fast DNA amplification and real-time optical detection
Ryan J. Ebmeier, George Gogos, Scott E. Whitney, Amitabha Sarkar, Hendrik J. Viljoen, Michael Nelson, Nisha V. Padhye

Session 555 - New Developments in the In Situ Characterization of Working Catalytic Materials *
Chair: Israel E Wachs
Vice Chair: William C Conner

Session 556 - Fundamental of Oxide Catalysis II *
Chair: Israel E Wachs
Vice Chair: Joseph H Holles

Session 557 - Catalytic Informatics and Quantitative Structure/Property Relationships *
Chair: Raul Miranda
Vice Chair: Manos Mavrikakis

Session 558 - Synthesis and Characterization of Nanostructured Catalytic Materials: Experiment and Simulation
Chair: Christopher T Williams
Vice Chair: Alexander Katz

558g Preparation of High Surface Area VOHPO4·0.5H2O with the Alkoxide Method
Juan M. Salazar, Keith L. Hohn

Session 559 - Electro-, Photo- and Other Non-thermal Activation of Catalysts
Chair: William C Conner
Vice Chair: Yangchuan Xing

559a Electrochemical activation of catalytic activity in the isomerization of hydrocarbons
Maria D. Salazar-Villalpando, Eugene Smotkin

559b Catalytic Esterification of Acetic Acid with Methanol; Comparison of Photocatalytic and Acid Catalysed Esterification
Christian Rohde, Rolf Marr

559e Photoassisted Alkane Activation under CO Atmosphere: Observation of Aldehyde, Alkene, and Activated Alkane
Karl I. Krummel, Chan Pek Ke, Leong Weng Kee, Marc Garland

Session 560 - Poster Session: Kinetics, Catalysis and Reaction Engineering
Chair: Ralph W Pike
Vice Chair: Jack R Hopper

560af Numerical Treatment of In-Situ Data for the Pre-Catalytic Transformations of Rhodium Carbonyl Species and Implications.
Ayman D. Allian, Chew Wee

560ag A Compact Reactor-Pump-Cell-Injection System for In-Situ / On-Line Spectroscopic Studies
Feng Gao, Li Chuanzhao, Marc Garland

560an Development of 2D BTEM for 2D NMR analysis of multicomponent mixtures and reactive mixtures
Liangfeng Guo, Anette Wiesmath, Peter Sprenger, Marc Garland

560d First Principles based Reaction Network for Thermal Cracking
K.M. Van Geem, M.F. Reyniers, G.B. Marin

560k Development of Novel CO2 Reforming Process and its Simulation Model
Shuhei Wakamatsu, Fuyuki Yagi, Tomoyuki Mikuriya, Ryuichirou Kajiyama, Mitsunori Shimura and Yoshifumi Suehiro

560w Alternative Heterogeneous Contacting Schemes Using Microfibrous Entrapped Catalysts/Sorbents
Ranjeeth R Kalluri, Donald R. Cahela, Bruce J. Tatarchuk

560z Calculation of desorption and migration of hydrogen on SiGe(100)-2×1 surface using density functional theory
Chia-Liang Cheng, Dah-Shyang Tsai, Jyh-Chiang Jiang

Session 561 - Fundamental of Supported Catalysis I *
Chair: Fabio H Ribeiro
Vice Chair: Eric J Doskocil

Session 562 - Fundamental of Supported Catalysis II *
Chair: Fabio H Ribeiro
Vice Chair: Eric J Doskocil

Session 563 - Fundamental of Supported Catalysis III *
Chair: Fabio H Ribeiro
Vice Chair: Eric J Doskocil

Session 564 - High Temperature Synthesis and Processing of Ceramics
Chair: Jorge E Gatica
Vice Chair: Jan A Puszynski

564b Combustion Synthesis of BN/AlN and BN/B4C Ceramic Composite Powders
Hayk H. Khachatryan, Suren L. Kharatyan, Jan A. Puszynski

564c Mathematical Modeling and Experimental Studies of Condensed-Phase Reaction in Ti-Mo-Si System in the Presence of Gas Pressure Gradient
G.K. Thich, I. Chaudhuri, J.A. Puszynski, M.M. Bichay, J.Rose

Session 565 - Zeolite Catalysis
Chair: Panagiotis (Peter) Smirniotis
Vice Chair: Daniel F Shantz

565c Effect of particle size of KL zeolite supporting Pt catalyst on n-octane aromatization
Trakarnroek, S., Ittisanronnachai, S., Osuwan, S., Rirksomboon, T., Jongpatiwut, S., Resasco, D.E.

