

FOCAPD 2019

POSTER SESSION C

Wednesday, July 17, 2019 ♦ 8:00 p.m. to 10:00 p.m.

A PHENOMENA-BASED SYNTHESIS METHOD FOR PROCESS INTENSIFICATION

Nipun Garg, Georgios M. Kontogeorgis and John M. Woodley

(Paper ID 3)

HYDROTHERMAL LIQUIFACTION OF ALGAE FOR BIO-CRUDE PRODUCTION:
EFFECTS OF CO₂ SOURCING ON ECONOMICS AND LCA

Pratham Arora, Matthew Realff, Valerie Thomas, Yanhui Yuan and Ronald Chance

(Paper ID 7)

INTEGRATING STEADY-STATE AND DYNAMIC MODELS FOR MULTI-SCALE
FLOWSHEET OPTIMIZATION: A STEAM-METHANE REFORMING CASE STUDY

Calvin Tsay, Ankur Kumar, Thomas Edgar and Michael Baldea

(Paper ID 10)

OPTIMAL DESIGN VIA CHANCE-CONSTRAINED OR TWO-STAGE STOCHASTIC
PROGRAMMING

Erik Esche, Byungjun You and Jens-Uwe Repke

(Paper ID 13)

CONCEPT AND DESIGN OPTIMIZATION OF A NOVEL AMMONIA-BASED SYSTEM
FOR FOOD-ENERGY-WATER SUSTAINABILITY

Matthew J. Palys, Andrew Allman, Anatoliy Kuznetsov and Prodromos Daoutidis

(Paper ID 18)

TWO STAGE SURROGATE ASSISTED FRAMEWORK FOR BOX-CONSTRAINED
GLOBAL OPTIMISATION

Sushant Garud, Nivethitha Mariappan and **Iftekhar Karimi**

(Paper ID 21)

SECOND-ORDER MULTIPLIER UPDATES TO ACCELERATE ADMM METHODS IN
OPTIMIZATION UNDER UNCERTAINTY

Jose S. Rodriguez, Gabriel Hackebeitl, **John Siirola**, Victor M. Zavala and Carl D. Laird

(Paper ID 26)

SUSTAINABILITY ASSESSMENT OF AN ETHYLENE OXIDE PROCESS WITH CARBON CAPTURE

Daniela R. G. de Faria, Gabriela Dias B. Magalhães, José Luiz de Medeiros and

Ofélia de Queiroz F. Araújo

(Paper ID 29)

COMPUTER-AIDED DESIGN OF SOLVENTS FOR MINIMUM EXERGY DEMAND IN REACTION-SEPARATION PROCESSES BASED ON COSMO-RS

Lorenz Fleitmann, Christoph Gertig, Kai Leonhard and André Bardow

(Paper ID 33)

SEMI-EMPIRICAL MODEL OF TWIN SCREW FEEDERS FOR CONTINUOUS PHARMACEUTICAL TABLET MANUFACTURING PROCESS

Davide Bascone, Federico Galvanin, Nilay Shah and Salvador Garcia Munoz

(Paper ID 36)

PARMEST: PARAMETER ESTIMATION VIA PYOMO

David Woodruff, Andrea Staid, Bethany Nicholson and Katherine Klise

(Paper ID 39)

ROBUST OPTIMIZATION OF POOLING NETWORKS

Johannes Wiebe, Inês Cecílio and Ruth Misener

(Paper ID 42)

INTEGRATING MARKET MODELS AND PRICE EFFECTS IN A MULTISCALE SUSTAINABLE PROCESS DESIGN FRAMEWORK

Tapajyoti Ghosh, Kyuha Lee and Bhavik R. Bakshi

(Paper ID 49)

DESIGN AND SIMULATION FOR TANK FARM EMISSION CONTROL AT A POLYMER PLANT

Emdadul Haque, Qiang Xu, **Thomas Ho** and Palanki Srinivas

(Paper ID 52)

DATA-DRIVEN FEASIBILITY ANALYSIS FOR MODULAR DESIGN UNDER DEMAND VARIABILITY

Lisia Dias, **Atharv Bhosekar** and Marianthi Ierapetritou

(Paper ID 57)

OPTIMAL DESIGN OF REACTIVE DISTILLATION SYSTEMS

Aikaterini Tsatse, Stijn R.G. Oudenhoven, Antoon J.B. ten Kate and **Eva Sorensen**

(Paper ID 58)

PROCESS DESIGN FRAMEWORKS FOR ECONOMIC UTILIZATION OF SMALL-SCALE AND UNCONVENTIONAL FEEDSTOCKS

Akhil Arora, Jianping Li, Manali Zantye and M. M. Faruque Hasan

(Paper ID 64)

PERSPECTIVES ON CONTROL/DESIGN INTERACTIONS UNDER DYNAMIC PROCESS OPERATION

Henrique Oyama and Helen Durand

(Paper ID 65)

OPTIMIZATION OF HEAT INTEGRATED MULTICOMPONENT DISTILLATION CONFIGURATIONS

Tony Joseph Mathew, Radhakrishna Tumbalam Gooty, Mohit Tawarmalani and Rakesh Agrawal

(Paper ID 68)

