FOCAPO / CPC 2017
POSTER SESSION A

Monday January 9, 2017
8:00 pm to 11:00 pm

MATHEMATICAL MODELING FOR OPTIMUM OPERATION OF HIGHLY
EXOTHERMIC EQUILIBRIUM GAS PHASE CATALYTIC REACTIONS USING
MULTI-TUBULAR COOLED REACTOR
Yihui Xu
(Paper ID F1)

EFFICIENT FORMULATIONS FOR DYNAMIC WAREHOUSE LOCATION UNDER
DISCRETE TRANSPORTATION COSTS
Braulio Brunaud, Matthew H. Bassett, Anshul Agarwal, John M. Wassick and Ignacio
E. Grossmann
(Paper ID F5)

MULTISCALE MODEL PARALLELIZATION AND RUN-TO-RUN CONTROL OF
BATCH PROTEIN CRYSTALLIZATION
Joseph Kwon and Panagiotis Christofides
(Paper ID C6)

ELUCIDATION AND HANDLING OF VALVE ACTUATOR NONLINEARITY IN
PROCESS CONTROL LOOPS: AN OVERVIEW OF RECENT RESULTS
Helen Durand and Panagiotis Christofides
(Paper ID C7)

SMART MANUFACTURING: APPLICATION TO AN INDUSTRIAL SCALE
STEAM-METHANE REFORMER
Ankur Kumar, Michael Baldea and Thomas Edgar
(Paper ID F9)

MULTI-SCALE MODELING FOR OPTIMAL DESIGN, OPERATION AND
INTEGRATION OF POWER GENERATION AND STORAGE SYSTEMS
Masoud Soroush, **Yuriy Y. Smolin** and Kenneth K.S. Lau
(Paper ID C10)

APPLICATIONS OF VINYL ACETATE MONOMER (VAM) PLANT MODEL: A
NEW BENCHMARK PROBLEM
Toshiaki Omata, Shigeki Ootakara, Hiroya Seki, Yoshihiro Hashimoto, Manabu Kano,
Yasuhiro Miyake, Naoto Anzai, Masayoshi Sawai, Yuta Machida and Takashi Katsuno
(Paper ID C13)

MIXED-INTEGER NON-LINEAR PROGRAMS FOR OPTIMAL DETECTION AND ISOLATION OF FAULTS
William Hale, Kyle Palmer and George Bollas
(Paper ID F14)

OPTIMAL RAIL SCHEDULING IN LIMITED FLEXIBILITY ENVIRONMENTS
Danielle Zyngier, Jan Lategan and Ludwig Furstenberg
(Paper ID F15)

OPTIMAL CONTROL OF A LINEARIZED CONTINUUM MODEL FOR RE-RENTRANT MANUFACTURING PRODUCTION SYSTEMS
Xiaodong Xu and Stevan Dubljevic
(Paper ID C16)

MODEL-PREDICTIVE SAFETY SYSTEM FOR PREDICTIVE DETECTION OF OPERATION HAZARDS
Masoud Soroush, Taha Mohseni Ahooyi, Jeffrey Arbogast and Warren Seider
(Paper ID C17)

INTEGRATION OF CAMPAIGN SCHEDULING, DYNAMIC OPTIMIZATION AND OPTIMAL CONTROL IN MULTI-UNIT BATCH PROCESSES
Francesco Rossi, Gintaras Reklaitis, Flavio Manenti and Guido Buzzi-Ferraris
(Paper ID F19)

ECONOMIC IMPROVEMENT OF CONTINUOUS BIOCHEMICAL REACTORS VIA MULTI-FEED OPERATION
Jonathan P. Raftery and M. Nazmul Karim
(Paper ID F21)

DISTRIBUTED CHEMICALS AND ELECTRICITY PRODUCTION WITH REGULATED ENERGY EXCHANGE
Andrew Allman, Michael Zachar and Prodromos Daoutidis
(Paper ID F22)

ROBUST OPTIMIZATION WITH DATA DRIVEN ASYMMETRIC UNCERTAINTY SET CONSTRUCTION
Zukui Li and Said Rahal
(Paper ID F23)

A SIMULATION-OPTIMIZATION APPROACH TO INTEGRATE PROCESS DESIGN AND PLANNING DECISIONS UNDER TECHNICAL AND MARKET UNCERTAINTIES
Catarina Marques, **Samuel Moniz**, Jorge Pinho de Sousa and Ana Paula Barbosa-Póvoa
(Paper ID F24)

DETECTING SYMMETRY IN DESIGNING HEAT EXCHANGER NETWORKS
Georgia Kouyialis and Ruth Misener
(Paper ID F25)

HEALTH-AWARE OPERATION OF A SUBSEA GAS COMPRESSION SYSTEM UNDER UNCERTAINTY
Adriaen Verheyleweghen and Johannes Jäschke
(Paper ID F26)

ACCOUNTING FOR MEMBRANE PROPERTIES IN MATHEMATICAL MODELS OF HIGH-PRESSURE MEMBRANE CONTACTORS FOR NATURAL GAS SWEETENING
Ven Chian Quek, Nilay Shah and Benoit Chachuat
(Paper ID F27)

