# CURRICULUM VITAE

# Marianthi G. Ierapetritou

Department of Chemical & Biochemical Engineering, Rutgers University

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URL: <http://cbe.rutgers.edu/staff1/marianth>

##### EDUCATION

1991-1995 Ph. D., Chemical Engineering Department, *Imperial College, London, UK.*

 Faculty Advisor: Prof. Efstratios Pistikopoulos

Thesis Topic: "Optimization Approaches for Process Engineering Problems under Uncertainty"

1986-1991 Diploma (Summa cum Laude), Chemical Engineering Department, *NTUA, Greece*

 Faculty Advisor: Prof. Z. Maroulis

#####  Thesis Topic: "Synthesis of Heat Exchanger Network"

##### PROFESIONAL EXPERIENCE

2013- present Chair

#####  *Department of Chemical & Biochemical Engineering Rutgers University,*

 Piscataway, NJ

2009- present Professor

#####  *Department of Chemical & Biochemical Engineering Rutgers University,*

#####  Piscataway, NJ

2004-2009 Associate Professor

#####  *Department of Chemical & Biochemical Engineering Rutgers University,*

#####  Piscataway, NJ

* 1. Visiting Associate Professor

 *Department of Chemical Engineering, MIT*

 *Cambridge, MA*

1998-2004 Assistant Professor

#####  *Department of Chemical & Biochemical Engineering Rutgers University,*

#####  *Piscataway, NJ*

1996-1998 Post Doctoral Research Associate

 *Department of Chemical Engineering, Princeton University, Princeton, NJ*

 Faculty Advisor: Prof. Christodoulos A. Floudas

1995-1996 Post Doctoral Research Associate

 *Center for Process Systems Engineering, Imperial College, London, UK*

 Faculty Advisor: Prof. Efstratios Pistikopoulos

##### RESEARCH Interests

Computer-Aided Process and Product Design; Production Planning, Scheduling and Supply Chain Management; Process Operations under Uncertainty; Uncertainty Considerations in Process Design and Operations; Decomposition based Techniques for Complex Systems; Reaction Model Reduction; Modeling and Optimization of Pharmaceutical Processes; Economic and Life Cycle Analysis of Biomass conversion processes; Metabolic engineering and optimization.

##### Accomplishemts

##### *Honors –AWARDS*

2016 Keynote Speaker. International Conference on Sustainable Chemical Product and Process Engineering (SCPPE 2016), May 31-June 3, Nanjing, China

2016 Keynote Speaker. ESCAPE26, Slovenia, June 12-15, 2016.

2015 EPA's 2015 Scientific and Technological Achievement Highest Level Award.

2015 Award of Division of Particulate Preparations and Design (PPD) in PPD division of The Society of Powder Technology, Japan (SPTJ).

2015 Plenary Speaker. PSE2015/ESCAPE25, Copenhagen, May 31-June 4, 2015.

2015 Invited Speaker. 50th AAPS Arden Conference: Continuous Manufacturing of Solid Oral

 Drug Products, Baltimore, March 16-18, 2015.

2015 Invited Speaker. QAFCO-Texas A&M at Qatar Conference 2015.

2014 Best Teacher award (selected by the students – Engineering Governing Council)

2014 Invited keynote lecturer at the Foundations of Computer-Aided Process Design (FOCAPD)

2014 Invited Seminar Speaker. BMS, Syracuse, March 2014.

2013 PSE Model-Based Innovation (MBI) Prize for 2013

2013 Invited Visiting Faculty, ETH Zurich, 2013.

2012 Outstanding Faculty Award, School of Engineering, Rutgers University

2012 Invited International Seminar on Planning and Scheduling, Rio de Janeiro, Oct 2012.

2011 Invited speaker on 5th International Graz Congress on Pharmaceutical Engineering, Graz, Austria, September 2011

2009 Keynote lecture, 20th International Symposium of Process Systems Engineering (PSE), Brazil, August 2009.

2008 Invited Seminar Speaker Pan American Advanced Studies Institute Program on Process

 Systems Engineering (PASI), Mar Del Plata, Argentina, August 2008.

2006 Keynote lecture ADCHEM (Advanced Control of Chemical Processes) Gamado, Brazil,

 2006.

2005 Invited Seminar Speaker Pan American Advanced Studies Institute Program on Process

 Systems Engineering (PASI), Iguassu Falls, Brazil, August 2005.

2004 Board of Trustees Research Award for Scholarly Excellence, Rutgers University

2002 Teaching Excellence Award from Chemical Engineering Department, Rutgers University

2001 Plenary Speaker, ENPROMER 2001, 3rd Mercosur Congress on Process Systems

 Engineering, Argentina, September 16-20, 2001.

