

SUNDAY - JULY 1, 2018				
01:00-06:00 PM	REGISTRATION			
06:30-06:45 PM	WELCOME - Mario R. Eden & Marianthi Ierapetritou			
06:45-07:00 PM	TRIBUTE TO C.A. FLOUDAS - Stratos Pistikopoulos & Ignacio Grossmann			
07:00-08:00 PM	C.A. FLOUDAS PLENARY - Art Westerberg			
08:00-09:30 PM	WELCOME RECEPTION			
MONDAY - JULY 2, 2018				
07:50-08:00 AM	INTRO AND ANNOUNCEMENTS			
08:00-09:00 AM	PLENARY 1 - Rafiqul Gani & Ka M. Ng			
09:00-10:00 AM	PLENARY 2 - Jinghai Li & Wei Ge			
10:00-10:20 AM	BREAK			
10:20-11:20 AM	PLENARY 3 - David Miller			
11:20-12:30 PM	LUNCH			
12:30-12:50 PM	KEYNOTE 1 - Androulakis & Garcia Munoz	Big Data 01	Industrial Biotech 01	Process/Product 01
12:50-01:10 PM		Big Data 02	Industrial Biotech 02	Process/Product 02
01:10-01:30 PM	Healthcare Systems 01	Big Data 03	Industrial Biotech 03	Process/Product 03
01:30-01:50 PM	Healthcare Systems 02	KEYNOTE 2 - Qin & Chiang		Process/Product 04
01:50-02:10 PM	Healthcare Systems 03			Process/Product 05
02:10-02:30 PM	BREAK			
02:30-02:50 PM	KEYNOTE 3 - Rawlings & Maravelias	Modeling/Simulation 01	Healthcare Systems 04	Process/Product 06
02:50-03:10 PM		Modeling/Simulation 02	Healthcare Systems 05	Process/Product 07
03:10-03:30 PM	Optimization/Software 01	Modeling/Simulation 03	Healthcare Systems 06	Process/Product 08
03:30-03:50 PM	Optimization/Software 02	KEYNOTE 4 - Realf & Boukouvala		Process/Product 09
03:50-04:10 PM	Optimization/Software 03			Process/Product 10
04:10-05:40 PM	BREAK & POSTER SESSION A			
05:40-06:00 PM	KEYNOTE 5 - Christofides	Operations/Design 01	Optimization/Software 04	Modeling/Simulation 04
06:00-06:20 PM		Operations/Design 02	Optimization/Software 05	Modeling/Simulation 05
06:20-06:40 PM	Dynamics/Control 01	Operations/Design 03	Optimization/Software 06	Modeling/Simulation 06
06:40-07:00 PM	Dynamics/Control 02	Operations/Design 04	Optimization/Software 07	Modeling/Simulation 07
07:00-07:20 PM	Dynamics/Control 03	KEYNOTE 6 - Schwartz & Kawajiri		Modeling/Simulation 08
07:20-07:40 PM	Dynamics/Control 04			Modeling/Simulation 09
TUESDAY - JULY 3, 2018				
07:50-08:00 AM	INTRO AND ANNOUNCEMENTS			
08:00-09:00 AM	PLENARY 4 - Jose Pinto & Ana Barbosa-Povoa			
09:00-10:00 AM	PLENARY 5 - Rakesh Agrawal			
10:00-10:40 AM	BREAK			
10:40-11:00 AM	KEYNOTE 7 - Hasebe & Grover	Molecular/Materials 01	Sustainable Systems 01	Scheduling/Planning 01
11:00-11:20 AM		Molecular/Materials 02	Sustainable Systems 02	Scheduling/Planning 02
11:20-11:40 AM	Multiscale Systems 01	Molecular/Materials 03	Sustainable Systems 03	Scheduling/Planning 03
11:40-12:00 PM	Multiscale Systems 02	KEYNOTE 8 - Gounaris & Adjiman		Scheduling/Planning 04
12:00-12:20 PM	Multiscale Systems 03			Scheduling/Planning 05
12:20-01:30 PM	LUNCH			
01:30-01:50 PM	KEYNOTE 9 - Cremaschi & Sirolo	Smart Manufacturing 01	Multiscale Systems 04	Operations/Design 05
01:50-02:10 PM		Smart Manufacturing 02	Multiscale Systems 05	Operations/Design 06
02:10-02:30 PM	Decision-Making 01	Smart Manufacturing 03	Multiscale Systems 06	Operations/Design 07
02:30-02:50 PM	Decision-Making 02	KEYNOTE 10 - Davis & Pastel		Operations/Design 08
02:50-03:10 PM	Decision-Making 03			Operations/Design 09
03:10-04:40 PM	BREAK & POSTER SESSION B			
04:40-05:00 PM	KEYNOTE 11 - Adams & Martin	Smart Grid Systems 01	Decision-Making 04	Smart Manufacturing 04
05:00-05:20 PM		Smart Grid Systems 02	Decision-Making 05	Smart Manufacturing 05
05:20-05:40 PM	Process/Product 11	Smart Grid Systems 03	Decision-Making 06	Smart Manufacturing 06
05:40-06:00 PM	Process/Product 12	KEYNOTE 12 - Marechal & Baldea		Smart Manufacturing 07
06:00-06:20 PM	Process/Product 13			Smart Manufacturing 08
07:30-10:00 PM	CONFERENCE BANQUET			
WEDNESDAY - JULY 4, 2018				
07:50-08:00 AM	INTRO AND ANNOUNCEMENTS			
08:00-09:00 AM	PLENARY 6 - Jay H. Lee & Thomas Badgwell			
09:00-10:00 AM	PLENARY 7 - Vikas Dhole			
10:00-10:20 AM	BREAK			
10:20-11:20 AM	PLENARY 8 - Joseph Lu			
11:20-12:30 PM	LUNCH			
12:30-12:50 PM	KEYNOTE 13 - Bakshi	Energy/Water/Food 01	Supply Chain 01	Dynamics/Control 05
12:50-01:10 PM		Energy/Water/Food 02	Supply Chain 02	Dynamics/Control 06
01:10-01:30 PM	Sustainable Systems 06	Energy/Water/Food 03	Supply Chain 03	Dynamics/Control 07
01:30-01:50 PM	Sustainable Systems 07	KEYNOTE 14 - You & Linke		Dynamics/Control 08
01:50-02:10 PM	Sustainable Systems 08			Dynamics/Control 09
02:10-02:30 PM	BREAK			
02:30-02:50 PM	KEYNOTE 15 - Bequette	Scheduling/Planning 06	Sustainable Systems 09	Optimization/Software 10
02:50-03:10 PM		Scheduling/Planning 07	Sustainable Systems 10	Optimization/Software 11
03:10-03:30 PM	Education 01	Scheduling/Planning 08	Sustainable Systems 11	Optimization/Software 12
03:30-03:50 PM	Education 02	KEYNOTE 16 - Henning & Wassick		Optimization/Software 13
03:50-04:10 PM	Education 03			Optimization/Software 14
04:10-05:40 PM	BREAK & POSTER SESSION C			
05:40-06:00 PM	KEYNOTE 17 - Mitsos & Misener	Safety Systems 01	Scheduling/Planning 09	Process/Product 14
06:00-06:20 PM		Safety Systems 02	Scheduling/Planning 10	Process/Product 15
06:20-06:40 PM	Optimization/Software 15	Safety Systems 03	Scheduling/Planning 11	Process/Product 16
06:40-07:00 PM	Optimization/Software 16	KEYNOTE 18 - Kravanja & Srinivasan		Process/Product 17
07:00-07:20 PM	Optimization/Software 17			Process/Product 18
THURSDAY - JULY 5, 2018				
07:50-08:00 AM	INTRO AND ANNOUNCEMENTS			
08:00-09:00 AM	PLENARY 9 - Dion Vlachos & Stratos Pistikopoulos			
09:00-10:00 AM	PLENARY 10 - Frank Doyle			
10:00-10:20 AM	BREAK			
10:20-11:20 AM	PLENARY 11 - Ignacio Grossmann & Iiro Harjunkoski			
11:20-11:40 AM	Awards & PSE 2021 Presentation			
11:40-12:50 PM	LUNCH			
12:50-01:10 PM	Modular Intensification 01	Dynamics/Control 10	Process/Product 19	Energy/Water/Food 04
01:10-01:30 PM	Modular Intensification 02	Dynamics/Control 11	Process/Product 20	Energy/Water/Food 05
01:30-01:50 PM	Modular Intensification 03	Dynamics/Control 12	Process/Product 21	Energy/Water/Food 06
01:50-02:10 PM	Modular Intensification 04	Dynamics/Control 13	Process/Product 22	Energy/Water/Food 07
02:10-02:30 PM	Modular Intensification 05	Dynamics/Control 14	Process/Product 23	Energy/Water/Food 08
02:30-02:50 PM	BREAK			
02:50-03:10 PM	Operations/Design 10	Dynamics/Control 15	Process/Product 24	Energy/Water/Food 09
03:10-03:30 PM	Operations/Design 11	Dynamics/Control 16	Process/Product 25	Energy/Water/Food 10
03:30-03:50 PM	Operations/Design 12	Dynamics/Control 17	Process/Product 26	Energy/Water/Food 11
03:50-04:10 PM	Operations/Design 13	Dynamics/Control 18	Process/Product 27	Energy/Water/Food 12
04:10-04:30 PM	Operations/Design 14	Dynamics/Control 19	Process/Product 28	Energy/Water/Food 13

Healthcare Systems 01	17	Modeling of Spreading and Drying of Aqueous Polymer Coatings on Pharmaceutical Tablets during Film Coating	Charalampos Christodoulou, Luca Mazzei, Salvador García-Muñoz, and Eva Sorensen
Healthcare Systems 02	38	Towards the Optimal Design of a Minimum Set of Clinical Trials for the Identification and Characterization of VWD	Beatrice Taverna, Alessandra Casonato, Fabrizio Bezzo, and Federico Galvanin
Healthcare Systems 03	128	A Shortcut Approach for Decision-Making and Operational Analysis of an Integrated End-to-End Continuous Pharmaceutical Process	Seyed Soheil Mansouri, Isuru A. Udugama, Jakob Kjabsted Huusom, Krist V. Gernaey, and Brahim Benyahia
Big Data 01	267	Deep Learning Based Soft Sensor and Its Application on a Pyrolysis Reactor for Compositions Predictions of Gas Phase Components	Wenbo Zhu, Yan Ma, Yizhong Zhou, Michael Benton, and Jose Romagnoli
Big Data 02	333	Data Mining-based Algorithm for Pre-processing Biopharmaceutical Manufacturing Records	Gioele Casola, Christian Siegmund, Markus Mattern, and Hirokazu Sugiyama
Big Data 03	487	A Bi-objective Optimization Approach to Reducing Uncertainty in Pipeline Erosion Predictions	Wei Dai, Selen Cremaschi, Hariprasad J. Subramani, and Haijing Gao
Industrial Biotech 01	77	Techno-economic Feasibility Study for Catalytic Production of 1,2-Pentanediol from Bio-renewable Furfural	Jaewon Byun, Yuchan Ahn, Juyeon Kim, Dongin Kim, and Jeehoon Han
Industrial Biotech 02	87	Life Cycle Assessment of Bio-based Sustainable Polylimonene Carbonate Production Processes	Dongda Zhang, Ehecatl Antonio del Rio-Chanona, and Nilay Shah
Industrial Biotech 03	299	Integrated Metabolic and Process Modeling of Bubble Column Reactors for Gas Fermentation	Xianglan Li, Jin Chen, Derek Griffin, Xuellang Li, and Michael A. Henson
Industrial Biotech 04	508	Process Variability Source Analysis for a Multi-step Bio-process	Yuan Jin, S. Joe Qin, Victor Saucedo, Zheng Li, Angela Meier, Siddhartha Kunda, and Salim Charaniya
Industrial Biotech 05	509	A System Identification Enhanced Phenotype Phase Plane Analysis	Matthew Hilliard, Andrew Damiani, Q. Peter He, and Jin Wang
Process/Product 01	147	Optimization of Extractive Distillation – Integrated Solvent Selection and Energy Integration	Thomas Waltermann, Tamara Grueters, and Mirko Skibrowski
Process/Product 02	89	Methanol Production from High CO ₂ Content Natural Gas	Benjamin Cañete, Nélida B. Brignole, and Carlos E. Gigola
Process/Product 03	95	Leveraging Atomistic Modeling during Precursor Design for Cobalt Film Deposition	Andrew J. Adamczyk, Alan C. Cooper, Moo-Sung Kim, and Sergei V. Ivanov