MULTISCALE PRODUCTION ROUTING IN INDUSTRIAL GAS SUPPLY CHAINS
Qi Zhang, Arul Sundaramoorthy, **Ignacio E. Grossmann** and Jose M. Pinto
(Paper ID F31)

NONLINEAR ROBUST OPTIMIZATION WITH UNCERTAIN EQUALITY CONSTRAINTS
Yuan Yuan, **Zukui Li** and Biao Huang
(Paper ID F32)

UNCERTAINTY ANALYSIS IN MULTIPHASE FLOW PREDICTIONS IN PRESENCE OF SOLIDS
Wei Dai, Selen Cremaschi, Hariprasad Subramani and Haijing Gao
(Paper ID F33)

SEMI-BATCH CHEMICAL-LOOPING REACTORS INTEGRATED WITH COMBINED CYCLE POWER PLANTS OPERATING AT TRANSIENT ELECTRICITY DEMAND
Chen Chen and **George Bollas**
(Paper ID F34)

ANALYSIS OF DETERMINISTIC ONLINE SCHEDULING
Dhruv Gupta and Christos Maravelias
(Paper ID F37)

ARTIFICIAL LIFT INFRASTRUCTURE PLANNING FOR SHALE GAS PRODUCING HORIZONTAL WELLS
Zuo Zeng and Selen Cremaschi
(Paper ID F39)

MODEL-BASED OPTIMIZATION OF THE MEDIUM REFRESHMENT REGIME DURING NEOTISSUE GROWTH IN A PERFUSION BIOREACTOR
Mohammad Mehrian, Yann Guyot, Ioannis Papantoniou, Maarten Sonnaert and Liesbet Geris
(Paper ID F41)

MODIFIER ADAPTATION APPROACH USING RELS TO COMPUTE PROCESS GRADIENTS
Tania Rodríguez-Blanco, Daniel Sarabia and César de Prada
(Paper ID C42)

PRODUCT AND CLOSED-LOOP SUPPLY CHAIN DESIGN WITH UNCERTAIN RETURN FLOWS
Luis Javier Zeballos, Carlos Alberto Méndez and **Ana Paula Barbosa-Póvoa**
(Paper ID F43)

A BRANCH AND BOUND ALGORITHM TO SOLVE LARGE SCALE MULTISTAGE STOCHASTIC PROGRAMS
Brianna Christian and Selen Cremaschi
(Paper ID F44)

MINLP MODELS FOR OPTIMAL DESIGN OF RELIABLE CHEMICAL PLANTS
Yixin Ye, Ignacio Grossmann and Jose Pinto
(Paper ID F45)

FLOWSHEET MODELING OF A CONTINUOUS DIRECT COMPRESSION TABLETING PROCESS AT PRODUCTION SCALE
Shaun Galbraith, Zhuangrong Huang, Bumjoon Cha, Huolong Liu, Samantha Hurley, Matthew Flamm, Robert Meyer and Seongkyu Yoon
(Paper ID F46)

AIR-QUALITY CONSCIOUS COORDINATION FOR MULTIPLE OLEFIN PLANT STARTUP AND SHUTDOWN OPERATIONS
Sijie Ge, Sujing Wang, Qiang Xu and Tomas C Ho, **(Min Chen, Presenter)**
(Paper ID F47)

VARIABLE REDUCTION FOR SURROGATE MODELLING
Julian Straus and Sigurd Skogestad
(Paper ID F50)

CRUDE-OIL BLEND SCHEDULING OPTIMIZATION OF AN INDUSTRIAL-SIZED REFINERY: A DISCRETE-TIME BENCHMARK
Jeffrey Kelly, **Brenno Menezes**, Faramroze Enginner and Ignacio Grossmann
(Paper ID F53)

ONLINE OPTIMIZATION OF A TOP-SPRAY FLUIDIZED BED GRANULATION PROCESS BASED ON A THREE-STAGE POPULATION BALANCE MODEL
Huolong Liu, Shaun Galbraith, Bumjoon Cha, Zhuangrong Huang, Seoyoung Park and Seongkyu Yoon
(Paper ID C55)

APPLICATION OF FORMAL VERIFICATION AND FALSIFICATION TO LARGE-SCALE CHEMICAL PLANT AUTOMATION SYSTEMS
Blake C. Rawlings, John M. Wassick and B. Erik Ydstie
(Paper ID C58)

OPERABILITY-BASED APPROACH FOR PROCESS DESIGN, INTENSIFICATION, AND CONTROL: APPLICATION TO HIGH-DIMENSIONAL AND NONLINEAR MEMBRANE REACTORS
Juan Carrasco and **Fernando Lima**
(Paper ID C63)

CHALLENGES AND OPPORTUNITIES FOR LOT-ENABLED MANUFACTURING: WHAT WE LEARNED FROM AN LOT-ENABLED MANUFACTURING TECHNOLOGY TESTBED
Devarshi Shah, Austin Hancock, Anthony Skjellum, Jin Wang and **Peter He**
(Paper ID C66)

PREDICTIVE CONTROL AND ESTIMATION FOR THE ADAPTIVE MANAGEMENT OF LAKE LEVELS AND STREAM FLOWS IN COMPLEX WATERSHEDS
Jeffrey Kantor, Michelle Pham and Kelly McGarry
(Paper ID C70)