2001 Invited Speaker University of Iceland, May 2001.

2000 NSF CAREER Award, CTS 99-83406

*RESEARCH GRANTS*

1. FDA 2015-2018 ($4,000,000) “Real Time Release in Continuous Solid Dose Manufacturing: Systematic Characterization of Material Properties, and Optimal Design of Sensing and Control Methods” (PI: F. Muzzio; co-PIs: Marianthi Ierapetritou, Ben Glasser, Rohit Ramachandran, Alberto Cuitino, Gintaras Reklaitis, Carl Laird, Carl Wasgreen, Raj Dave)
2. NSF 2015-2018 ($800,000) “Commercializing Pharmaceutical Process Modeling for Continuous Manufacturing” PI: B. Glasser; co-PIs: Marianthi Ierapetritou, Rafael Mendez, Carl Wassgren, Rajesh Dave
3. NSF EAGER 2015-2017 ($284,184) “Cybermanufacturing: Advanced Modeling and Information Management in Pharmaceutical Manufacturing” (PI, co-PIs: Rohit Ramachandran, Shantenu Jha)
4. Rutgers 2015-2016 ($125,000) Academic Women Leadership Program as part of the Rutgers University Strategic Plan (PI, co-PI: Helen Buttner)
5. NSF 2014-2015 ($56,931) “Workshop on Process Intensification” (PI)
6. NSF-REU 2015-2016 ($12,000) “Integration of scheduling and control using closed loop implementation” (single PI)
7. BMS 2015-2016 ($70,000) “Modeling Development for CDC in BMS” (PI)
8. J&J 2014-2018 ($3,250,000) Rutgers-J&J strategic Partnership in Advanced Pharmaceutical Manufacturing (PI: F.J. Muzzio PI, M. Ierapetritou Co-PI)
9. J&J 2014-2018 ($2,000,000) Development of Predictive Models for Continuous Wet Granulation, in partnership with Ghent University in Belgium (PI: R. Ramachandran, M. Ierapetritou Co-PI)
10. PSE 2014-2015 ($80,000) “Material property prediction, database implementation and model validation” (PI, co-PIs Fernando Muzzio, Rohit Ramachandran)
11. FDA 2014-2017 ($500,000) “Flowsheet Modeling and Analysis Tools for Solid Base Pharmaceutical Products Manufacturing” (PI, co-PIs Fernando Muzzio, Rohit Ramachandran)
12. NSF SusChem 2014-2017 ($468,128) “SusChem Collaborative Research: Process Optimization of Novel Routes for the Production of bio-based Para-Xylene” (PI, co-PIs Vladimiros Nikolakis and Dion Vlachos University of Delaware)
13. NSF Award 2012-2016 ($342,575) “Integration of scheduling and control using closed loop implementation” (single PI)
14. NSF Award 2010-2015 ($343,901) “Innovative methodologies for integrated planning and scheduling and industrial applications” (single PI)
15. Office of Naval Research 2010-2013 ($328,128) “Modeling complexities in biofuel combustion” (PI, co-PI Ioannis Androulakis)
16. NSF Award 2009-2012 ($1,800,000) “Commercializing of Continuous Pharmaceutical Manufacturing Technology” (PI, co-PI Fernando Muzzio, Gintaras Reklaitis, James Donald Litster (Purdue), Raj Dave (NJIT),
17. NSF Graduate Research Supplement 2009-2010 ($53,938) (single PI)
18. NSF REU supplement 2009 ($12,000)
19. NSF Graduate Research Supplement 2008-2009 ($46,871) (single PI)
20. NIH Grant RO1 2008-2011 ($1,200,000) Bioinformatics Analysis of Control Mechanisms of Hypermetabolism (co-PI with Ioannis Androulakis (PI), Charles Roth and Francois Berthiaume)
21. NSF Award 2007-1010 ($316,317) “Reactive Flow Simulation Using An Adaptive Chemistry Framework” (co-PI with Ioannis Androulakis (PI)).
22. NSF Award 2006-2009 ($399,572) “Systematic Mathematical Strategies for Stochastic Modeling and Uncertainty in Production Planning and Scheduling” (single PI).
23. Office of Naval Research 2006-2009 ($270,782) “Efficient Characterization of Combustion Fuels” (PI, co-PI Ioannis Androulakis)
24. National Center of Excellence for Environmental Bioinformatics and Computational Toxicology – EPA 2005-2010 ($4,500,000) (co-PI with William Welsh (PI), Panos Georgopoulos, from Robert Wood Johnson Medical School, Ioannis Androulakis from Rutgers University and Herschel Rabitz and Chris Floudas from Princeton University)
25. Metabolic Engineering – National Science Foundation 2005-2008 ($998,659) “Molecular Network Controls of Hepatocyte Metabolism” (co-PI with Charles Roth (PI), Martin Yarmush and Ioannis Androulakis from Rutgers University)
26. Quantitative Systems Biology – National Science Foundation 2004-2007 ($500,000) “Experimental and Computational Studies to Optimize Hepatocyte Function” (PI with Charles Roth and Martin Yarmush from Rutgers University).
27. NSERC Strategic Grant 2004-2007 ($300,000) “Innovative Approach to the Optimization of Integrated Newsprint Mill Dynamic Operations” (Co-PI with Professor Paul Stuart from Ecole Polytechnique in Montreal).
28. Office of Naval Research 2003-2006 ($213,000) “Development of an Adaptive Chemistry Model for Combustion Systems Considering Micromixing Effects” (single PI)
29. NSF Award 2002-2005 ($200,000) “Design of Flexible Reaction Models” (single PI)
30. CAREER NSF Award 2000-2004 ($308,803) “Process Operations: Decision-Making under Uncertainty” (single PI).
31. Strategic Resource and Opportunity Analysis (SROA) ($80,000), Rutgers University “The Laboratory for Multiphase Reactive Flow (LMRF): Integrating Information Technology and Experiments for Maintaining Technological Superiority in Homeland Security, Energy Generation, and the Environment” (Co-PI)
32. ACS-PRF Type G "Starter" Grant ($25,000) “Incorporation of Uncertainty into Complex Kinetic Mechanisms” (single PI).
33. New Jersey Space Consortium Grant (NASA) ($25,000) “Order Reduction of Complex Kinetic Mechanisms Considering Micro-mixing Effects” (single PI).
34. NSF International Division Grant, 0071505 ($13,800) “Multiple Inputs - Multiple Outputs (MIMO) Control Design” (single PI).
35. Grant from BOC Gases ($43,000) to perform research on novel optimization approaches for design under uncertainty.
36. Grant from Honeywell Hi-Spec Solutions ($25,000) to investigate the application of continuous time formulation for refinery scheduling.
37. Grant for Union Carbide ($5,000) to study the optimization of Amerchol Plant operations.
38. Grant from Rutgers University (co-PI along with Professors Narashiman, Khinast, Glasser, and Moghe) to modernize the graduate curricula in Chemical Engineering ($48,000).
39. Grant form Rutgers University (co-PI along with Professors Lehman, Norris, Denda, and Buttner) to advance instructional technology for engineering education by introducing new computer-based learning resources ($112,000).
40. Together with Professor Manish Parashar from Electrical Engineering Department lead the Unisys initiative to establish one of the three Nationwide Excellence Centers equipped with initial computing network ($278,000).
41. Grant from Rutgers University to initialize the research effort towards the application of optimization methods in environmental treatment systems ($1,500).
42. Grant from Rutgers University to initialize the research effort towards the consideration of uncertainty into complex kinetic models ($1,500).
43. Undergraduate Research Fellowship to support a student to do research in the area of scheduling of batch processes ($1,500).
44. Undergraduate Research Fellowship to support a student to do research in the area of refinery scheduling ($1,500).