GENERAL-PURPOSE COMPUTATIONAL TOOL FOR CRYSTALLINE MATERIAL STRUCTURE OPTIMIZATION

Christopher L. Hanselman, David C. Miller and Chrysanthos E. Gounaris

(Paper ID 72)

A SIMULATION-BASED OPTIMIZATION APPROACH FOR PROCESS SYNTHESIS AND DESIGN OF WASTEWATER TREATMENT PLANTS

Resul Al and Gürkan Sin

(Paper ID 76)

APPLYING MACHINE LEARNING TO CONSTRUCT SURROGATE MODELS OF PRESSURE-SWING ADSORPTION CYCLES

Daison Yancy-Caballero, Fengqi You and Randall Snurr

(Paper ID 79)

A GENETIC PROGRAMMING APPROACH FOR CONSTRUCTION OF SURROGATE MODELS

Jimena Ferreira, Martín Pedemonte and Ana Inés Torres

(Paper ID 82)

ON THE PERFORMANCE OF MULTI-OBJECTIVE OPTIMIZATION METHODS APPLIED TO A MIXED-INTEGER SOLVENT DESIGN PROBLEM

Ye Seol Lee, George Jackson, Amparo Galindo and Claire Adjiman

(Paper ID 85)

NONLINEAR OPTIMIZATION OF DETAILED HEAT EXCHANGER MODELS WITH PHASE CHANGE

Saif Kazi and Lorenz Biegler

(Paper ID 88)

THE DESIGN OF OPTIMAL SOLVENTS FOR THE CRYSTALLISATION OF ACTIVE PHARMACEUTICAL INGREDIENTS

Oliver Luke Watson, George Jackson, Amparo Galindo and Claire Adjiman

(Paper ID 91)

QUANTIFICATION OF BATTERY DEGRADATION EFFECTS IN OPTIMAL ENERGY STORAGE SCHEDULES

Mariana Corengia and **Ana I. Torres**

(Paper ID 94)

A MODULAR MODELLING ENVIRONMENT FOR COMPUTER-AIDED PROCESS DESIGN

Mark Nicholas Jones, Simon Anthony Jones and Gürkan Sin

(Paper ID 97)

SYSTEMATIC DESIGN, ANALYSIS AND OPTIMIZATION OF WATER-ENERGY NEXUS

Spyridon D. Tsolas, M. Nazmul Karim and M. M. Faruque Hasan

(Paper ID 101)

MODELLING AND PARAMETER ESTIMATION OF A PLATE HEAT EXCHANGER AS PART OF A SOLVENT-BASED POST-COMBUSTION CO₂ CAPTURE SYSTEM

Paul Akula, John Eslick, Debangsu Bhattacharyya and David Miller

(Paper ID 104)

SYSTEMS DESIGN OF A PETROLEUM COKE IGCC POWER PLANT: TECHNICAL, ECONOMIC, AND LIFE CYCLE PERSPECTIVES

Ikenna J. Okeke and Thomas A. Adams II

(Paper ID 107)

A CIRCULAR ECONOMY APPROACH TO THE DESIGN OF A WATER NETWORK TARGETING THE USE OF REGENERATED WATER

Ana Somoza-Tornos, Manuel Rives-Jiménez, Antonio Espuña and Moisès Graells

(Paper ID 111)

ON THE USE OF MACHINE LEARNING FOR IDENTIFYING SAFETY HAZARDS

Helen Durand

(Paper ID 113)

SUSTAINABLE PROCESS INTENSIFICATION USING BUILDING BLOCKS

Salih Emre Demirel, Jianping Li and M. M. Faruque Hasan

(Paper ID 116)

DESIGN AND OPERATION OF TECHNO-ECOLOGICAL SYNERGY: A NO₂ CASE STUDY

Utkarsh Shah and **Bhavik Bakshi**

(Paper ID 120)

FAIRNESS MEASURES FOR DECISION-MAKING AND CONFLICT RESOLUTION

Apoorva Sampat and Victor M. Zavala

(Paper ID 123)

INCORPORATING PROCESS SAFETY INTO HEAT EXCHANGER NETWORK
SYNTHESIS AND OPERATION

Ahmed Harhara and M. M. Faruque Hasan

(Paper ID 131)

INTEGRATING TEAM SCIENCE INTO THE STEM GRADUATE TRAINING
EXPERIENCE

Mary Lynn Realff, Susan Cozzens, Meltem Alemdar, Katalin Dosa, Christopher Cappelli
and Angus Wilkinson

(Paper ID 141)

MODELING AND OPTIMIZATION OF A COAL-FED CHEMICAL LOOPING
COMBUSTION PROCESS

Chinedu Okoli, Andrew Lee, Anthony Burgard, Debangsu Bhattacharya and David Miller

(Paper ID 145)

DATA-DRIVEN PROCESS MODELING AND OPTIMIZATION FOR OPERATION AND
DESIGN IMPROVEMENT: AN APPLICATION FOR PULP&PAPER INDUSTRY

Hakim Ghezzaz, Étienne Bernier, Luciana Savulescu and Serge Bédard

(Paper ID 154)

BAYESIAN APPROACH TO INTEGRATE CO₂ ADSORPTION ISOTHERM DATA FROM
MULTIPLE SOURCES

Jayashree Kalyanaraman, Yoshiaki Kawajirib and Matthew Realff

(Paper ID 157)