Process/Product 04	534	Synthesis of Heat-integrated Water Network with Interception Unit	Dominic C. Foo, Gopal C. Sahu, Shweta Kamat, and Santanu Bandyopadhyay
Process/Product 05	444	Process Synthesis under Seasonal and Daily Variability: Application on Concentrating Solar Power	Xinyue Peng, Thathier W. Root, and Christos T. Maravelias
Optimization/Software 01	31	Global Optimization of Superstructures and Decision Support via a Universally Applicable Optimization Tool	Kristina Zimmermann and Georg Fieg
Optimization/Software 02	40	Paramonious Input Parameterization for Dynamic Optimization Problems	Diogo Rodrigues and Dominique Bonvin
Optimization/Software 03	53	Surrogate Equations of State for Equation-Oriented Optimization of Polymerization Processes	John P. Eason, Jiayuan Kang, Xi Chen, and Lorenz T. Biegler
Modeling/Simulation 01	139	Automatic Decomposition of Nonlinear Equation Systems for Improved Initialization and Solution of Chemical Engineering Process Models	Erik Esche, Saskia Bubitz, Gregor Tolksdorf, and Jens-Uwe Reple
Modeling/Simulation 02	222	Numerical Simulations on Direct Contact Condensation of Saturated Vapor to Subcooled Liquid Spray	Hengtao Ding, Yiqing Luo, Yangmin Pan, and Xigang Yuan
Modeling/Simulation 03	352	CFD-assisted Modeling and Analysis on Residual Monomer Stripping using Spinning Cone Column	Seongwoong Bae, Shinhyuk Kim, and Jay H. Lee
Healthcare Systems 04	235	Quantitative Analysis on the Relevance of Regulatory Constraints in Designing Pharmaceutical Manufacturing Processes	Hirokazu Sugiyama, Yusuke Morikawa, Mai Matsuura, and Menghe Xu
Healthcare Systems 05	263	A Simulation-based Optimization Approach to Develop Personalized Colorectal Cancer Screening Strategies	David Young and Selen Cremaschi
Healthcare Systems 06	328	Economic Evaluation of Batch and Continuous Manufacturing Technologies for Solid Drug Products during Clinical Development	Kensaku Matsunami, Shuichi Tanabe, Hiroshi Nakagawa, Masahiko Hirao and Hirokazu Sugiyama
Healthcare Systems 07	413	Precision Healthcare Supply Chain Design through Multi-Objective Stochastic Programming	Xiaonan Wang, Qingyuan Kong, Maria M. Papathanasiou, and Nilay Shah
Healthcare Systems 08	455	Sensor Network for Continuous Tablet Manufacturing	Sudarshan Ganesk, Mariana Moreno, Jianfeng Liu, Marcial Gonzalez, Zoltan Nagy, and Gintaras Reklaitis
Process/Product 06	213	Optimal Multicomponent Distillation Column Sequencing: Software and Case Studies	Radharishna Tumbalam Gooty, Parham Mobeđa, Mohit Tawarmalani, and Rakesh Agrawal
Process/Product 07	233	GC-COSMO based Reaction Solvent Design with New Kinetic Model using CAMD	Qilei Liu, Lei Zhang, Linlin Liu, Jian Du, Xinyuan Liang, Haitao Mao, and Qingwei Meng
Process/Product 08	560	Hybrid Method/Tool for Sustainable Process Synthesis, Design, Analysis, and Improvement	Anjan K. Tula, Mario R. Eden, and Rafiqul Gani
Process/Product 09	473	A Simple PLS based Approach for the Construction of Compact Surrogate Models	Jose E.A. Graciano, Reinaldo Giudici, Rita M.B. Alves, and Benoît Chachuat
Process/Product 10	254	A Fluidized Bed Process Model of a Chemical Looping Combustion Fuel Reactor	Chinedu O. Okoli, Andrew Lee, Anthony P. Burgard, and David C. Miller
Dynamics/Control 01	69	A General Framework for Sensitivity-Based Optimal Control and State Estimation	David Thierry, Bethany Nicholson, and Lorenz Biegler
Dynamics/Control 02	103	Nonlinear Dynamic Optimization for Improved Load-Shifting Agility of Cryogenic Air Separation Plants	Pascal Schäfer, Luise F. Bering, Adrian Caspari, Adel Mhamdi, and Alexander Mitsos
Dynamics/Control 03	143	Dynamic Reduced Order Models for Polymerization Process Based on Molecular Weight Distribution	Jiayuan Kang, Zhijiang Shao, and Xi Chen
Dynamics/Control 04	468	Modifier Adaptation with Model Adaptation in Iterative Real-Time Optimization	Afaq Ahmad, Weihua Gao, and Sebastian Engell
Operations/Design 01	423	Sustainable and Innovative Solutions through an Integrated Systematic Framework	Nipun Gang, Georgios M. Kontogeorgis, John M. Woodley, and Rafiqul Gani
Operations/Design 02	451	Uncertainty Aware Integration of Planning, Scheduling and Multi-Parametric Control	Vassilis M. Charitopoulos, Adrian M. Aguirre, Lazaros G. Papageorgiou, and Vivek Dua
Operations/Design 03	167	Integrated Solvent and Process Optimization Using PC-SAFT for Continuous Crystallization with Energy-intensive Solvent Separation for Recycling	Jiayuan Wang and Richard Lakesveld
Operations/Design 04	150	Integrated Ionic Liquid and Process Design Involving Hybrid Separation Schemes	Yuehui Chen, John Woodley, Georgios Kontogeorgis, and Rafiqul Gani
Optimization/Software 04	83	Algorithms for Mixed-Integer Optimization Constrained by Partial Differential Equations	Christian Wesselhoef, David A. Ham, and Ruth Misener
Optimization/Software 05	265	Pyomo-GDP: Disjunctive Models in Python	Qi Chen, Emma S. Johnson, John D. Siirola, and Ignacio E. Grossmann
Optimization/Software 06	201	Comparative Study between GDP and NLP Formulations for Conceptual Design of Distillation Columns	Jaffer H. Ghouse, Qi Chen, Miguel A. Zamarripa, Andrew Lee, Anthony P. Burgard, Ignacio E. Grossmann, and David C. Miller
Optimization/Software 07	207	A Smooth, Square Flash Formulation for Equation-Oriented Flowsheet Optimization	Anthony P. Burgard, John P. Eason, John C. Eslick, Jaffer H. Ghouse, Andrew Lee, Lorenz T. Biegler, and David C. Miller
Optimization/Software 08	208	Price-based Coordination of Interconnected Systems with Access to External Markets	Lukas S. Maxeiner, Simon Wenzel, and Sebastian Engell
Optimization/Software 09	195	Efficient Implicit-Explicit Time Stepping for Accurate and Rapid Simulation of Chromatographic Models	Kristian Meyer, Jakob K. Huusom, and Jens Abildskov
Modeling/Simulation 04	317	Process Design and Simulation of a Novel Wet Claus Desulfurization Technology	Yang Yang, Xiao Feng and Qiao Zhang
Modeling/Simulation 05	356	Dynamic Modelling and Simulation of Solid Oxide Fuel Cell Based Auxiliary Power Unit System	Daewook Kim, Sohyun Jeong, and Jay H. Lee
Modeling/Simulation 06	367	A Multi-Component Mass Transfer Rate based Model for Simulation of Non-Equilibrium Crystal Growth	Yidan Shu, Yang Li, Yang Zhang, Jing J. Liu, and Xue Z. Wang
Modeling/Simulation 07	400	Two-Phase Dynamic Model for PEM Electrolyzer	Mariana Corengia and Ana I. Torres
Modeling/Simulation 08	450	High-Pressure Polymerization of Ethylene in Tubular Reactors: Prediction of the Bivariate Distributions of Molecular Weight-Branched with a Rigorous Reactor Model	Maira L. Dietrich, Claudia Sarmoria, Adriana Brandolin, and Mariano Asteasuain
Modeling/Simulation 09	452	High Performance Agent-Based Modeling to Simulate Mammalian Cell Culture Bioreactor	Robert Jackson, Elif Seyma Bayrak, Tony Wang, Myra Coufal, Cenk Undey, and Ali Cinar

TUESDAY - JULY 3, 2018

Multiscale Systems 01	7	Integrated Process and Ionic Liquid Design by Combining Flowsheet Simulation with Quantum Chemical Solvent Screening	Simon Bechtel, Zhen Song, Teng Zhou, Tanya Visalakovic-Koch, and Kai Sundmacher
Multiscale Systems 02	50	Multiscale Scheme for the Optimal Use of Resources for the Production of Biogas	Manuel R. Tafforn and Mariano Martin
Multiscale Systems 03	418	Visual Modelling with Networks	Heinz A. Preißig, Arne Tobias Ewe, and Sigve Karolius
Molecular/Materials 01	43	Multiscale Three-Dimensional CFD Modelling for PECVD of Amorphous Silicon Thin Films	Marquis Crow, Anh Tran, Gerassimos Orkoulas, and Panagiotis D. Christofides
Molecular/Materials 02	169	Integrated Design of CMC Process and Working Fluid for Transient Waste-Heat Recovery from Heavy Duty Vehicles	Johannes Schilling, Katharina Eicher, Stefan Pischinger, and André Bardow
Molecular/Materials 03	475	Design of Doped Perovskite Oxygen Carriers Using Mathematical Optimization	Christopher L. Haselmeier, De Nyago Tafiri, Dominic R. Alfonso, Jonathan W. Leake, Christopher Matrangola, David C. Miller, and Chryanthos E. Gouvaras
Sustainable Systems 01	176	Toward Optimal Synthesis of Renewable Ammonia and Methanol Processes (RAMAP)	William W. Tso, C. Doga Demirehan, Joseph B. Powell, and Elfratou N. Pistikopoulos
Sustainable Systems 02	190	Framework for the Optimal Design of Sustainable Processes Incorporating Data Envelopment Analysis	Andres Gonzalez-Garay and Gonzalo Guillen-Gosalbez
Sustainable Systems 03	206	Towards a Low Carbon Economy via Sorption-Enhanced Water Gas Shift and Alcohol Reforming	Diana Iuretagayeva, Nixon Sunny, Ehecatl A. del Rio Chanoa, David Chadwick, Niall Mac Dowell, and Nilay Shah
Sustainable Systems 04	269	Optimization of the Thermal Efficiency of a Fixed-Bed Gas-Filler using Computational Fluid Dynamics	Nunura Kapurde, Cornelia Mădăruț, Masaki, and Diane Hildebrandt
Sustainable Systems 05	272	Superstructure Investigation for H ₂ -recovery Technologies Integration with Macroscopic based Hydrothermal Liquefaction	Stavros Papadokostantakos, Andrea Gambardella, Johan Adelaar, and Yiyu Ding
Scheduling/Planning 01	27	Integrated Scheduling of On-Line Blending and Distribution of Oil Products in Refinery Operation	Lijie Su, Lixin Tang, David E. Bernal, Ignacio E. Grossmann, and Bowen Wang
Scheduling/Planning 02	84	Expanding RTH Discrete-Time Scheduling Formulations to Preemptive Tasks	Pedro M. Castro, Iiro Harjupekko, and Ignacio E. Grossmann