*Teaching Activities*

##### 2013-2016 Professional Skills Development Course: Sophomore level Course

##### 2013-2014 Design of Separations Processes: Junior level Course

##### 2012 Process Systems Engineering: Modeling and Optimization of Process Design and Operations: Graduate level Course

##### 2010-2011 Chemical Analysis I: Sophomore level course

##### 2004/2009 Freshmen Orientation Lectures

##### 2004-2012 Process Dynamics and Control: Senior level course

##### 2004 Modeling and Optimization of Process Design and Operations: Graduate level Elective Course

2000-2002 Design of Separation Processes: Senior Level Course

2001-2002,

2005-2007 Analytical Methods in Chemical and Biochemical Engineering: Graduate level Core Course

* 1. Advanced Transport Phenomena: Graduate level Core Course:

1999 Process Systems Engineering: Graduate level Course

##### *MENTORING GRADUATE & UNDERGRADUATE STUDENTS AND POSTDOCTORAL SCHOLARS*

Postdoctoral Scholars Supervised

 Ravendra Singh (12/2011- Present)

 Research Area: Process Integration and Control of Pharmaceutical Processes.

 Jun Zhang (09/2014- 09/2015)

 Research Area: Database development and integration with Flowsheet simulation

 Jey Arjunan (10/2010 – 05/2011)

 Research Area: Process Integration and Optimization of Pharmaceutical operations.

 Vidya Iyer (06/2007 – 05/2010)

 Research Area: Metabolic Engineering of Liver Cell Cultures

 George Saharidis (03/2007- 12/2008)

 Research Area: Decomposition Based Optimization of Complex Systems

 Zhenya Jia (01/2007 – 02/2009)

 Research Area: Modeling, Optimization and Control of Pharmaceutical Systems

 Antoine Berton (03/2005 – 03/2006)

 Research Area: Optimization and Control of Pulp and Paper Processes

 École Polytechnique. Montréal

 Avinash Sirdeshpande (9/1999-3/2001)

 Research Area: Reduction of Complex Kinetic Models

 Current Affiliation: BOC Gases

Current Graduate Students Advised/Co-Advised

 Ph.D. Students

 Nirupaplava Metta Since May 2015

 Ph.D. expected 2020

 Reduced Models of pharmaceutical process operations

 Lisia Dias Since September 2015

 Ph.D. expected 2020

 Supply Chain Management under uncertianty

 Zilong Wang Since December 2014

 Ph.D. expected 2019

 Flowsheet simulation and Optimization of continuous Manufacturing

 of Pharmaceutical products

 Sebastian Escotet Since December 2013

 Ph.D. expected 2018

 Analysis and Optimization of Pharmaceutical process development

 Nihar Sahay Since January 2011

 Ph.D. expected 2015

 Thesis Title Modeling of Sustainable Chemical Supply Chain

 Parham Farzan Since May 2015

 Ph.D. expected 2020

 Thesis Title Modeling of Bio-pharmaceutical Manufacturing processes

 Master Students

Abhay Athaley Since January 2015

 Thesis Title: Biomass Conversion to Chemicals

Shishir Vadodaria Since January 2015

 Thesis Title: Modeling of Compaction Process

Past Graduate Students Advised/Co-Advised

 Ph.D.

1. Zhaojia Lin Ph.D. September 2015

Thesis Title Modeling and Optimization of Chemical and Fuel production from Biomass

1. Jinjun Zhuge Ph.D. May 2015

 Thesis Title Integration of Process Scheduling and Control

1. Nikisha Shah Ph.D May 2015

Thesis Title Decomposition Approaches for Enterprise-wide Optimization in Process Industry

1. Amanda Rogers Ph.D. December 2014

Thesis Title Process Systems Engineering Methods for the Development of

 Continuous Pharmaceutical Manufacturing Processes

1. Shuliang Zhang Ph.D. December 2013 (co-advised by Prof. I.P. Androulakis)

Thesis Title Combustion Characterization and Kinetic Modeling in Reactive Flow Simulations

1. Fani Boukouvala Ph.D November 2012 (co-advised by Prof. F. Muzzio)

Thesis Title Integrated Simulation and Optimization of Continuous Pharmaceutical Manufacturing

1. Yijie Gao Ph.D April May 2012 (co-advised by Prof. F. Muzzio)

Thesis Title Modeling and Analysis of Continuous Powder Blending

1. Aditya Vanarase Ph.D. August 2011 co-advised by Prof. F. Muzzio)

Thesis Title Design, Modeling and Real-Time Monitoring of Continuous Powder Mixing Processes

1. Mehmet Orman Ph.D December 2011 (co-advised by Prof. I.P. Androulakis)

Thesis Title Bioinformatics Analysis of Control Mechanisms of Burn and Sepsis Induced Inflammatory Response

1. Kai He Ph.D. June 2010 (co-advised by Prof. I.P. Androulakis)

Thesis Title Development of Kinetic Model Reduction Framework and its Application in Realistic Flow Simulation

1. Beverly Smith Ph.D. June 2010

Thesis Title Product Design and New Product Portfolio Management Modeled Integration and Optimization