Session 587 - Nanomaterials and Devices for Energy Applications
Chair: Levi T Thompson
Vice Chair: Hank Foley

587b Hydrogen Production from Simulated Gasoline using Nickel-Based Catalysts
Andrew Tadd, Ben Gould and Johannes Schwank

* These papers were unavailable at the time of publication.

21: Computational Molecular Science and Engineering Forum

To Use this Index: Scroll down or use the bookmarks in the left-hand frame to move to a new location in this index. Click on a blue paper title to view that paper. To return to this index after viewing a paper, click the PREVIOUS MENU bookmark in the left frame.

50h Simulating fluid-crystalline solid equilibria with the Gibbs ensemble
M.B. Sweatman and N. Quirke

Session 51 - Electronic Materials II: Computational and Experimental Studies of Polymers for Microelectronics and Photonics
Chair: Peter Ludovice
Vice Chair: Lynn Loo

51c Parasitic resistance in bottom-contact pentacene thin-film transistors that use water-dispersible polyaniline electrodes
Kwang Seok Lee, Graciela B. Blanchet, Feng Gao and Yueh-Lin Loo

51d Organic solvent processable OligotronTM conducting triblock copolymers for microelectronics: functional end-caped conducting oligomers
Brian J. Elliott, William W. Ellis, Silvia Luebben and Shawn Sapp

51e Immersion Lithography: Moving Microlithography to Nanolithography
J. Christopher Taylor, Charles R. Chambers, Ramzy M. Shayib, Robert J. LeSuer, Willard E. Conley and C. Grant Willson

Session 52 - Simulation of Biomolecules II: Computational Biology *
Chair: Abraham D Stroock
Vice Chair: Grant S Heffelfinger

Session 53 - Molecular Modeling Methods III: Developments in intermolecular potential models
Chair: Marcus Martin
Vice Chair: Matthew Neurock

53e Transferable Step Potentials for Amines, Primary Amides, Ketones, Thiophenes, Phosphates, and Chlorinated Hydrocarbons
Amanda Sans, F. Suhan Baskaya, Neil H. Gray, Zeynep N. Gerek and J. Richard Elliott

Session 54 - Simulation of Biomolecules III: Computational Biology
Chair: Vassily Hatzimanikatis
Vice Chair: Kris Chan

54a DNA Synthesis Efficiency and Fidelity Mechanisms
Ravi Radhakrishnan

Session 55 - Nucleation
Chair: Bernhardt L Trout
Vice Chair: David S Corti

55c Nucleation of Monovalent Metal Particles from Metastable Vapor
Ranjit Bahadur and Richard B. McClurg

55d System size dependence of the free energy surface in cluster simulation of nucleation
Isamu Kusaka

55g Bubble nucleation in micellar solution: A density functional study
Pankaj A. Apte and Isamu Kusaka

Session 56 - Molecular Modeling Methods IV: Simulation of Materials Processing *
Chair: Talid R Sinno
Vice Chair: Phillip R Westmoreland

Session 57 - Computational Chemistry and Molecular Simulation III
Chair: Phillip R Westmoreland
Vice Chair: Clare McCabe

57e Quantum Chemical Prediction of Hydrocarbon Cracking Reactions
Xiaobo Zheng and Paul Blowers

Session 58 - Multiscale Modeling II: Multiscale Characterization and Modeling of Polymers
Chair: Sanat Kumar
Vice Chair: Cameron F Abrams

58c Characteristics of parameter reduction in multiscale simulations of polymer chains
Ahmed E. Ismail, George Stephanopoulos and Gregory C. Rutledge

Session 159 - Supercooled Liquids and Glasses
Chair: Sharon C Glotzer
Vice Chair: Thomas M Truskett