Scheduling/Planning 03	135	Industrial Demand Side Management Formulation for Simultaneous Electricity Load Commitment and Future Load Prediction	Giuseppe Delle Ave, Iiro Harjupekko, and Sebastian Engel
Scheduling/Planning 04	144	A Mathematical Technique for Multi-period Planning of Unconventional Gas Field Development	Jui-Yuan Lee, Raymond E. H. Dol, Dominic C. Y. Foo, and Raymond R. Tan
Scheduling/Planning 05	198	Data Driven Models and Algorithms for Demand Response Scheduling of Air Separation Units	Calvin Tray, Michael Baldea, Jun Shi, Ankur Kumar, and Jesus Flores-Cerrillo
Decision-Making 01	8	Dimensionality Reduction in Feasibility Analysis by Latent Variable Modeling	Gabriele Baroz, Zihong Wang, Pierantonio Barco, Fabrizio Bezzo, Massimiliano Barolo, and Marianne Ierapetritou
Decision-Making 02	70	Markov Chain MIMLP Model for Reliability Optimization of System Design and Maintenance	Yixin Ye, Ignacio E. Grossmann, Jose M. Pinto, and Svaraman Ramaswamy
Decision-Making 03	174	Optimal Strategies for Carbon Dioxide Enhanced Oil Recovery under Uncertainty	Demian J. Presner, Vanisa Q. Cafiro, Miguel Zamarripa, and Diego C. Caballo
Smart Manufacturing 01	39	On Integration of Model Predictive Control with Safety Systems: Preventing Thermal Runaway	Zhihao Zhang, Zhu Wu, Helmi Durand, Fahad Alabawi, and Panagiotis D. Christofides
Smart Manufacturing 02	416	Manufacturing Sustainability Enhancement: A Model Predictive Control Based Approach	Majid Moradi-Alabadi and Yinlin Huang
Smart Manufacturing 03	506	Statistics Pattern Analysis: A Statistical Process Monitoring Tool for Smart Manufacturing	Q. Peter He and Jin Wang
Multiscale Systems 04	659	A Framework for Multi-Network Modelling	Arne Tobias Ewe and Heinz A. Preißig
Multiscale Systems 05	310	Direct Air Capture of CO ₂ in Enclosed Environments: Design under Uncertainty and Techno-Economic Analysis	Anshuman Sinha, Harshul Thakkar, Fateme Rezaei, Yoshiaki Kawajiri, and Matthew J. Reaiff
Multiscale Systems 06	327	Modelling and Simulation for Regional Ozone Impact by Faring Destruction and Removal Efficiency of Oil & Gas Industries	Sijie Ge, Sujing Wang, Jian Zhang, Qing Xu, and Thomas Ho
Multiscale Systems 07	421	Integration of Design, Scheduling, and Control of Combined Heat and Power Systems: A Multiparametric Programming Based Approach	Boris Barak, Justin Katz, Mikolaj A. Chruscielak, and Elfratou N. Pistikopoulos
Multiscale Systems 08	499	Approaches to Multi-Scale Modeling from Systems Engineering	Sigve Karolius and Heinz A. Preißig
Operations/Design 05	252	Modelling and Optimisation Approach of an Integrated Oil Refinery and a Petrochemical Plant	Elham Katabchi, Eugenia Mecchieri, Sai Gu, and Harvey Arellano-Garcia
Operations/Design 06	253	Integration of Optimal Clearing Scheduling and Flow Split Control for Crude Oil Fouling Mitigation in the Operation of Refinery Heat Exchanger Networks	Federico Lozano Santamaría and Sandro Macchietto
Operations/Design 07	260	Simultaneous Controllability Analysis and Cyclic Scheduling of Grade Transitions for the Continuous Multi-product Chemical Processes	Yue Li, Rawen Wei, and Zhihong Yuan
Operations/Design 08	518	Kabel Column: Modeling and Optimization	E. Soraya Lopez-Saucedo, Qi Chen, Ignacio E. Grossmann, and Jose A. Caballero
Operations/Design 09	130	Procurement Planning of Refinery Integrated with Production System by Quantifying the Effect of the Gap Between Supply and Demand on the Production System's Performance	Yechan Choi, Joohyun Shin, Kyungsook Nah, and Jay H. Lee
Process/Product 11	275	Systems Platform as a Synthesis and Decision Tool in Algae Biorefineries	Melina Psycha, Filippomim Lykakiarelis, and Antonis C. Kokkosis
Process/Product 12	283	Superstructure Optimization of Oleochemical Processes with Surrogate Models	Mark Jones, Hector Forero-Hernandez, Alwand Zubov, Heng Sampa, and Gürkan Sin
Process/Product 13	295	Sequential Design of experiments to Maximize Learning from Carbon Capture Pilot Plant Testing	Fris Byron Soepren, Christine M. Anderson-Cook, Joshua C. Morgan, Charles H. Tang, Debanju Bhattacharyya, Benjamin P. Omel, Michael S. Matuszewski, K. Sham Bhat, Miguel A. Zamarripa, John C. Edick, Joel D. Kress, James R. Gattiker, Christopher S. Russell, Brenda Ng, Jeremy C. Ou, and David C. Miller
Smart Grid Systems 01	85	Uncovering New Opportunities from Frequency Regulation Markets with Dynamic Optimization and Pyomo DAE	Alexander W. Dowling and Bethany L. Nicholson
Smart Grid Systems 02	261	A Mathematical Programming Approach to Optimal Design of Smart Distributed Energy Systems	Eugenia Mecchieri and Harvey Arellano-Garcia
Smart Grid Systems 03	285	Dynamic Real-Time Optimization of Air-Conditioning Systems in Residential Houses with a Battery Energy Storage under Different Electricity Pricing Structures	Moztaba N. Zheba and Roddy M. Powell
Decision-Making 04	155	An Improved L-shaped Method for Two-stage Convex 0-1 Mixed Integer Nonlinear Stochastic Programs	Can Li and Ignacio E. Grossmann
Decision-Making 05	209	Inventory Profit Based Algorithm for Gasoline Blend Planning with Uncertainty in Components Qualities	Mahir Azhara and Vladimir Matshuk
Decision-Making 06	373	Assessment of Accuracy and Computational Efficiency of Different Strategies for Estimation of Probability Distributions Applied to ODE/DAE Systems	Francesco Rossi, Linus Modius, Flavio Manenti, and Gintaras Reklaitis
Decision-Making 07	504	Strengthened SOCP Relaxations for ACOPF with McCormick Envelopes and Bounds Tightening	Michael Bynum, Anya Castillo, Jean-Paul Watson, and Carl D. Laird
Decision-Making 08	177	Optimal Production Scheduling of Industrial Gases under Uncertainty with Flexibility Constraints	M. Paz Dicho, Hao Jiang, Ajit Gopalakrishnan, Irene Lotero, and Ignacio E. Grossmann
Smart Manufacturing 04	44	Estimating the Spatial Temperature Distribution in a Steam Methane Reforming Furnace Using Bayesian Modelling	Anh Tran, Middleline Fort, Marquis Crow, and Panagiotis D. Christofides
Smart Manufacturing 05	401	Incorporating Automation Logic in the Online Scheduling of Batch Chemical Plants	Blake C. Rawlings, Venkatachalam Aadappan, Stéphane Lafontaine, Christos T. Maravelias, and John M. Wassick
Smart Manufacturing 06	429	Process Fault Detection in Heat Recovery Steam Generator using an Artificial Neural Network Simplification of a Dynamic First Principles Model	Pang Prati, Subh Srinivasan, and Rajagopalan Srinivasan
Smart Manufacturing 07	523	Simultaneous Fault Detection and Identification in Continuous Processes via Nonlinear Support Vector Machine based Feature Selection	Melis Ouel, Chris A. Kissick, Yamin A. Guzman, and Elfratou N. Pistikopoulos
Smart Manufacturing 08	584	Feature-based Virtual Metrology for Semiconductor Manufacturing	Kerul Suthar, Devarshi Shah, Jin Wang, and Q. Peter He

Sustainable Systems 06	358	Network Visualization of Design Variables and Functions for Sustainable Packaging Design	Naoki Yokokawa, Yutaro Masuda, Eri Amasawa, Hirokazu Sugiyama, and Masahiko Hirao
Sustainable Systems 07	360	Semantically-Enabled CAPS Platform: Towards a Generic and Dynamic Formulation for the Synthesis and Optimisation of Value Chains	Eirini Sioukrou, Foteini Barla, and Antonis C. Kokossis
Sustainable Systems 08	460	Thermoeconomic Design of Biomass Biochemical Conversion Technologies for Advanced Fuel, Heat and Power Production	Maxime Alexandre Vigot, Theodoros Damartzis, and François Maréchal
Energy/Water/Food 01	516	Stochastic Optimization Tools for Water-Heat Nexus Problems	Sumit Kr. Bishnu, Jamileh Fouladi, Patrick Linke, and Mahmoud El-Halwagi
Energy/Water/Food 02	258	Nutraceuticals Production Under a Water-Food-Energy-Waste Integration Concept	Carla V. García Prieto, Fernando D. Ramos, Vanina Estrada, and M. Soledad Díaz
Energy/Water/Food 03	82	Simultaneous Removal of Organic Compounds from Wastewater Using Reverse Osmosis Process: Modelling, Simulation, and Optimisation	Mudhar A. Al-Obaidi, Chakib Kara-Zaitri, and Iqbal M. Mujtaba
Supply Chain 01	297	A Game Theory Approach to Design and Optimization of Decentralized Supply Chains under Uncertainty	Jiyao Gao and Fengqi You
Supply Chain 02	120	Optimal Design under Uncertainty of Carbon Capture, Utilization, and Sequestration Network considering Benefit, Environmental Impact, and Preference on Risk	Suh-Young Lee, In-Beum Lee, and Jeehoon Han
Supply Chain 03	403	Optimal Planning of a Waste Management Supply Chain	Maryam Mohammadi, Iiro Harjunkoski, Susanna Mikkola, and Sirkka-Liisa Jämsä-Jounela
Supply Chain 04	520	An Improved Approach to Scheduling Gasoline Blending and Order Delivery Operations	Nur Hussain, Jie Li, Li Sun, Xin Xiao, and Cuiwen Cao
Supply Chain 05	572	Space Mapping based Derivative-Free Optimization Framework for Supply Chain Optimization	Atharv Bhosekar and Maranthi Ierapetritou
Dynamics/Control 05	482	Closed-loop Economic Model Predictive Control for Scheduling and Control Problems	Michael J. Risbeck, Christos T. Maravelias, and James B. Rawlings
Dynamics/Control 06	214	Coordination of Distributed MPC Systems using a Nonlinear Dynamic Plant Model with Closed-Loop Prediction	Hao Li and Christopher L.E. Swartz
Dynamics/Control 07	514	Integrating Model Identification and Model-Based Control of Networked Process Systems	Amr Zedan, Da Xue, and Nael H. El-Farra