1. Zukui Li Ph.D. May 2010.

Thesis Title Process Operations with Uncertainty and Integration Considerations

1. Hong Yang Ph.D. December 2009 (co-advised by Prof. C.M.Roth)

Thesis Title: Design and analysis of Amino Acid supplementation in Hepatocyte culture using in vitro experiment and mathematical modeling

1. Eddie Davis Ph.D. August 2008

Thesis Title: Modeling and Optimization of Process Engineering Problems Containing Black-Box Systems and Noise

1. Patricia Portillo Ph.D. May 2008 (co-advised by Prof. F. Muzzio)

Thesis Title: Modeling, Control and Optimization of Continuous Pharmaceutical Processes

1. Nripen Sharma Ph.D. January 2007. (co-advised by Prof. M.L.Yarmush)

Thesis Title: Metabolic Engineering of Stem Cell Differentiation

1. Zhenya Jia, Ph.D. September 2005.

Thesis Title: Uncertainty Analysis of Scheduling and Planning Problems.

1. Ipsita Banerjee Ph.D. May 2005.

Thesis Title: Multiscale Framework for Coupling Micromixing Phenomena and Detailed Kinetic Networks for Combustion Systems in a Dynamic Environment.

1. Dan Wu Ph.D. May 2005.

Thesis Title: Unified Frameworks for the Optimal Production Planning and Scheduling.

1. Vishal Goyal Ph.D. Jan 2005.

Thesis Title: Design and Synthesis of Flexible Module-Based Systems.

1. Aditya Bindal Ph.D. October 2004 (co-advised by Prof. J. Khinast)

Thesis Title: Optimization and Stability Analysis of Multidimensional Reacting Systems

 Masters

1. Xian Wu Masters June 2015

 Thesis Title: Integration of Scheduling and Control

1. Jierui Liang Masters June 2015

 Thesis Title: Reduction of Combustion Kinetic Modeling

1. Vasilis Niotis Masters Dec 2011

 Thesis Title Sensitivity Analysis of Complex Systems

1. Amalia Nikolopoulou Masters Dec 2011

 Thesis Title Hybrid Simulation Based Optimization for Supply Chain Management

1. Steve Guzikowski Masters January 2008 (co-advised by Prof. C.M.Roth)

 Thesis Title: Novel tools towards Improving Hepatocyte Function

1. Tien Phong Huynh Masters October 2007 (co-advised by Prof. I.P. Androulakis)

 Thesis Title Characterization of Complex Fuels for Combustion Applications

1. Ian Glasgow Masters Dec 2005 (co-advised by Prof. P. Stuart Ecole

 Polytechnique de Montreal, Montreal, Canada)

 Thesis Title: Optimization Applications in Pulp Paper Process Industry

1. Suhrid Balakrishnan Masters September 2002 (Co-advised with Prof. P. Georgopoulos).

 Thesis Title: Uncertainty considerations in Atmospheric Systems

1. Jeetmanyu Vin Masters July 2000

 Thesis Title: Short Term Scheduling of Batch Plants under Uncertainty.

Member of PhD Committee

 Jiandong Meng Ph.D. March 2014 (Primary Advisor: Prof. Yogesh Jaluria, MAE, Rutgers University)

 Simulation and Optimization of the GaN MOCVD Process

 Kubra Kamisoglou Ph.D. May 2014(Primary Advisor: Prof. I.P. Androulakis, CBE Rutgers University)

 Branched-chain amino acid supplementation: impact on inflammatory and metabolic signaling in liver after acute stress

 Pantelis Mavroudis Ph.D. May 2014(Primary Advisor: Prof. I.P. Androulakis, CBE Rutgers University)

 Evaluation of heart rate variability and peripheral clock gene entrainment dynamics in acute and chronic inflammation, under an in-silico scenario of human endotoxemia

 Anwesha Chaudhury Ph.D. expected Dec 2014 (Primary Advisor: Prof. Rohit Ramachandran)

 Mechanistic modeling, simulation and optimization of wet granulation processes

 Dana Barrasso Ph.D. expected May 2016 (Primary Advisor: Prof. Rohit Ramachandran)

 Multi-scale model development and simulation of wet granulation processes

 Yong Zhang Ph.D. expected May 2015 (Primary Advisor: Prof. Georgopoulos, CBE Rutgers University)

 Climate change and airborne allergenic pollen

 Bill Engisch Ph.D. expected May 2014 (Primary Advisor: Prof. Muzzio, CBE Rutgers University)

 Loss-in-weight feeding in continuous powder manufacturing

 Juan Osorio Ph.D. expected May 2014 (Primary Advisor: Prof. Muzzio, CBE Rutgers University)

 Macro and micro characterization of resonant acoustic and continuous powder mixing processes

 Qian Yang Ph.D. May 2012(Primary Advisor: Prof. I.P. Androulakis, CBE Rutgers University)

 Dynamics of Gene Expression Profiling in Liver Following Thermal

 Injury and Sepsis

 Alisa Vasilenko Ph.D. August 2011 (Primary Advisor: Prof. Muzzio, CBE Rutgers University)

 Rheological properties of granular materials

 Eric Jayjock Ph.D. May 2011 (Primary Advisor: Prof. Muzzio, CBE Rutgers University)

 Advanced Data Inversion Applied to Cascade Impactor Design

 Brenda Remy Ph.D. May 2010 (Primary Advisor: Prof. Glasser, CBE Rutgers University)

 Granular Flow, Segregation and Agglomeration in Bladed Mixers

 Meric A. Ovacik Ph.D. May 2010 (Primary Advisor: Prof. Androulakis, BME Rutgers University)

 Modeling Pathways of Transcriptional Profiling of in Utero DBP Exposure in Rat Testes

 Kiran Vyakaranam Ph.D. May 2009 (Primary Advisor: Prof. Kokini, Food Science, Rutgers University)

