

FOCAPD 2019

POSTER SESSION B

Tuesday, July 16, 2019 ♦ 8:00 p.m. to 10:00 p.m.

A MULTI-OBJECTIVE MULTI-TECHNOLOGY (MOMT) EVALUATION AND ANALYSIS FRAMEWORK FOR AMMONIA SYNTHESIS PROCESS DEVELOPMENT

Jia Li, Samuel Feaster and Andrew Kohler
(Paper ID 2)

IMPACT OF ACCURATE WORKING FLUID PROPERTIES ON THE GLOBALLY OPTIMAL DESIGN OF AN ORGANIC RANKINE CYCLE

Wolfgang R. Huster, Artur M. Schweidtmann and Alexander Mitsos
(Paper ID 5)

OPTIMAL PRODUCTION OF RENEWABLE ETBE FROM LIGNOCELLULOSIC RAW MATERIALS

Guillermo Galán, **Mariano Martín** and Ignacio E. Grossmann
(Paper ID 9)

DESIGN AND SCHEDULING OF DESALINATION SYSTEM FOR SHALE GAS FLOWBACK WATER TREATMENT

Zhuang Zhang, Chun Deng, Fanxin Kong, Jui-Yuan Lee and Denny Kok Sum Ng
(Paper ID 12)

INTEGRATION OF MAGNETOHYDRODYNAMIC POWER PLANT MODELS VIA THE FRAMEWORK FOR OPTIMIZATION, QUANTIFICATION OF UNCERTAINTY, AND SURROGATES (FOQUS)

Frits Byron Soepyan, John C. Eslick, Jason P. Mazzocoli, Nathan T. Weiland, Charles W. White, E. David Huckaby and Benjamin P. Omell
(Paper ID 17)

SURROGATE MODEL SELECTION FOR DESIGN SPACE APPROXIMATION AND SURROGATE BASED OPTIMIZATION

Bianca Williams and Selen Cremaschi
(Paper ID 20)

INTEGRATION OF DESIGN AND CONTROL BASED ON LARGE-SCALE NLP FORMULATIONS AND AN OPTIMAL ECONOMIC NMPC

Christian Hoffmann, Erik Esche and Jens-Uwe Repke
(Paper ID 24)

A THERMODYNAMIC FEASIBILITY EVALUATION MODEL FOR THE EFFICIENT STRUVITE PRODUCTION FROM LIVESTOCK WASTE

Edgar Martín-Hernández, Mariano Martín and Gerardo Ruiz-Mercado
(Paper ID 28)

PROCESS SYSTEMS ENGINEERING AND CATALYSIS: A COLLABORATIVE APPROACH FOR THE DEVELOPMENT OF CHEMICAL PROCESSES

Abdulrahman S. Alsuhaibani, Shaik Afzal, Mohamedsufiyan Challiwala, Nimir O. Elbashir and Mahmoud M. El-Halwagi
(Paper ID 32)

FLEXIBILITY ANALYSIS FOR DESIGN SPACE DEFINITION

Maria Paz Ochoa, Anuja Deshpande, Salvador García-Muñoz, Stephen Stamatis and Ignacio E. Grossmann
(Paper ID 35)

AN LAYOUT OPTIMIZATION METHOD FOR INDUSTRIAL FACILITIES BASED ON DOMINO HAZARD INDEX

Ruiqi Wang, Yan Wu, Yufei Wang, Xiao Feng and Mengxi Liu
(Paper ID 38)

GEOMETRIC EVALUATION FOR FLEXIBILITY INDEX OF PROCESS DESIGN MODELS

Fei Zhao, **Chenglin Zheng**, Xi Chen and Lingyu Zhu
(Paper ID 41)

LYAPUNOV DYNAMIC FLEXIBILITY OF NONLINEAR PROCESSES

Wentao Tang and **Prodromos Daoutidis**
(Paper ID 44)

INTEGRATING PROCESS SIMULATION INTO THE ENGINEERING DISCIPLINE WORKFLOW

Marina Velazquez, Henrik Hultin, Cal Depew and **Errol Jacob**
(Paper ID 48)

ROBUST OPTIMIZATION FOR NONLINEAR CHEMICAL PROCESS MODELS: APPLICATIONS TO POST-COMBUSTION CARBON CAPTURE

Natalie M. Isenberg, Paul Akula, Debangsu Bhattacharyya, David C. Miller and Chrysanthos E. Gounaris
(Paper ID 51)

EVALUATION OF CHLORINE BOOSTER STATION PLACEMENT FOR WATER SECURITY

Arpan Seth, Gaberiel Hackebeil, Terranna Haxton, Regan Murray, Carl Laird and **Katherine Klise**
(Paper ID 53)

FROM GRAPHICAL TO OPTIMIZATION-BASED DISTILLATION COLUMN DESIGN:

A MCCABE-THIELE-INSPIRED MATH PROGRAM

Lingxun Kong and Christos Maravelias

(Paper ID 56)

CONVEX MINLP – AN EFFICIENT TOOL FOR DESIGN AND OPTIMIZATION TASKS?