Dynamics/Control 08	561	Optimal Control of Surfactant containing Multiphase Systems – Challenges and Solution Strategies for a stable Mini-Plant Operation	Markus Illner, Erik Esche, and Jens-Uwe Repeke
Dynamics/Control 09	338	Modeling and Simulation of Autothermal Reforming Reactor of Diesel over Ni-based Catalyst in Solid Oxide Fuel Cell based Auxiliary Power Unit System	Sohyun Jeong, Daewook Kim, and Jay H. Lee
Education 01	146	Transforming Instruction to Chemical Product Design	Ka M. Ng and Warren D. Seider
Education 02	189	Reflections on Embedding Safety throughout the Process Engineering Program	Michaela Pollock and Eva Sorensen
Education 03	287	Advantages of Flipping Multiple PSE Courses (to the same students)	Daniel R. Lewin and Abigail Barzilai
Scheduling/Planning 06	173	Product Decomposition in Supply Chain Planning	Braulio Brunaud, M. Paz Ochoa, and Ignacio E. Grossmann
Scheduling/Planning 07	212	Multistage Stochastic Models for Shale Gas Artificial Lift Infrastructure Planning	Zuo Zeng and Selen Cremaschi
Scheduling/Planning 08	236	Multi-Stage Integrated Electricity Procurement and Production Scheduling	Egidio Leo and Sebastian Engell
Sustainable Systems 09	382	Computer Aided Design of Green Thermomorphic Solvent Systems for Homogeneous Catalyst Recovery	Kevin McBride, Steffen Linke, Shuang Xu, and Kai Sundmacher
Sustainable Systems 10	547	Including Ecosystem Services in Sustainable Process Design across Multiple Spatial Scales	Tapajyoti Ghosh, Xinyu Liu, and Bhavik R. Bakshi
Sustainable Systems 11	577	Long-Term Energy Storage: What is the Need and is Ammonia a Solution?	Richard M. Nayak-Luke and René Bñares-Alcántara
Sustainable Systems 12	589	Solar Thermal and Geothermal Integration with Low Temperature CO ₂ DENs	Raluca-Ancuta Suci, Paul Stadler, Luc Girardin, and François Maréchal
Sustainable Systems 13	605	Monte Carlo Simulation for Optimal Solar Cell Configuration	Aisha Alobaid and Raymond Adomaitis
Optimization/Software 10	184	Design of Experiments for Model Discrimination using Gaussian Process Surrogate Models	Simon Olofsson, Marc Peter Deisenroth, and Ruth Misener
Optimization/Software 11	351	Fully Automated Approach for Bio-Crude Mixture Modelling Based on GC-MS and Elemental Analyses	Boris Brigljević, Petar Žuvela, J. Jay Liu, Hee-Chul Woo, and Jae Hyung Choi
Optimization/Software 12	386	Identification of Reaction Systems using Spectroscopic Measurements and Micro-reactors	Manokaran Veeramani, Sridharakumar Narasimhan, and Nirav Bhatt
Optimization/Software 13	399	A Flexible Framework and Model Library for Process Simulation, Optimization and Control	Andrew Lee, Jaffer H. Ghouse, Qi Chen, John C. Eslick, John D. Sirola, Ignacio E. Grossman, and David C. Miller
Optimization/Software 14	402	Towards a Generic Algorithm for Identifying High-Quality Decompositions of Optimization Problems	Andrew Allman, Wentao Tang, and Prodromos Daoutidis
Optimization/Software 15	478	Systematic Comparison of Aggregation Methods for Input Data Time Series Aggregation of Energy Systems Optimization Problems	Holger Teichgraber and Adam R. Brandt
Optimization/Software 16	536	A Projection-based, Data-Driven Method for High-Dimensional Black-Box Optimization	Ishan Bajaj and M.M. Faruque Hasan
Optimization/Software 17	597	Integrated Techno-Economic Optimization for the Design and Operations of Energy, Water and Food Nexus Systems Constrained as Non-Cooperative Games	Sarah Namany, Tareq Al-Ansari, and Rajesh Govindan
Safety Systems 01	37	Towards the Economic Optimisation of European Supply Chains for CO ₂ Capture, Transport and Sequestration, including Societal Risk Analysis	Federico d'Amore, Paolo Mocellini, Chiara Vianello, Giuseppe Maschio, and Fabrizio Bezzo
Safety Systems 02	223	A Novel Method for Real-time Alarm Root Cause Analysis	Feifan Cheng and Jinsong Zhao
Safety Systems 03	432	Parameters Determination of Convergent Cross Mapping for Causal Analysis of Chemical Variables	Si Meng Li and Tong Qiu
Scheduling/Planning 09	302	A General Mixed-Integer Programming State-Space Model for Online Scheduling	Dhruv Gupta and Christos T. Maravelias
Scheduling/Planning 10	430	Optimal Multiperiod Production Planning in a Sawmill	Nicolás Vanzetti, Diego Broz, Gabriela Corsano, and Jorge M. Montagna
Scheduling/Planning 11	445	Optimal Short-Term Scheduling for Cascaded Hydroelectric Power Systems considering Variations in Electricity Prices	Pulkit Mathur, Christopher L. E. Swartz, Danielle Zyngier, and François Welt
Scheduling/Planning 12	507	Comprehensive Investment Framework for Optimal Exploitation of Liquid-Rich Unconventional Reservoirs and Natural Gas Distribution	Jorge Cheber, Hope Asala, Vidhyadhar Manee, Ipsita Gupta, and Jose Romagnoli
Scheduling/Planning 13	511	Precedence-based Lot-sizing and Scheduling Formulation with Mixing/Splitting and Shared Intermediate Vessels	Pablo A. Marchetti and Jaime Cerdá
Process/Product 14	521	A General Framework for Process Synthesis, Integration and Intensification	Salih Emre Demirel, Jianping Li, and M.M. Faruque Hasan
Process/Product 15	321	Mathematical Modeling of a Moving-Bed Reactor for Chemical Looping Combustion of Methane	Anca Ostace, Andrew Lee, Chinedu O. Okoli, Anthony P. Burgard, David C. Miller, and Debangsu Bhattacharyya
Process/Product 16	497	Challenges in Replacing Heuristics-Based Trial-and-Error Procedures by Mathematical Optimization for Basic Equipment Design	André L. H. Costa and Miguel J. Bagajewicz
Process/Product 17	366	A Systematic Methodology for Property Model-Based Chemical Substitution from Chemical-based Products	Sparsha Jhamb, Xiaodong Liang, Rafiqul Gani, and Georgios M. Kontogeorgis
Process/Product 18	368	Introducing the Concept of Floating Pumps in the Synthesis of Multipurpose Batch Plants	Shaun Engelbrecht and Thokozani Majosi

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Modular Intensification 01	16	Optimal Design of a COEX Process for Spent Nuclear Fuel Reprocessing using Small Channels	Davide Bascone, Panagiota Angeli, and Eric S. Fraga
Modular Intensification 02	171	Towards a Systematic Framework for the Synthesis of Operable Process Intensification Systems	Yuhé Tian, M. Sam Mannan, and Efstratios N. Pistikopoulos
Modular Intensification 03	293	Efficiency Analysis of Chemical-looping Fixed Bed Reactors Integrated in Combined Cycle Power Plants	Chen Chen and George M. Bollas
Modular Intensification 04	379	Optimal Design of Boil-Off Gas Liquefaction in LNG Regasification Terminals	Harsha Nagesh Rao, Iftekhar A. Karimi, and Shamsuzzaman Farooq
Modular Intensification 05	396	Monitoring of Two-Phase Slug Flow in Stacked Multi-Channel Reactors based on Analysis of Feed Pressure	Osamu Tonomura, Ryuichi Kobori, Satoshi Taniguchi, Shinji Hasebe, and Akira Matsuoka
Dynamics/Control 10	370	Stochastic NMPC of Batch Processes Using Parameterized Control Policies	Eric Bradford and Lars Imsland
Dynamics/Control 11	391	Forecast of Persistent Disturbances using k-Nearest Neighbour Methods	Francesco Borghesan, Moncef Choua, and Nina F. Thornhill
Dynamics/Control 12	419	Model Approximation in Multiparametric Optimization and Control – A Computational Study	Justin Katz, Nikolaos A. Dounigialis, and Efstratios N. Pistikopoulos
Dynamics/Control 13	457	Optimal Operation of a Combined Continuous-Batch Process	Cesar de Prada, Rogelio Mazaeda, and Smeranda Podar
Dynamics/Control 14	461	Variation and Risk Analysis in Tablet Press Control for Continuous Manufacturing of Solid Dosage via Direct Compaction	Qinglin Su, Yasavri Bommireddy, Marcial Gonzalez, Gintaras V. Reklaitis, and Zoltan K. Nagy
Process/Product 19	245	Novel Symbolic Regression-Mathematical Programming based Predictions of the Molecular Cetane Number with Small Sampling Data	Jiawen Wei and Zhihong Yuan
Process/Product 20	474	A Comprehensive Approach for the Design of Solvent-based Adhesive Products using Generalized Disjunctive Programming	Jingyue Cui, Suela Jonuzaj, and Claire S. Adjiman
Process/Product 21	191	A Novel Method of Integrating Flexibility and Stability for Chemical Processes under Parametric Uncertainties	Ying Chen, Zhihong Yuan, and Bingzhen Chen
Process/Product 22	250	Modelling under Uncertainty for Process Design and Scale-up of an Industrial AKCVD	Pedro I. O. Filho, Panagiota Angeli, and Eric S. Fraga
Process/Product 23	429	Exploiting the Synergy between Work and Heat for Holistic Energy Integration	Sajitha K. Nair and Iftekhar A. Karimi
Energy/Water/Food 04	188	Energy Network Optimization in an Oil Refinery	Elif Mete and Metin Turkyay
Energy/Water/Food 05	203	Systematic Framework Development for the Construction of Surrogate Models for Wastewater Treatment Plants	Resul AI, Chitta Ranjan Behera, Alexandr Zubov and Gürkan Sin
Energy/Water/Food 06	228	Modelling and Design of a Solar-Assisted High-Performance Direct Contact Membrane Distillation System	Mahdi Mohammadi Ghaleini, Abdulrah Al Balushi, Mona Bavarian, and Siamak Nejadi
Energy/Water/Food 07	243	Heat Transfer Enhancement for the Cold Zone of Closed Wet Cooling Towers through Field Synergy Analysis	Xiaocui Xie, Chang He, Binglin Zhang, and Qinglin Chen
Energy/Water/Food 08	346	Simultaneous Energy and Water Optimization in Shale Exploration	Doris Oke, Thokozani Majole, Rajib Mukherjee, Debalina Sengupta, and Mahmoud El-Halwagi