 Thesis Title: Air Bubble Dynamics during Continuous Mixing of Viscous Liquids

 Bharani Kumar

 Ashokan Ph.D. October 2008 (Primary Advisor: Prof. Kokini, Food Science, Rutgers University)

 Thesis Title: Developing Methods for Design and Scale-up of Continuous Mixers through 3D Numerical Simulation of Flow and Mixing

 Marcos Llusa Ph.D. May 2008 (Primary Advisor: Prof. F. Muzzio)

 Thesis Title: Effect of shear mixing on the agglomeration of cohesive granular

 material and the lubrication of granular blends

 Jeng-Shiou Chen Ph.D. December 2007 (Primary Advisor: Prof. J. Khinast)

 Thesis Title: Transition Metal Catalysts for Suzuki Couplings and Chiral

 Hydrogenations: Kinetic Study, Computational Model and Synthesis

 Paloma Pimenta Ph.D. June 2008 (Primary Advisor: Prof. H. Pedersen)
 Thesis Title: Surfactant Solutions and Nanoparticle Suspensions

 Thomas W Cochran Ph.D. June 2005 (Primary Advisor: Prof. Y. Chiew)

 Thesis Title: Molecular Thermodynamic Modeling of Amorphous Solid Phase of

 Chain Molecules

 Xue Liu Ph.D. January 2005 (Primary Advisor: Prof. B. Glasser)

 Thesis Title: Instability and Segregation in Bounded Gas-Particle Fluidized beds

 Athanas Koynov Ph.D. May 2005 (Primary Advisor: Prof. J. Khinast).

 Thesis Title: Computational Studies of Bubble Columns

 Qinghua Wang Ph.D. September 2002 (Mechanical Engineering Department,

 Rutgers

 University, Primary Advisor: Prof. Y. Jaluria).

 Thesis Title: Instability and Heat Transfer in Mixed Convection Flow in a

 Horizontal Duct with Application to Cooling of Electronic Systems

 Joe Kukura II Ph.D. July 2003 (Primary Advisor: Prof. F. Muzzio).

 Thesis Title: Computational Investigation of Laminar Mixing in Pharmaceutical

 Tanks

 Christine Switzer Ph.D. May 2003 (Primary Advisor: Prof. D. Kosson).

 Thesis Title: Soil Vapor Extraction and Air Sparging Remediation of

 Trichlorethylene Contamination at the Savannah River Site

 Elizabeth Shen Ph.D. 2001 (Primary Advisor: Prof. B. Narasimhan).

 Thesis Title: Microphase Separation in Bioerodible Polyanhydrides for

Controlled Drug Release

 Tongdan Jin Ph.D. 2001 (Industrial Engineering Department, Rutgers

 University, Primary Advisor: Prof. D. Coit).

 Thesis Title: System Reliability Assessment and Optimization Considering

 Estimation Uncertainty

 Stephano Cerbelli Ph.D. 2000 (Primary Advisor:Prof. F. Muzzio).

 Thesis Title: The Topology of Mixing Structures in two-dimensional Periodic

 and Aperiodic Chaotic Flows

Member of Master Thesis Committee

Anuj V. Prakash Masters December 2012 (Primary Advisor: Prof. Ramachandran, CBE Rutgers University)

 Accelerating population balance model - based particulate process simulations via parallel computing

Sharareh Hashemi Masters December 2012 (Primary Advisor: Prof. Berthiaume, BME Rutgers University)

 Branched chain amino acid supplementation modulates the effect of inflammatory mediators on the function of a hepatoma cell

Undergraduate Students Advised

Charles Foster, Discrete Element Method (DEM) of continuous powder mixing, 2016.

Jingyao Wang, Process Design and Simulation of Bio-Based Hydroxymethylfufural (HMF), 2015.

Sohyun Jeong, Sensitivity Analysis of Continuous Pharmaceutical Manufacturing, 2015.

Chaitali Inamdar, Uncertainty propagation in pharmaceutical modeling, Spring 2012-Summer 2012.

Jonathan E. Gajda, Segregation studies in continuous mixing, Summer 2012.

Lukasz Mioduszewski, Modeling of Pharmaceutical Processes. Fall 2010-Spring 2011.

Catherine Polyakov, Analyzing flux data for liver exposure to toxicants. Summer 2010.

Chris Doe, Studying hepatotoxicity due to environmental toxicants. Summer 2009, Fall 2009.

Nikisha Shah, Centralized – Decentralized Optimization for Refinery Scheduling, Slade Scholar honor student, Fall 2007- Spring 2008.

Roentgen Hau, Examining the Content Uniformity of Powder Blends Using Near-Infrared Spectroscopy, Slade Scholar honor student, Fall 2007-Spring 2008.

Lily Cheung Chang, Cell Growth and Urea Production in Hepg2 Cells under Different Insulin and Glucose Concentration in the Media, Slade Scholar honor student, Fall 2007-Spring 2008

Sarah Abdelsayed, Optimization of supplementation for hepatocyte utilization in Bioartificial liver devices, Fall 2007.

Timothy Lin, Understanding of acetaminophen (APAP) metabolism and induced-hepatotoxicity, Fall 2005 –Spring 2006

Adebola Ogunniyi, Development of Response Surfaces for Optimization of Noisy Black-Box Systems, Fall 2004-Spring 2005

Yuliana Lugo, Application of MATLAB’s model predictive control toolbox to mixing processes, Summer 2006, RISE student.

Fred Bidrawn, Sensitivity analysis for Mixed Integer Linear Programming problems, Fall 2004.

Victor Low, Reduction of combustion chemistry, Spring- Summer 2007.

Salah Issa, Investigating the performance of hepatocyte cultures, Fall 2005- Spring 2006.

Enrique Coronado, Short-term Scheduling of Pharmaceutical Plants, Fall 2002.