159e An Energy Landscape Based Mean-Field Theory for the Thermal and Mechanical Behavior of Confined Amorphous Materials
Jeetain Mittal and Thomas M Truskett

Session 162 - Multiscale Modeling I: Thermodynamic and Mesoscale Properties
Chair: Hank Ashbaugh
Vice Chair: Mikhail A Anisimov

162b Intrinsic Stability Limits for Glassy Nanoscale Films: Insights from the Energy Landscape
Pooja Shah and Thomas M. Truskett

162c A Simple Coarse-Grained Model for Studying the Behavior of Proteins in Solution
Jason K. Cheung and Thomas M. Truskett

Session 165 - Teaching Molecular Simulation *
Chair: David A Kofke
Vice Chair: Peter T Cummings

Session 166 - Monte Carlo and Molecular Dynamics Methods for Reactive Systems
Chair: Aidan P Thompson
Vice Chair: Phillip R Westmoreland

166d A Brand New Reactive Potential Made Molecular Dynamics on Chemical Reaction Possible
Kailiang Yin, Qing Xia, Duanjun Xu and Cheng-lung Chen

Session 249 - Characterization of Porous Materials
Chair: Peter A Monson
Vice Chair: Kendall T Thomson

249g Pore Structures of Mesoporous ZSM-5 from Resorcinol-formaldehyde Aerogel and Carbon Aerogel Templating
Yousheng Tao, Hirofumi Kanoh and Katsumi Kaneko

Session 251 - Transport in Nanostructured Porous Materials
Chair: Edward J Maginn
Vice Chair: David S Sholl

251h Molecular Simulation of Water and Ion Motion in Lysozyme Crystals
Kourosh Malek, Theo Odijk and Marc-Olivier Coppens

Session 252 - Molecular Modeling of Adsorption
Chair: Peter A Monson
Vice Chair: Mark A Plummer

252b Predicting the adsorption and isosteric heat of pure gases in active carbons with the slit-pore model, MC simulation and DFT
M.B. Sweatman, N. Quirke and P. Pullumbi

Session 264 - Nanostructured Adsorbent Materials
Chair: Peter I Ravikovitch
Vice Chair: Stephen E Rankin

264f Preparation of Magnetic Silica Nanospheres with Metal Chelate Ligands and Application in Recovery of Protein
Zhiya Ma, Yueping Guan, Xianqiao Liu, Huizhou Liu

Session 356 - Polymers for Photonics and Microelectronic Applications *
Chair: Joseph L Lenhart
Vice Chair: Erin Jablonski

Session 387 - Advanced Computations for Environmental Applications I *
Chair: Yoram Cohen
Vice Chair: Andreas A Linninger

Session 543 - Novel Computational Techniques for Catalysis
Chair: Marc Garland
Vice Chair: Kendall T Thomson

543f A General Exploratory Chemometrics Methodology For Catalytic System Identification
Wee Chew

543g Massively Parallel Entropy Based Pattern Recognition for System Identification in Catalytic Binuclear Elimination Reaction
Chuanzhao Li, Li Chen, Effendi Widjaja, Huajun Zhang, Liangfeng Guo. Wee Chew

Session 575 - Self and Directed Assembly at the Nanoscale I *
Chair: Hank Ashbaugh
Vice Chair: Kristen A Fichthorn

Session 581 - Self and Directed Assembly at the Nanoscale II
Chair: Hank Ashbaugh
Vice Chair: Kristen A Fichthorn

581f Equilibrium Microstructure of Complex Fluids
YoChan Kim, Charles A. Petty and André Bénard

Session 584 - Self and Directed Assembly at the Nanoscale III
Chair: Hank Ashbaugh
Vice Chair: Kristen A Fichthorn

584f Permanently Linked Rigid Superparamagnetic Chains
Harpreet Singh, Paul E. Laibinis and T. Alan Hatton

Session 604 - Physical Properties Fluid Simulation Challenge I *
Chair: Paulette Clancy

Session 605 - Physical Properties Fluid Simulation Challenge II *
Chair: Paulette Clancy

* These papers were unavailable at the time of publication.