Operations/Design 10	345	Integration of the Biorefinery Concept for Development of Sustainable Processes for the Pulp and Paper Industry	Ghochapon Mongkhonsiri, Rafiqul Gani, Pomthong Malakul, and Suttichai Assabunrungrat
Operations/Design 11	408	Total Site Utility Systems Structural Design Considering Electricity Price Fluctuations	Timothy G. Walmisley, Peter S. Varbanov, Matthias Philipp, and Jif J. Klemes
Operations/Design 12	94	Solving Integrated Ingot Type Selection and Order Batching Problem in Aluminum Industry	Gongshu Wang, Shucheng Zhao, and Qinglin Guo
Operations/Design 13	172	Optimal Matches with Load Shifting Strategy in Hybrid Power System Considering Varied Price of Outsourced Electricity	Yinghua Jiang, Lixia Kang, and Yongzhong Liu
Operations/Design 14	277	Adjusting the Heating Value of LNG using a Superstructure for Hydrocarbon Recovery	Arnab Dutta, Iftekhar A. Karimi, and Shamsuzzaman Farooq
Dynamics/Control 15	466	Dynamic Simulation of a LNG Regasification Terminal and Management of Boil-off Gas	Vikas Singh Bisen, Iftekhar A. Karimi, and Shamsuzzaman Farooq
Dynamics/Control 16	194	Implementation of a Radial Basis Function Control Strategy for the Crystallization of Ibuprofen under Uncertainty	Frederico Montes, Krist V. Gernaey, and Gürkan Sin
Dynamics/Control 17	46	Run-to-Run Control of Film Thickness in PECVD: Application to a Multiscale CFD Model of Amorphous Silicon Deposition	Marquis Crose, Weiwei Zhang, Anh Tran, Gerassimos Orkoulas, and Panagiota D. Christofides
Dynamics/Control 18	246	Optimization and Low-Level Control Design for Reactive Batch Distillation Columns including the Start-up	Alejandro Marquez-Ruiz, J.H.A. Ludlage, and Leyla Ozkan
Dynamics/Control 19	282	Control of Reactive Distillation Columns with Top-Bottom External Recycle	Huisheng Chen, Tengfei Wang, and Kejin Huang
Process/Product 24	489	Sustainable Carbon Constrained Natural Gas Monetization Networks in Industrial Parks	Dhabia M. Al-Mohannadi, Jamileh Fouladi, and Patrick Linke
Process/Product 25	325	Computational Fluid Dynamics (CFD) Modelling and Optimum Gap Size of a Compact Steam Methane Reforming (SMR) Reactor	Dan Duc Nguyen, Son Ich Ngo, Young-II Lim, Woohyun Kim, Dongju Seo, and Wang Lai Yoon
Process/Product 26	311	Multilayer and Multiobjective Design Platform for Drug Product Manufacturing Processes of Biopharmaceuticals	Haruku Shirahata, Shant Dakesian, Masahiko Hirao, and Hirokazu Sugiyama
Process/Product 27	369	Conceptual Process Design and Economic Analysis of Oxidative Coupling of Methane	Hamid Reza Godini, Mohammadreza Azadi, Mohammadali Khadivi, Abolfazl Gharibi, Seyed Mahdi Jazayeri, Daniel Salerno, Alberto Penteado, Babak Mokhtariani, Alvaro Orjuela, Tim Karsten, Günter Wozny, and Jens-Uwe Repke
Process/Product 28	26	Forest Residues Gasification Integrated with Electrolysis for Production of SMG – Modelling and Assessment	Johan M. Ahlström, Simon Harvey, and Stavros Papadokonstantakis
Energy/Water/Food 09	114	Dewatering Screw Pressing: Model Development and Sensitivity Analysis for Process Understanding	Franco Mangano, Adrián Ferrari, and Soledad Gutiérrez
Energy/Water/Food 10	274	Land Use Modeling and Optimization based on Food-Energy-Water Nexus: A Case Study on Crop-Livestock Systems	Yaling Nie, Styliani Avramidou, Jie Li, Xin Xiao, and Efstratios N. Pistikopoulos
Energy/Water/Food 11	385	Economic Optimization of Integrated Nutrient and Energy Recovery Treatment Trains Using a New Model Library	Caline Vaneckhaete, Enrico Ulisse Remigi, Evangelina Belli, Erik Meers, Filip M.G. Tack, and Peter A. Vanrolleghem
Energy/Water/Food 12	125	A Hierarchical Food-Energy-Water Nexus (FEW-N) Decision-Making Approach for Land Use Optimization	Styliani Avramidou, Burcu Beykal, Ioannis P. E. Pistikopoulos, and Efstratios N. Pistikopoulos
Energy/Water/Food 13	545	Optimization of Sugarcane Bagasse based Industrial Cluster for Economic and Environmental Benefits	D. Vanshney, P. Mandade, and Yogendra Shastri

POSTER SESSION A - MONDAY JULY 2, 2018

145	Defect Data Modeling and Analysis for Improving Product Quality and Productivity in Steel Industry	Xinmin Zhang, Manabu Kano, Masahiro Tani, Junichi Mori, and Kohhei Harada
249	States Identification of Complex Chemical Process Based on Unsupervised Learning	Shaodong Zheng and Jinsong Zhao
319	Estimating the Content of MAPD Contaminants in a Trickle Bed Reactor through a Virtual Analyser	Vicente Braga Barbosa, Ana Rosa Massa, Karla P.S. Oliveira-Esquerre, Adelmo M. Aguiar Filho, and Adonias M. S. Ferreira
104	From Property Uncertainties to Process Simulation Uncertainties – Monte Carlo Methods in SimSci PRO/II Process Simulator	Jérôme Frutiger, Mark Jones, Nevin Gereek Ince, and Gürkan Sin
105	Strategic Design and Analysis of Large-Scale Shale Gas Monetizing Projects under Mixed Uncertainty	Hua Liu, Qingsong Xie, Ming Pan, and Chang He
5	Analysis of Evaporation Effects in Hydrostatic TBR models	Niels Frithjof Lomholdt, Carlos Eduardo Ramirez-Castellán, and Jakob Kjøbsted Husom
10	Research on Faulty Antibody Library of Dynamic Artificial Immune System for Fault Diagnosis of Chemical Process	Yiyang Dai, Yi Qiu, and Ziyun Feng
42	Optimal Enantiomer Crystallization Operation using Ternary Diagram Information	Caio Felipe Curitiba Marcellos, Helen Durand, Joseph Sang-Il Kwon, Amaro Gomes Barreto Jr., Paulo Laranjeira da Cunha Lage, Maurício Bezerra de Souza Jr., Argimiro Resende Secchi, and Panagiotis D. Christofides
58	Distributed Model Predictive Control of a System with Multi-Rate and Delayed Measurements	Arvind Ravi and Niket S. Kaisare
72	On-line Bayesian-based Model-Set Management Method with Case Study of Steam Reforming Prediction under Various Feed Compositions	Jia Li and Mingheng Li
74	Dual-time Scale based Extending of the Benchmark Tennessee Eastman Process	Bo Chen, Feng-Wen Lan, Zhu Wang, and Xiong-Lin Luo
86	A Bilevel Programming Approach for the Dynamic Optimization of Cyanobacterial C-phycocyanin Production under Uncertainty	Dongda Zhang and Ehecatt A. del Rio-Chanona
99	Novel Design of Dynamic Matrix Control with Enhanced Decoupling Control Performance	Jyh-Cheng Jeng, Yun-Ju Chang, and Ming-Wei Lee
119	Reinforcement Learning Applied to Process Control: A Van der Vusse Reactor Case Study	G.O. Cassol, G.V.K. Campos, D.M. Thomas, B.D.O. Capron, and A.R. Secchi
488	Feedback Control of Proppant Bank Heights during Hydraulic Fracturing for Enhanced Productivity in Shale Formations	Prashanth Siddhamshetty, Abhinav Narasingam, Shuai Liu, Peter P. Valko, and Joseph Sang-Il Kwon
28	A Methodology for Development of a Pedagogical Simulation Tool used in Fermentation Applications	Simoneta Caño de las Heras, Seyed Soheil Mansouri, Stefano Cignitti, Hinrich Uellendahl, Charlotte Lærke Weitzte, Krist V. Gernaey, Helle Roodtzen, and Ulrich Krühne
390	Cyber Incident Exercise Admitting Inter-Organization for Critical Infrastructure Companies	Akihiro Tsuchiya, Yutaka Ota, Yuma Takayama, Tomomi Aoyama, Takashi Hamaguchi, Yoshihiro Hashimoto, and Ichiro Koshijim
13	Comparative Study on Heat Transfer Efficiency of CRR Based on Entropy Analysis and Entransy Analysis	Li Xia, Yiting Zeng, Yuanli Feng, Xiaoyan Sun, and Shuguang Xiang
109	Food and Bioenergy: Capturing the Synergies and Conflicts in the Design of Value Chains through Spatio-Temporal Multi-Objective Optimisation	Sheila Samtli
158	Optimization of Membrane Processes at the Water-Energy Nexus	Mingheng Li, Yoshihito Adachi, Cuong Ngo, and Eduardo Guillen
199	Optimal Supply Chain for Biofuel Production under the Water-Energy-Food Nexus Framework	Dulce C. López-Díaz, Luis F. Lira-Barragán, J. Betzabe González-Campos, Medardo Serna-González, Mahmoud M. El-Halwagi, and Jose M. Ponce-Ortega
12	CFD-Based Design of Focal Brain Cooling System for Suppressing Epileptic Seizures	Kei Hata, Takuto Abe, Takao Inoue, Koichi Fujiwara, Takatomi Kubo, Toshitaka Yamakawa, Sadahiro Nomura, Hirochika Imoto, Michiyasu Suzuki, and Manabu Kano
453	Stochastic Modelling of CTB-receptor Binding Kinetics	Dangheun Lee, Alec Mohr, Joseph Sang-Il Kwon, Hung-Jen Wu, and Akshi Singla
14	Analysis of the Onset of Chaos for the Belousov-Zhabotinsky Reaction	Xi Wang, Chi Zhai, Zhijian Zhao, Ahmet Palazoglu, Wei Sun, and Jiali Ai
91	Design Concept for Coal-based Polygeneration Processes of Chemicals and Power with the Lowest Energy Consumption for CO ₂ Capture	Hong Huang and Siyu Yang
62	An MILP-based Operability Approach for Process Intensification and Design of Modular Energy Systems	Vitor Gazzaneo, Juan C. Carrasco, and Fernando V. Lima
107	Optimal Synthesis of Rotating Packed Bed and Packed Bed: A Case Illustrating the Integration of PI and PSE	Zhi Qian, Qi Chen, and Ignacio E. Grossmann
15	Dynamic Bounds on Stochastic Chemical Kinetic Systems through Semidefinite Programming	Garrett R. Dowdy and Paul I. Barton
85	Multi-Objective Computer-Aided Solvent Design for Selectivity and Rate in Reactions	Eliana Grant, Yueyuan Pan, Jeffery Richardson, Joseph R. Martinelli, Alan Armstrong, Amparo Galindo, and Claire S. Adjiman
3	Identification of Design Modifications for Implementing Optimal HEN Cleaning Schedules	Chuei-Tin Chang and Bo-Jyun Liao
4	Optimization Model for the Transfer Line Exchanger System	Guang Song and Limin Tang
93	Water Network Synthesis for Industrial Parks respecting to Unpredictable Scenarios	Linlin Liu, Yao Sheng, Lei Zhang, Jian Du, and Qingwei Meng