Kimberly Ward, Design of a Graphical Interface for Scheduling of Batch Plants, Fall 2000, Spring 2001.

Melissa Gregory, Integrating Energy Price Forecasting with Design Optimization of Energy Intensive Plants, Spring 2001.

Regina Galie, Scheduling of Refinery Operations, Fall 2001.

Miral Parikh Design and Optimization of Air Separation Plant, SUPER Douglass College of women Student, Spring 2001

Rinku Parikh, Model Reduction of Complex Kinetic Networks, Slade Scholar honor student- Fall 2000 – Spring 2002.

Claire Pinto, Short-term Scheduling of Multi-Product Batch Plants, Spring 2000.

Nisha Batra, Uncertainty Considerations In Atmospheric Kinetic Modeling, Spring 1999.

Pauline Voung, Flexibility Evaluation of Batch Processes. Fall 1998.

Grace Zougheib, Modeling of Short-term Scheduling of Batch Plants, Fall 1998.

*UNIVERSITY SERVICE*

Chair of Chemical and Biochemical Engineering Department 2013-2016

SOE Faculty Research Committee 2013-2014

SOE Decanal Evaluation Committee (DEC) 2013-2014

New Brunswick Faculty Council 2011-2013

Chair of the Committee on Appointments and Promotions 2010-2011

Committee on Appointments and Promotions 2009-2011

Scholastic Standing Committee 2008-2011

College Planning Committee 2008-2011

Faculty Secretary, SOE 2009-2011

Dean’s Advising Committee 2009-2011

Member of New Brunswick Faculty Council 2011-2012

Faculty Admissions’ Committee 2009-2012

Undergraduate Executive Officer 2004-2008

Advisor Society of Women Engineers 2007-2008

Member of School of Engineering Rules of Procedure Committee 2003-2004

Chair of Graduate Admissions Committee 2001-2002

All Class Advisor 2000-2008

Departmental Web Site Coordinator 2000-present

Member of RUTCOR (Rutgers Center of Operations Research) 2000-present

Participation in program SUPER of Douglass College of women.

Chair, School of Engineering Student Discipline Committee 2000-present

Member of the Departmental Admissions and Recruiting Committee 1998-2004

Member of the Departmental Qualifying Committee 1998-1999

Member of the Departmental Computing Committee 1998-1999

Member of the Departmental Promotional Material Committee 1998-1999

Junior Advisor 1999-2000

##### *professional Activities*

*Conference Organizer*

FOCAPO (Foundations of Computer Aided Process Operations) Conference, 2008

*Membership in Professional Societies*

Elected AIChE Computing and Systems Technology (CAST) Chair 2013

Elected AIChE Computing and Systems Technology (CAST) Vice Chair 2011

Elected AIChE Computing and Systems Technology (CAST) Director 2008-2010

Elected president of CACHE, the leading organization within the Chemical Engineering community promoting computational applications, 2013

Elected vice president of CACHE, the leading organization within the Chemical Engineering community promoting computational applications, 2012

Elected as a Trustee of the CACHE, the leading organization within the Chemical Engineering community promoting computational applications

Member of *American Institute of Chemical Engineers* (AIChE)

Member of *Institute of Operations Research and Management Sciences* (INFORMS)

Member of *Society of Industrial and Applied Mathematics* (SIAM)

AIChE Computing and Systems Technology (CAST) Nominated and elected 10a (Systems and Process Design) Division Director for 2006

*Conference Organizing Committees*

Organizing Committee: ESCAPE 16, 17, 18, 21 PSE 2006, Annual Meeting of Creek Chemical Engineers, PSE 2009, FOCAPD 2009, FOCAPO/CPC2012, FOCAPD 2014, PSE 2015.

*Chairing on Technical Meetings*

Optimization I, European Symposium of Computer Aided Process Engineering (ESCAPE) 21, Greece, June 2011 (Chair)

Supply Chain and Logistics Optimization AIChE Meeting, November 2007, Salt Lake City, UT (Chair)

Design Analysis and Operations Under Uncertainty, AIChE Meeting, November 2007, Salt Lake City, UT (Chair)

Planning and Scheduling, AIChE Meeting, November 2007, Salt Lake City, UT (co Chair)

Uncertainty in Process Design and Operations AIChE Meeting, November 2006, San Francisco, CA (Chair).

Advances in Optimization I &II AIChE Annual Meeting, November 2005, Cincinnati, OH (Chair).

Process Design and Operation Under Uncertainty, AIChE Annual Meeting, November 2005,Cincinnati, OH (Chair).

Computing Methods for CAPE, ESCAPE 15, May 2005, Barcelona, Spain (Chair).

Supply Chain Management I, AIChE Annual Meeting, November 2004, Austin, TX (Vise-Chair).

Supply Chain Management II, AIChE Annual Meeting, November 2004, Austin, TX (Vise-Chair).

Chair for Enabling Technologies in Product and Process Design: Operations, FOCAPD, Princeton, NJ, July 2004

Manufacturing and Process Operations, ESCAPE 14, Lisbon, May 2004 (Chair)

Enterprise Wide Optimization, AIChE Annual Meeting, November 2003, San Francisco, CA (Chair).

Modeling and Computation for Process Design, AIChE Annual Meeting, November 2002, Indianapolis, NV (Vice Chair).

Planning and Scheduling, AIChE Annual Meeting, November 2002, Indianapolis, NV (Vice Chair).

Flexibility and Operability in Design, AIChE Annual Meeting, November 2001, Reno, NV (Chair).

Applications of System Analysis Tools in Information Processing, AIChE Annual Meeting, November 2001, Reno, NV (Vice Chair).

Applications of Scheduling and Planning in Batch Processes, AIChE Annual Meeting, November 2001, Reno, NV (Chair).

Process Operations, 7th International Symposium on Process Systems Engineering (PSE) 2000, Collorado (Chair).