Jan Kronqvist and Andreas Lundell

(Paper ID 59)

MATERIAL PROPERTY GOALS TO ENABLE CONTINUOUS DIAFILTRATION
MEMBRANE CASCADES FOR LITHIUM-ION BATTERY RECYCLING

Elvis Eugene, William Phillip and **Alexander Dowling**

(Paper ID 61)

MONETIZING GAS FLARING IN SHALE OIL PRODUCTION

Andrés Calderón and Natalie Pekney

(Paper ID 67)

A HYBRIDIZING META-HEURISTIC APPROACH TOWARDS OPTIMAL MULTI-FLOOR
PROCESS PLANT LAYOUT

Qiaoting He, Xu Ji, **Li Zhou** and Yagu Dang

(Paper ID 71)

OPTIMAL DESIGN OF REFINERY HYDROGEN NETWORK UNDER MULTI-SCALE
UNCERTAINTIES

Ying Chen, **Zhihong Yuan** and Bingzhen Chen

(Paper ID 74)

EVALUATING DEMAND RESPONSE OPPORTUNITIES TO REDUCE DESIGN COSTS
FOR ELECTRIC GRID RESILIENCE

Anya Castillo, Michael Bynum, Jean-Paul Watson and **Carl Laird**

(Paper ID 78)

GRADIENT BOOSTED DECISION TREES FOR LITHOLOGY CLASSIFICATION

Vikrant A. Dev and **Mario R. Eden**

(Paper ID 81)

REACTION SYSTEMS AND PROCESS CONFIGURATIONS FOR SOLID-GAS
THERMOCHEMICAL ENERGY STORAGE

Xinyue Peng, Thatcher Root and Christos Maravelias

(Paper ID 84)

PARAMETRIC OPTIMIZATION OF A POWER AND BIOMASS TO LIQUID PROCESS

Mohammad Ostadi, **Bjørn Austbø** and Magne Hillestad

(Paper ID 87)

ON THE CONVERGENCE OF OUTER APPROXIMATION METHODS FOR ROBUST
DESIGN

Huiyi Cao, Yingkai Song and **Kamil Khan**
(Paper ID 90)

GENERALIZED MODULAR REPRESENTATION FRAMEWORK FOR THE SYNTHESIS
OF EXTRACTIVE SEPARATION SYSTEMS

Yuhe Tian and Efstratios N. Pistikopoulos
(Paper ID 93)

MODELING OF SEASONAL GRID ENERGY STORAGE BASED ON A PRODUCTION
COST SIMULATION TOOL

Omar Guerra, Jiazi Zhang, Josh Eichman, Bri-Mathias Hodge and Jennifer Kurtz
(Paper ID 96)

SIMULTANEOUS SYNTHESIS AND DESIGN OF INTEGRATED REACTION-
SEPARATION SYSTEMS USING RIGOROUS MODELS

Yingjie Ma, Aline El-Khoruy, Zekun Yang, Li Sun, Nan Zhang, Jie Li and Xin Xiao
(Paper ID 100)

EFFICIENCY OF UNCERTAINTY PROPAGATION METHODS FOR ESTIMATING
OUTPUT MOMENTS

Samira Mohammadi and Selen Cremaschi
(Paper ID 103)

INFRASTRUCTURE PLANNING AND OPERATIONAL SCHEDULING FOR POWER
GENERATING SYSTEMS: AN ENERGY-WATER NEXUS APPROACH

R. Cory Allen, Yaling Nie, Styliani Avraamidou and Efstratios N. Pistikopoulos
(Paper ID 106)

PROCESS/EQUIPMENT DESIGN IMPLICATIONS FOR CONTROL SYSTEM
CYBERSECURITY

Helen Durand
(Paper ID 110)

DESIGN AND DYNAMIC SIMULATION OF NEAR-OPTIMAL, ADSORBENT-SPECIFIC
PSA CYCLES FOR IMPROVED ADSORBENT SCREENING

Taehun Kim and Joseph Scott
(Paper ID 112)

DISCRETE ELEMENT MODELING (DEM) PARAMETRIC STUDY OF FEEDER UNIT IN
CONTINUOUS PHARMACEUTICAL INDUSTRY

Pooja Bhalode and Marianthi Ierapetritou
(Paper ID 115)

TEACHING DATA-DRIVEN COMPUTER-AIDED DESIGN AND OPTIMIZATION
Fani Boukouvala

(Paper ID 118)

MODELING AND OPTIMIZATION OF SIMULTANEOUS WASTE HEAT UTILIZATION AND WASTEWATER TREATMENT PROCESSES

Haoshui Yu, Zhichao Chen, Chang He and **Truls Gundersen**

(Paper ID 122)

COMPUTATIONAL FLUID DYNAMICS OF GAS-LIQUID BUBBLE COLUMN WITH HYDROCRACKING REACTIONS

Bay Van Tran, Son Ich Ngo, Young-il Lim, Dong Hyun Lee, Kang-Seok Go and Nam-Sun Nho

(Paper ID 129)

MICROKINETIC MODEL REDUCTION IN REACTOR OPTIMIZATION FOR OLIGOMERIZATION REACTION USING CISTAR TECHNOLOGY

Kanishka Ghosh and Alexander Dowling

(Paper ID 139)

OPTIMIZATION OF A COAL-FIRED POWER PLANT USING A FIRST-PRINCIPLES-BASED HYBRID BOILER MODEL

Miguel Zamarripa, Jinliang Ma, Jaffer Ghouse, John Eslick, Anthony Burgard,

Debangsu Bhattacharyya, Gary Kocis and David Miller

(Paper ID 144)

PRACTICAL EXTENSIONS TO MULTI-OBJECTIVE COMBINATORIAL OPTIMIZATION FOR SYSTEM DESIGN

Matthew Hoffman, Stephen Henry, John Gauthier, Darryl Melander, Alex Dessanti, John Eddy, Geoffrey Pankretz and Lucas Waddell

(Paper ID 151)

INNOVATIVE PROCESS DESIGN FOR CONVERTING C₂ TO C₅ ALKANES IN SHALE GAS INTO LIQUID HYDROCARBONS

Yiru Li, Zewei Chen and Rakesh Agrawal

(Paper ID 156)