113	Hybrid Global Optimization Method for the Analysis of Integrated Reaction and Separation Processes	L.S. Harding, M. Schroeder, and G. Fieg
123	Simultaneous Synthesis of WHEN Based on Superstructure Modelling Considering Thermodynamic and Economic Factors	Yu Zhuang, Lei Zhang, Linlin Liu, Qingwei Meng, and Jian Du
149	Optimization of Cooling Water System with Compression Refrigeration Cycle	Jiaze Ma, Yufei Wang, and Xiao Feng
219	Design of Refinery Hydrogen Network with Near-Zero Hydrogen Emission	Meiqian Zhu, Chun Deng, Dominic Chwan Yee Foo, and Xiao Feng
49	Advanced Model-Based Optimization of a Commercial Natural Gas Liquid Recovery Unit	Dara Satyadileep, Abdallah S. Berrouk, Yasser Al Wahidi, S. Leyland, A. Andrade, D. Georgis, A.S. El Nasr, and F. Geuzebroek
81	Rigorous Synthesis of Energy Systems by Relaxation and Time-Series Aggregation to Typical Periods	Nils Baumgärtner, Matthias Lesin, Björn Bahl, Malke Hennen, and André Bardow
88	Parallel Cooperative Optimization through Hyperheuristics	Paola P. Oteiza, Diego A. Rodriguez, and Néida B. Brignolle
92	Optimization of Polymer Molecular Weight Distribution with Non-Ideal Reactors using Surrogate Models	Jing Kong, Xi Chen, Zhijiang Shao, and Lingyu Zhu
97	Hydrodynamic Behaviour of Helical Rings Random Packing Using CFD Simulation	Jia-Lin Kang, Ya-Chi Ciou, Dong-Yang Lin, Ching-Hung Cheng, David Shan-Hill Wong, and Shi-Shang Jang
124	Sustainability Assessment using Local Lazy Learning: The Case of Post-Combustion CO ₂ Capture Solvents	Gulnara Shavaliyeva, Athanasios I. Papadopoulos, Sara Badr, Panos Seferlis, and Stavros Papadokostantakis
133	Experimental Implementation of Dynamic Real-Time Optimization in a Graft Polymerization Reactor	Ryad Bouzbia-Salah, François Lesage, Guo-Hua Hu, and Abderrazak Latifi
162	Data-driven Modeling and Optimization of Complex Chemical Processes using a Novel HDMR Methodology	Qingsong Xie, Hua Liu, Di Bo, Chang He, and Ming Pan
1	Computer-Aided Design for Energy Saving in an Ammonia-based Post-combustion CO ₂ Capture Process	Jialin Liu and Ding-Sou Chen
35	Plant-wide Process Design of Producing Dimethyl Carbonate by Indirect Alcoholysis of Urea	Li Shi, San-Jiang Wang, David Shan-Hill Wong, Kejin Huang, En-Ko Leeb, and Shi-Shang Jang
41	Design of a Pressure-Swing Distillation Process for the Separation of n-Hexane and Ethyl Acetate Using Simulated Annealing	Xiao-Lin Yang and Jeffrey D. Ward
47	Design and Economic Evaluation for Production of Ethyl Lactate via Reactive Distillation Combined with Various Separation Configurations	Shi-Bao Dai, Hao-Yeh Lee, and Cheng-Liang Chen
66	Potentials for CO ₂ Utilization: Diethyl Carbonate Synthesis from Propylene Oxide	Meng-Kai Chen and Lung Chien
71	Superstructure-based Rigorous Simulation for Synthesis and Evaluation of Lignocellulosic Biofuels Processes	Paola Ibarra-Gonzalez, Carlo-Edgar Torres-Ortega, and Ben-Guang Rong
115	Methanol Production from Coke Oven Gas and Blast Furnace Gas	Lingyan Deng and Thomas A. Adams II
129	Design and Control of Diphenyl Carbonate Synthesis Involving Single Reactive Distillation with the Feed-Splitting Arrangement	Hsiang-Ning Chang, Chien-Ying Chen, and Hao-Yeh Lee
130	Scale-up Modeling of a Pharmaceutical Crystallization Process via Compartmentalization Approach	Merve Öner, Christian Bach, Tamaz Tajsoeiiman, Getachew S. Molla, Michael F. Freitag, Stuart M. Stocks, Jens Abildskov, Ulrich Krühne, and Gürkan Sin
151	An Industrial Park Layout Design Method Considering Pipeline Length Based on FLUTE Algorithm	Ruiqi Wang, Yan Wu, Yufei Wang, Xiao Feng, and Mengli Liu
154	Influence of Epistemic Uncertainty in the Selection of Flowsheet Structures	Edelmira D. Gálvez, Luis A. Cisternas, Freddy A. Lucay, and Renato Acosta-Flores
21	Automated Visual Helmet Identification based on Deep Convolutional Neural Networks	Hao Wu and Jinsong Zhao
127	Alarm Data Analysis for Safe Plant Operations: Case Study of Ethylene Plant	Zhexing Wang and Masaru Noda
68	Emission Conscious Scheduling of Crude Unloading, Transferring, and Processing for Petroleum Refineries	Jialin Xu, Honglin Qu, Jian Zhang, Sujing Wang, and Qiang Xu
166	Multi-Period Operational Optimization of Natural Gas Treating, Blending, Compressing, Long-Distance Transmission, and Supply Network	Wen W. Zhang, Bing J. Zhang, Chang He, Ming Pan, and Qing L. Chen
179	Resilient Scheduling under Uncertain Processing Times: A Hybrid CP/TOC Approach	Franco M. Novara and Gabriela P. Henning
181	Continuous-time and Precedence-based Modelling for Aluminium Electrolysis and Caster Scheduling Process	Qingxin Guo, Gongshu Wang, and Xin Gao
289	Expanding the Scope of Electric Power Infrastructure Planning	Cristiana L. Lara, Ben Omeli, David Miller, and Ignacio E. Grossmann
36	A High-Performance Molecular Reconstruction Method with Parameter Initialization based on PCA	Kexin Bi and Tong Qiu
64	Study and Application of the Computing Architecture of Petrochemical Cyber-Physical System (PCPS)	Defang Li
75	Integrated Design Strategy for Optimization of Utility Supply and Carbon Utilization: Multi-period Deterministic Model	Yuchan Ahn, Jaewon Byun, Juyeon Kim, and Jeehoon Han
98	An Optimization-based Design and Analysis of a Biomass Derived Hydrogen Energy System	Seolhee Cho, Wangyun Won, Seulki Han, Sunghoon Kim, Chanhee You, and Jiyong Kim
48	Mathematical Modeling and Optimization for Central Refrigeration Systems Design Using Low-Grade Energy in Industrial Parks	Qiao Q. Tang, Kai Liu, Qing L. Chen, Ming Pan, Chang He, and Bing J. Zhang
57	Influence of Humic Substances on the Solubility and Crystallization Behavior of Calcium Phosphates during Crystallization from Digester Supernatant	Liubov Vasenko and Haiyan Qu
73	A MINLP Model to Design Desalinated Water Supply Systems including Solar Energy as an Energy Source	Sebastián Herrera-León, Andrzej Kraslawski, and Luis A. Cisternas
148	Process Intensification of Algae Oil Extraction to Biodiesel	Geetanjali Yadav, Warren D. Seider, Lindsay Sob, and Julie Zimmerman
200	Synthesis of Water Distribution Networks through a Multi-Stakeholder Approach	Ramón González-Bravo, Luis Fabian Fuentes-Cortés, Mahmoud M. El-Halwagi, and José María Ponce-Ortega
357	Maximum groundwater level for urban development: Evaluation of different calculation methods in Western Australia	Tara Zarakbashi, Anastasia Boronina, Martin Anda, and Parisa A. Bahri

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329	Root Cause Analysis of Estimation Error of a Soft-Sensor	Narutomo Ishikawa, Sanghong Kim, Manabu Kano, and Shinji Hasebe
387	Soft-Sensor Design for a Crude Distillation Unit Using Statistical Learning Methods	Aysun Urhan, Nevin Gerek Ince, Ronald Bondy, and Burak Alakent
505	Information Entropy based Indices for Variable Selection Performance Assessment	Q. Peter He
183	Raw Material Supply Strategy for Petrochemical Process under Market Uncertainty	Byeonggil Lyu, Seokyoung Hong, Seunghyeon Oh, and Il Moon
268	Software for Creating Stochastic Scenarios for Optimization from Data	Andrea Staid and David L. Woodruff
248	State and Parameter Estimation Based On Extent Transformations	Alejandro Marquez-Ruiz, Carlos Mendez-Blanco, Marcella Porru, and Leyla Özkan
256	Efficient Process Monitoring and Fault Isolation with the Integrated use of Markov Random Fields Learning and the Graphical Lasso	Changsoo Kim, Hodong Lee, Younggung Lee, Kyeongsu Kim, and Won Bo Lee
308	Multivariable Control Structure Design of Heat Exchange Networks based on Mixed-Integer Quadratic Programming	Lautaro Braccia, Pablo A. Marchetti, Patricio Luppi, and David Zumoffen
309	Control Allocation Based Plantwide Control Structure Design for Heat Exchange Networks	Patricio Luppi, Lautaro Braccia, Pablo A. Marchetti, and David Zumoffen
344	Modeling and Simulation of LNG Fuel Vessel (LFV) Fuel Tank Reflecting CFD Result	Shin Hyuk Kim, Sungyoon Choi, and Jay H. Lee
394	Input Designs to Obtain Uncorrelated Outputs in MIMO System Identification	Kurt E. Häggblom
398	Control Strategy Scheme for the Prehydrolysis Kraft Process	Antton Lahnamämi, Herbert Sixta, and Sirka-Liisa Jäämsä-Jounela
409	Using Cognitive Computing for the Control Room of the Future	Sambit Ghosh and B. Wayne Bequette
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463	Supporting the use of PSE Computational Tools across a Chemical Engineering Program	Mazaher Molaie Chalchoughi and Eva Sorensen
467	Sustainable Manufacturing Education Modules for Senior Undergraduate or Graduate Engineering Curriculum	Debalina Sengupta, Yinlun Huang, Cliff I Davidson, Thomas F. Edgar, Mario R. Eden, and Mahmoud M. El-Halwagi
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313	Optimal Design of Transport and Reaction Pattern in Premixed Methane-air Micro-combustor	Xuepu Cao, Shengkun Jia, Yiqing Luo, Xigang Yuan, and Kuo-Tsong Yu
320	Development of a Model to Identify Combined Use in Residential Water End Use Events	Eduardo S. Soares, Ademo M. de Aguiar, Karla P. Oliveira-Esquerre, and Gabriella L.P. Botelho
380	Modelling a Water-Air Conditioning System of a Large Commercial Building for Energy Consumption Evaluation	Rodrigo Luiz Schil Pellegrini, Natália Magalhães de Araújo, and Miriam Trzská de Gouvêa
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502	Evaluating Hospital Performance Using Process Systems Engineering Tools	Jangwon Lee and Q. Peter He