Planning and Scheduling AIChE Annual Meeting, November 2000, Los Angeles, CA (Chair).

Design of Reactive Separation Systems, AIChE Annual Meeting, November 2000, Los Angeles, CA (Chair).

Planning, Scheduling and Supply Chain Management, AIChE Annual Meeting, November 1999, Dallas, TX (Chair)

Batch Processing, AIChE Annual Meeting, November 1998, Miami Beach, FL (Chair).

Flexibility in Process Operations, AIChE Annual Meeting, November 1998, Miami Beach, FL (Chair).

Design for Flexibility and Operability, AIChE Annual Meeting, Miami Beach, Nov 1998 (Chair).

***COLLABORATIONS***

*Rutgers University*

* Professor Muzzio in the area of pharmaceutical manufacturing.
* Professor Ramachandran in the area of modeling and control of pharmaceutical processes.
* Professor Georgopoulos: in the area of sensitivity and uncertainty analysis in contaminant source-to-dose sequence.
* Professor Boros from Rutgers Center of Operations Research (RUTCOR) in the area of introducing optimization theory in engineering.
* Professor Coit from the department of Industrial Engineering in the area of Multi-objective optimization of process operations under uncertainty
* Professor Roth from Chemical and Biochemical Engineering and Biomedical engineering departments in the area of hepatocyte functionality optimization.
* Professor Androulakis from Biomedical engineering in the area of modeling regulatory networks.
* Professor Yarmush and Professor Berthiaume from Biomedical Engineering in the area of modeling and optimization of metabolic networks.

*External*

* Professor Dion Vlachos from University of Delaware in the area of biomass conversion to chemicals.
* Professor G.V. Reklaitis from Purdue University in the area of modeling of pharmaceutical engineering
* Professor Michel Minoux from University of Paris 6 in decomposition based methods.
* Professor Anna Soffia Hauksdottir from University of Iceland a pioneer in the process control field.
* Professor Paul Stuart from Ecole Polytechnic in Montreal Canada in the area of optimization in pulp and paper industry.
* Professor Yannis Kevrekides from Princeton University, in the area of optimization of multiscale dynamic systems.
* Dr Jeff Kelly Honeywell Hi-Spec Solutions in the area of refinery scheduling.
* Dr Kevin Furman from ExxonMobil Research Engineering, in the area of supply chain modeling and optimization.
* Dr John Farell from ExxonMobil Research Engineering, in the area reduction of complex reaction networks.

***REFEREE AND EDITORIAL ACTIVITIES***

*REFEREEING/REVIEWING ACTIVITY*

Member of an External evaluation committee of the Department of Logistics Technological Education Institute of Thiva in Greece, February 2014

Member of an External evaluation committee of the Department of Logistics Technological Education Institute of Central Macedonia in Greece, December 2013

*Scientific Conference Reviewer*

Foundations of Computer Aided process Operations 2007 (FOCAPO)

Foundations of Computer Aided Process Design FOCAPD 2014

European Symposium of Computer Aided Process Engineering (ESCAPE)- 26 (2016), 25 (2015), 23 (2013), 22 (2012), 21 (2011)

Process Systems Engineering International Meeting PSE 2009, 2015

Foundations of Computer Aided Process Design FOCAPD 2009

17th IFAC World Conference 2008

ACC (American Control Conference) 2006 Conference

8th International Symposium on Dynamics and Control of Process Systems (DYCOPS 2007)

ADCHEM (Advanced Control of Chemical Processes) Conference 2006

European Symposium of Computer Aided Process Engineering (ESCAPE)-16 / Process Systems Engineering (PSE 2006)

Foundations of Computer Aided process Operations 2003 (FOCAPO)

European Symposium of Computer Aided Process Engineering (ESCAPE)- 6 (1996)

*Scientific Journal Reviewer*

Chemical Engineering Research and Design

Engineering Optimization

Computers and Chemical Engineering

AIChE Journal

Industrial Engineering & Chemistry Research

Energy and Fuels

Combustion and Flame

Optimization and Engineering,

Chemical Engineering Communications

Chemical Engineering Science

European Journal of Operations Research

Computers and Industrial Engineering

Applied Mathematical Modeling

European Journal of Operations Research

Biotechnology and Bioengineering

Metabolic Engineering

Journal of Zhejiang University SCIENCE (JZUS)

The International Journal

Discrete Event Dynamic System

IEEE Transactions on Dielectrics and Electrical Insulation

*Proposal Reviewer*

Danish Council for Independent Research

FCT Portugal

European Community

EPSRC

National Science Foundation CAREER Panel, ITR Panel, EFRI Panel, CDI Panel, IGERT Panel, Cyberinfrastructure

Petroleum Research Fund (ACS).

*EDITORIAL ACTIVITY*

Editorial Board of Operational Research, Springer

Editorial Advisory Board of Computers and Chemical Engineering – Elsevier

Editorial Advisory Board of Industrial Engineering and Chemistry Research – ACS Journal

Editorial Advisory Board of Energy and Fuels

Editorial Board of the Operational Research: An International Journal (ORIJ)

**FEATURED WORK**

Featured on Global Medical Discovery “Dynamics of hepatic gene expression profile in a rat cecal ligation and puncture model.” In J Surg Res. 2012 Aug;176(2):583-600.

Spotlight feature Biotechnology and Bioengineering “Effects of glucose and insulin on HepG2-C3A cell metabolism”, 2010.

Chemical Engineering Progress "Simplifying Kinetic Models" **97**:11, 16, November 2001.