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247	An Improved Recycle-loop Tearing Algorithm Based on Process Topology Information	Yi Ding, Weidong Zhang, Rafiqul Gani, and Wei Sun
303	Comparative Study of Similarity Measures used to Classify Residential Water Flow Pattern of Low-Income Households in Salvador - Brazil	Mariza Mello, Karla Oliveira-Esquerre, and Gabriella Botelho
427	Study on the Distillation Sequence with Dividing Wall Column for Five-component Separations	Yunlu Zhang, Jingde Wang, Xiuyu Liu, Min Zhang, Milan Zhang, and Wei Sun
375	Modeling Multistream Heat Exchangers (MHXs) Using Operational Data	Harsha Nagesh Rao and Iftekhar A. Karimi
343	Study on DFT Based Computation for Quantum Chemical Descriptors of Neodymium Carboxylate Molecules	Shuguang Xiang and Jiye Wang
378	Experimental Validation of Scheduled PID Control for Directed Self-Assembly of Colloidal Particles in Microfluidic Devices	Yu Gao and Richard Lakerveld
362	Smart Adaptive Sampling for Developing Surrogate Approximations of Physicochemical Systems	Sushant Garud, Iftekhar Karimi, and Markus Kraft
221	Optimal Synthesis of Multi-Component Refinery Hydrogen Network	Chun Deng, Meiqian Zhu, Yeyang Zhou, and Xiao Feng
240	Optimal Operation of Seawater Desalination System based on Load Rolling Prediction	Aipeng Jiang, Haokun Wang, Quannan Zhang, Jian Wang, and Shu Jiangzhou
271	Co-current Partial Condensation of a Multicomponent Vapor Flowing Down Vertical Tubes – Cooling and Purification of a Reactive Mixture	Yihui Tom Xu
280	Simultaneous Optimization of Solvent Composition and Operation Parameters for Sulfolane Aromatic Extractive Distillation Processes	Q. Wang, B.J. Zhang, C. He, and Q.L. Chen
294	Multi-Objective Optimization of Membrane-based CO ₂ Capture	Miguel A. Zamarripa, John C. Eslick, Michael S. Matuszewski, and David C. Miller
318	Simultaneous Optimization of Power Consumption and Heat Exchange Network in Refinery Hydrogenation System	Yu Zhang, Jing Li, and Qiao Zhang
381	Multi-period Optimization of Hydrogen Networks with Sulfur Content Variation	Jing Li and Qiao Zhang
178	Modeling Ethylene Cracking Process by Learning Convolutional Neural Networks	Feng Hua, Zhou Fang, and Tong Qiu
244	CFD Simulation of a Full Scale LNG Storage Tank	Abdullah Saleem, Shamsuzzaman Farooq, Iftekhar A. Karimi, and Raja Banerjee
286	Mixed-Integer Nonlinear Decomposition Toolbox for Pyomo (MindFPy)	David E. Bernal, Qi Chen, Felicity Gong, and Ignacio E. Grossmann
324	Simultaneous Parameter Estimation in Reactive-Solvent-Based Processes	John C. Eslick, Paul T. Akula, Debansu Bhattacharyya, and David C. Miller
342	Novel MILP-based Iteration Approach for the Equation-Oriented Simulation and Optimization of Distillation Column	Kunru Yang, Ming Pan, Bingjian Zhang, and Qinglin Chen
371	Applicability Domains of a Minimal-Calibration Model for Effective Online Monitoring of Pure Components' Concentrations in the Pharmaceutical Continuous Manufacturing Processes	Shojiro Shibayama and Kimito Funatsu
170	Optimal Synthesis of Batch Water Networks with a Flexible Scheduling Framework Using Dynamic Programming	Zhiwei Li and Thokozani Majazi
197	Analysis and Evaluation of a Heat Integrated Horizontal Distillation System	Emmanouil Papadakis, Seyed Soheil Mansouri, Jakob Kjølbsted Huusom, and Jens Abildskov
227	A Hybrid Approach for Process Optimization of Distillation Reflux Condition using First Principle Models and Least Squares Regression	Tomoyuki Taguchia and Yoshiyuki Yamashita
241	Optimal Sizing of Selective Catalytic Reduction Reactor Considering the Position of Urea Injector	Sanha Lim, Yeonsoo Kim, Taekyoon Park, and Jong Min Lee
255	Study on the Measurement of Air Resistance of Plate Fin Heat Exchanger in an Open Environment	Jian Wang, Tong Chen, Jingqing Wang, Mingming Che, and Shu Jiangzhou
304	Integrated Optimal Design Proposal Based on a Multiscale Approach: Validation and Experimental Adjustment of Properties	Cristhian Tinjacá, Juan Pablo Gallo-Molina, Óscar Álvarez, and Jorge Gómez
307	Catalytic Production of Gamma-Valerolactone from Two Different Feedstocks	Juyeon Kim, Jaewon Byun, Yuchan Ahn, and Jeehoon Han
314	Computational Fluid Dynamics Model on a Compact-type Steam Methane Reformer for Highly-Efficient Hydrogen Production from Natural Gas	Son Ich Ngo, Dan Duc Nguyen, Young-il Lim, Woohyun Kim, Dongju Seo, and Wang-Lai Yoon
315	Computational Fluid Dynamics of Gas-Liquid Bubble Column with Hydrocracking Reactions	Bay Van Tran, Son Ich Ngo, Young-il Lim, Woohyun Kim, Kang-Seok Go, and Nam-Sun Nho
316	Effect of Ship Motion on Separation Efficiency in Crude Oil Separator with Coalescer	Thuy T. Le, Young-il Lim, Chi-Kyun Park, Byung-Don Lee, Byung-Gook Kim, and Dong-Ha Lim
349	Integrated Bio-refinery Utilizing Brown Macroalgae: Process Design, Simulation and Techno-economical Assessment	Boris Brigljević, Peyman Fasahati, and J. Jay Liu
353	Process Modeling for Steam Biomass Gasification in a Dual Fluidized Bed Gasifier	Quang-Vu Bach, Hye-Ri Gye, and Chul-Jin Lee
266	Convolution Neural Network based Chemical Leakage Identification	Lening Li, Xuqing Jia, Wende Tian, Suli Sun, and Wu Cao
341	An Application of STAMP to Safety and Cyber Security for ICS	Shun Kondo, Hiroto Sakashita, Souta Sato, Takashi Hamaguchi, and Yoshihiro Hashimoto
204	Effective Scheduling of Complex Process-Shops using Online Parameter Feedback in Crude-Oil Refineries	Robert E. Franzoi, Brenno C. Menezes, Jeffrey D. Kelly, and Jorge W. Gut
264	Refinery Operation Scheduling Considering Both varying Feedstocks and Operating Conditions: An Industrial Data-based Modeling Method	Xiaoyong Gao, Nan Ru, Yongheng Jiang, Tao Chen, Dexian Huang, and Xin Zuo
288	Multi-System Development Planning for Optimizing Shale Gas Production	Abigail Ondeck, Markus Drouven, Nathan Blandino, and Ignacio E. Grossmann
291	Optimal Front-end Crude Schedule for Refineries under Consideration of Inherent Upset Reduction	Honglin Qu, Jialin Xu, Sujing Wang, and Qiang Xu
335	A Novel Metaheuristic Framework for the Scheduling of Multipurpose Batch Plants	Matthew Woolway and Thokozani Majazi
90	Research and Exploration on Intelligent Scheduling System in Petrochemical Industry	Baihua Jiang, Yan Zhao, and Wenyuan Gu
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102	Resource Utilization & Supply Chain Optimization for Liquefied Gaseous Products	Shamik Misra, Mangesh Kapadi, and Ravindra D. Gudi
205	Prediction of Environmental Properties Using a Hybrid Group Contribution Approach	Resul Al, Jérôme Frutiger, Alexandr Zubov, and Gürkan Sin
231	How can We Solve Systemic Problems in Plant-derived Production based on Simulation-based Analysis?	Kotaro Ouchida, Tatsuya Okubo, and Yasunori Kikuchi
312	A Data-Driven Approach for Design and Optimization of Energy Storage Systems	Lanyu Li and Xiaonan Wang
332	Comparative Study on LCA Co-Product Allocation Method of Bioethanol Production in the Development from Sweet Sorghum Stem	Haoyu Liu and Tong Qiu
392	Life Cycle Analysis of an Industrial Water Supply System	José O.N. de Jesus, Karla P.S.O. Esquerre, Asher Kiperstok, Albérico R.P. da Motta, Diego L. Medeiros, and Carla P. de B. Lemos
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567	Using Big Data in Industrial Milk Powder Process Systems	Irina Bolarkina, Nick Depree, Arrian Prince-Pike, Wei Yua, David L. Wilson, and Brent R. Young
270	Scheduling of Seawater Reverse Osmosis Desalination under Two Kinds of Uncertain Factors	Jian Wang, Chao Zheng, Wentao Shen, Chunhua Zhang, Haokun Wang, and Aipeng Jiang
395	Quantitative and Probabilistic Approach for Underground Pipeline Management Optimization	Keonhee Park, Gunhak Lee, Chongyoung Nam, and Wonbo Lee
563	Dual Adaptation Strategy for Model-Based Operation	Cheng Yang, Kexin Wang, and Zhijiang Shao
446	Diagnosis of Gas Leaks by Acoustic Method and Signal Processing	Luiza B. Fernandes, Flávio V. da Silva, and Ana Maria F. Fileti
510	Extremum-seeking Control of a Continuous Neutralization Reactor	Luís Felipe Safady, Flávio Vasconcelos da Silva, Martin Guay, and Ana Maria Frattini Fileti
519	Reduced Order Nonlinear Multi-parametric Model Predictive Control of Large Scale Systems	Panagiotis Petsagkourakis and Constantinos Theodoropoulos
527	Partitioned Based Cooperative Distributed Model Predictive Control for Large-Scale Nonlinear Systems	Rosiane R. Rocha and Luis C. Oliveira-Lopes
533	POD-based EnKF Estimation of Heterogeneous Reservoir Parameters for Feedback Control of Hydraulic Fracturing	Abhinav Narasingam, Prashanth Siddhamshtettya, and Joseph Sang-II Kwon
576	Validating Control of Extreme Disturbance of an Organic Rankine Cycle using VMGSim	Matthew Lie, Boaz Habib, Wei Yu, David Wilson, and Brent R. Young
582	Hybrid Model Based Control of Propylene Copolymerization in Fluidized Bed Reactor	Nazratul Fareha Salahuddin, Ahmad Shamiri, Mohd Azlan Hussain, and Navid Mostoufi
586	Identification and Control of an Unstable SOPTD System with Positive Zero	Dhanya Ram V. and C. Sankar Rao
541	Teaching Data-Analytics through Process Design	Fani Boukouvala, Jianyuan Zhai, Sun Hye Kim, and Farida Jariwala
578	Development of the Cyber Exercise for Critical Infrastructures Focusing on Inter-Organization Communication	Hidekazu Hirai, Yuma Takayama, Tomomi Aoyama, Yoshihiro Hashimoto, and Ichiro Koshijima
388	Operation of Intermittent Water Distribution Systems: An Experimental Study	Saravanan Chinnusamy, Prasanna Mohandoss, Varghese Kurian, Sridharakumar Narasimhan, and Shankar Narasimhan
440	Sustainable Industrial Water and Energy Nexus Integration for an Industrial Park	Jamileh Fouadi and Patrick Linke
554	Simulation of Reaction in a Fluidized Bed Incinerator with Mixing Ratio of Double Based Propellant and Water	Jilheon Lee, Raymoon Hwang, Hyunsoo Kim, Jungsoo Park, Min Oh, and Il Moon
540	Characterization of Electroencephalography of Strokes based on Time-Frequency Analysis	Ning Wang, Yuehua Pu, Ying Li, Jia Tian, Dacheng Liu, Zhe Zhang, Qingrong Shen, Liping Liu, and Wei Sun
238	Transition Phase Approach for Statistical Model in Multiphase Process	Hye Il Lee, Dong Hwi Jeong, Jaehun Bae, and Jong Min Lee
553	HPC Enabled Parallel, Multi-Scale & Mechanistic Model for High Shear Granulation using a Coupled DEM-PBM Framework	Chaitanya Sampat, Yuktेशwar Baramwal, Ioannis Paraskevakos, Shantenu Jha, Mariahtheri Ierapetritou, and Rohit Ramachandran
558	Evaluating the Boosting Approach to Machine Learning for Formation Lithology Classification	Vikrant A. Dev and Mario R. Eden
607	Modelling and Analysis of Oil Shale Refinery Process with the Indirectly Heated Moving Bed	Huairong Zhou, Shuai Zeng, Lei Zhang, Guangwen Xu, and Yu Qian
376	Simulation and Optimization of a Combined Cycle Gas Turbine Power Plant under Part-Load Operation	Zuming Liu and Iftekhar A. Karimi
415	Modular Concept Inspired by Microchemical Systems and Application to Distillation	Ken-Ichiro Sotowa, Takahiro Aoyama, Ryo Takagi, Kohel Ito, Jesús Rafael Alcántara Avila and Toshhide Horikawa
485	Process-Structure-Property Relationships for Design of Polymer Organic Electronics Manufacturing	Michael McBride, Carlex Morales, Elsa Reichmanis, and Martha A. Grover
557	Developing Non-linear Rate Constant QSPR using Decision Trees and Multi-Gene Genetic Programming	Shounak Datta, Vikrant A. Dev, and Mario R. Eden
592	Study of the Phenomenology of Dispersion of Hydrocarbon Spillage into Freshwater Bodies	Jeffrey Leon-Pulido, Crísthian C. Henao-Sanchez, Paola M. Parra-Herrera, Angel D. Gonzalez-Delgado, and Alvaro E. Villamizar
404	Energy Recovery in Heat Exchanger Networks in a Dynamic, Big-Data World: Design, Monitoring, Diagnosis and Operation	Sandro Macchietto, Francesco Coletti, and Emilio Diaz Bejarano
405	Design of Circular Economy Plants – The Case of Waste Textiles to Chemicals	Foteini Barla, Athanasios Nikolakopoulos, and Antonis Kokkosis
454	Synthesis of Refinery Hydrogen Networks with Parametric Uncertainties	Zhi-Ting Chen, Jui-Yuan Lee, Viknesh Andiappan, Chun Deng, and Denny K.S. Ng
564	Systematic Procedure for the Removal of Violations in Water Sources Diagrams	Flávio da S. Francisco, Ewerton E.S. Calixto, Fernando L.P. Pessoa, and Eduardo M. Queiroz
587	A Heat Integration Method with Location-Dependent Heat Distribution Losses	Hür Bütün, Ivan Kantor, and François Maréchal
588	Techno-Economic Evaluation of Multistage Membrane Combinations using Three Different Materials to Recover Helium from Natural Gas	M. Abdul Quader, Simon Smart, and Thomas E. Rufford
603	Design of Flexible Multiperiod Heat Exchanger Networks with Reducing Redundancy in Heat Transfer Areas	Lixia Kang and Yongzhong Liu
374	Constraints for Set-Membership Parameter Estimation	Falco Jung, Adel Mhamdi, and Alexander Mitsos
377	Selection of Reference Components in Reaction Systems	Bala Shyamala Balaji, Nirav Bhatt, and Sridharakumar Narasimhan
452	Application of Strategy Switching Mechanism with Improved Strategy for Heat Exchanger Network Design	Takeru Kono, Chika Kawahara, Naoki Kimura, and Yoshifumi Tsuge
528	Bioenergy Investments in Sugarcane Mills: An Approach Combining Portfolio Theory with Neural Networks	Victoria M. Mutran, Celma O. Ribeiro, Claudio A.O. Nascimento, and Erik E. Rego
555	Efficient Surrogate Model Development: Impact of Sample Size and Underlying Model Dimensions	Sarah E. Davis, Selen Cremaschi, and Mario R. Eden
581	A Comparison between NLP and MILP Formulations of Organic Rankine Cycle Systems for Optimization	Vathna Am, Jonathan Currie, and David I. Wilson
596	Role of Analytics within the Energy, Water and Food Nexus – An Alfalfa Case Study	Halle Woldesellasse, Rajesh Govindan, and Tareq Al-Ansari
383	Energy-Economic Multi-Objective Modeling Framework for Simultaneous Multistream Heat Exchangers and Process Optimization	Yingzong Liang, Keat Ping Yeoh, Ergys Pahlja, Pui Ying Lee, and Chi Wai Hui
284	An Approach to Optimal Design of Pressure-Swing Distillation for Separating Azeotropic Ternary Mixtures	Xu Huang, Yiqing Luo, and Xigang Yuan
407	Conceptual Design of an Efficient Hydrogen Production Process from Natural Gas using an Extension to the "G-H" Methodology	Avinash Shankar Rammohan Subramanian, Rahul Anantharaman, and Truls Gundersen
410	Optimized Sustainable Molecular and Purification Process Design Framework: Acetone-Butanol-Ethanol Case Study	Jaime D. Ponce-Rocha, Eduardo Sánchez-Ramírez, Juan G. Segovia-Hernández, Fernando I. Gómez-Castro, and Ricardo Morales-Rodríguez
420	Simulation of a Dual Mixed Refrigerant LNG Process using a Nonsmooth Framework	Matias Vikse, Harry A. J. Watson, Paul I. Barton, and Truls Gundersen
422	Synthesis of Value Added Product Processes from Residual Biomass	A.I. Casoni, V.S. Gutierrez, M.A. Volpe, and P.M. Hoch
438	Mechanical Energy Recovery through Work Exchanger Network Integration: Challenges and Opportunities	Aida Amini-Rankouhi and Yinlin Huang
529	Design and Optimization of Plate Heat Exchanger Networks	Kexin Xu and Robin Smith
556	Computer-Aided Process Simulation, Design and Analysis: Lactic Acid Production from Lignocellulosic Residues	José A. Méndez-Alva, Eduardo S. Perez-Cisneros, Divanery Rodríguez-Gomez, Oscar A. Prado-Rubio, Beatriz Ruiz-Camacho, and Ricardo Morales-Rodríguez
552	ProCAPD – A Computer-Aided Model-Based Tool for Chemical Product Design and Analysis	Sawitree Kalakul, Lei Zhang, Hanif A. Choudhury, Nimir O. Elbashir, Mario R. Eden, and Rafiqul Gani
571	Work and Heat Exchange Networks – Opportunities and Challenges	Haoshui Yu, Chao Fu, and Truls Gundersen
434	Eye Tracking as a Tool to Enhance Operator Learning in Safety Critical Domains	Punitkumar Bhavsar, Babji Srinivasan, and Rajagopalan Srinivasan
524	Safety, Sustainability and Economic Assessment in Conceptual Design Stages for Chemical Processes	Karen de Jesús Guillén-Cuevas, Ecem Ozinan, Andrea P. Ortiz-Espinoza, Nikolaos K. Kazantzis, Mahmoud M. El-Halwagi, and Arturo Jiménez-Gutiérrez
551	Deep Neural Networks for Source Tracking of Chemical Leaks and Improved Chemical Process Safety	Hyunseung Kim, En Sup Yoon, and Dongil Shin
428	A Novel Modelling Approach to Scheduling of Multipurpose Batch Processes	Nikolaos Rakovitis, Jie Li, and Nan Zhang
492	Reliability Analysis Associated with Maintenance of Online Analyzers	Monique N.G. de Abreu, Karla Patricia S.O.R. Esquerre, Ana Rosa C. de G. Massa, and Robson W.S. Pessoa
526	Strategic Planning of SAGD Reservoir Development under Exogenous and Endogenous Uncertainty	Farough Motamed Nasab, Hossein Shahandeh, and Zukui Li
539	A Closed-loop Dynamic Rescheduling Strategy Applied to Chemical Production Problems	Frederico S. de Paula, Sérgio M. S. Neiro, Valéria V. Murata, and Luis C. Oliveira-Lopes
234	Design Support of Smart Energy Systems based on Locally Available Resources: A Case Study in Isolated Islands in Japan	Yasunori Kikuchi, Kotaro Ouchida, Yuichiro Kanematsu, and Tatsuya Okubo
339	Online System Identification for the Real Time Control of the Plasma Parameters	Junmo Koo, Damdae Park, Sangwon Ryu, Gon-Ho Kim, and Youn-Woo Lee
364	An Ontology Based Cyber-Infrastructure for the Development of Smart Eco Industrial Parks	Aravind Devanand, Li Zhou, Iftekhar A. Karimi, and Markus Kraft
132	A Supply Chain Analysis and Design Method based on the Value of Information	Nobuaki Ishii and Masaaki Ohba
193	Strategic Planning for Managing Municipal Solid Wastes with Consideration of Multiple Stakeholders	Alicia Danae Diaz-Barriga-Fernandez, Jose Ezequiel Santibañez-Aguilar, J. Betzabe González-Campos, Fabricio Nápoles-Rivera, Jose M. Ponce-Ortega, and Mahmoud M. El-Halwagi
465	Prediction of Dissolved Methane Loss in Anaerobically Treated Effluent Based on ADM 1 and Equilibrium Conditions	Júlia Carolina B.F. Bijos, Robson W.S. Pessoa, and Karla P.S.O.R. Esquerre
503	Optimal Configuration of Work-Heat Exchanger Networks (WHEN) in the Presence of Demand Response Objectives	Mats Rademacher, Yu Liu, Nael H. El-Farra, and Ahmet Palazoglu
531	Open Sugarcane Process Simulation Platform	Rubens E.N. de Castro, Rita M.B. Alves, Adam Hawkes, and Claudio A.O. Nascimento
538	Design of Energy-Saving CO ₂ Capture Process using Circulating Fluidized Bed for Power Generation	Yasuki Kansha, Masanori Ishizuka, and Atsushi Tsutsumi
543	Insertion of Renewable Sources in the Brazilian Electricity Matrix: An Analysis through Portfolio Theory	Lucas Lyrio de Oliveira, Celma de Oliveira Ribeiro, Julia Tomei, and Erik Eduardo Rego
544	Extracting Heuristics for Designing Sustainable Built Environments by Coupling Multiobjective Evolutionary Optimization and Machine Learning	Xinyu Liu and Bhavik R. Bakshi