**CITATIONS- IMPACT (March 2016)**

No of citations: 6156; h-index 42 (source: Google Scholar)

No of citations: 3547; h-index 28 (source: Web of Science: Science Citation Index)

**BOOKS AUTHORSHIP**

1. M. Ierapetritou and R. Ramachandran. Process Simulation and Data Modeling in Solid Oral Drug Development and Manufacture, Series: Methods in Pharmacology and Toxicology; Springer, 2016 (ISBN 978-1-4939-2996-2; 383 pages).
2. G. Saharidis, C.A. Floudas and M. G. Ierapetritou. Annals of Operation Research Special Issue Benders Decomposition and Its Application in Engineering, Volume 210, Issue 1, Springer, November 2013.
3. M. Ierapetritou, M. Bassett, E. N. Pistikopoulos. FOCAPO 2008 - Selected Papers from the Fifth International Conference on Foundations of Computer-Aided Process Operations, Publisher: Shannon: Elsevier Ireland Ltd., Volume 33, Issue 12, Pages 1905-2164 (10 December 2009).

**REFEREED JOURNAL PUBLICATIONS AND BOOK CHAPTERS**

1. Zhao, Hao; Ierapetritou, Marianthi G.; Rong, Gang. Production planning optimization of an ethylene plant considering process operation and energy utilization. Computers and Chemical Engineering **87**, 1-12, 2016.
2. Zhuge, J., Ierapetritou, M. A Decomposition Approach for the Solution of Scheduling including Process Dynamics of Continuous Processes. Ind. & Eng. Chem Research **55**, 1266-1280, 2016.
3. Ierapetritou, M., Ramachandran, R. Process Simulation and Data Modeling in Solid Oral Drug Development and Manufacture Preface. Methods in Pharmacology and Toxicology. V-VI, 2016.
4. Singh, R., Velazquez, C., Sahay, A., Ierapetritou, MG., Ramachandran, R. Advanced Control of Continuous Pharmaceutical Tablet Manufacturing Processes. Process Simulation and Data Modeling in Solid Oral Drug Development and Manufacture. Methods in Pharmacology and Toxicology.191-224, 2016.
5. Rogers, Amanda; Ierapetritou, Marianthi G. Mathematical Tools for the Quantitative Definition of a Design Space. Process Simulation and Data Modeling in Solid Oral Drug Development and Manufacture. Methods in Pharmacology and Toxicology. 225-279, 2016.
6. Escotet-Espinoza, S., Rogers, A., Ierapetritou, MG. Optimization Methodologies for the Production of Pharmaceutical Products. Process Simulation and Data Modeling in Solid Oral Drug Development and Manufacture. Methods in Pharmacology and Toxicology. 281-309, 2016.
7. Shah, N., Sahay, N., Ierapetritou, M. Efficient Decomposition Approach for Large-Scale Refinery Scheduling. Ind. & Eng. Chem. Res. **54**, 9964-9991, 2015.
8. Singh, R., Muzzio, F., Ierapetritou, M., Ramachandran, R. Plant-wide control of a continuous tablet manufacturing for Quality-by-Design based pharmaceutical manufacturing. Computer Aided Chemical Engineering. **37**, 2177-2182, 2015.
9. Singh, R., Ierapetritou, M., Ramachandran, R. The Scope of PAT in Real-Time Advanced Control of Tablet Quality. European Pharmaceutical Review. **20**, 76-80, 2015.
10. Singh, R., Sen, M., Muzzio, F., Ierapetritou, M., Ramachandran, R. Integrated Moving Horizon based Real Time Optimization and Hybrid MPC-PID Control of a Direct Compaction Continuous Tablet Manufacturing Process. Journal of Pharmaceutical Innovation. **10**, 233-253, 2015.
11. Rogers, A., Ierapetritou, M., Feasibility and flexibility analysis of black-box processes Part 1: Surrogate-based feasibility analysis, Chemical Engineering Science, **137**, 986-1004, 2015.
12. Rogers, A., Ierapetritou, M., Feasibility and flexibility analysis of black-box processes Part 2: Surrogate-based flexibility analysis, Chemical Engineering Science, **137**, 1005-1013, 2015
13. Zhuge, J., Ierapetritou, M., An integrated framework for scheduling and control using fast model predictive control, AIChE Journal, **61**, 3304-3319, 2015
14. Shah, N., Sahay, N., Ierapetritou, M., Efficient Decomposition Approach for Large Scale Refinery Scheduling, Ind. & Eng. Chem. Res., **54**(41), 9964-9991, 2015
15. Singh, R., Roman-Ospino, A., Romanach, R., Ierapetritou, M., Ramachandran, R., Real time monitoring of blend bulk density for coupled feed-forward/feed-back control of a continuous direct compaction tablet manufacturing process, International Journal of Pharmaceutics, **495**(1), 612-625, 2015.
16. Shah, N., Ierapetritou, M., Lagrangian decomposition approach to scheduling large-scale refinery operations, Computers & Chemical Engineering, 79, 1-29, 2015
17. Sahay, N., Ierapetritou, M., Flexibility assessment and risk management in supply chains, AIChE Journal, **61**, 4166-4178, 2015
18. Lin, Z., Ierapetritou, M., Nikolakis, V., Phthalic anhydride production from hemicellulose solutions: Technoeconomic analysis and life cycle assessment. AIChE Journal, **61**, 3708-3718, 2015
19. Singh, R., Ierapetritou, M., Muzzio, F., Ramachandran, R. A combined feed-forward/feed-back control system for a QbD based continuous tablet manufacturing process. Processes, **3**(2), 339-356, 2015.
20. Escotet-Espinoza, M. S., Singh, R., Sen, M., O' Connor, T., Lee, S., Chatterjee, S., Ramachandran, R., Ierapetritou, M., Muzzio, F. Flowsheet Models Modernize Pharmaceutical Manufacturing Design and Risk Assessment. Pharmaceutical Technology.**39**, 34-42, 2015.
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22. Lin, Z., Nikolakis, V., Ierapetritou, M. Life Cycle Assessment of Biobased p-Xylene Production. Industrial & Engineering Chemistry Research. **54**(8), 2366-2378, 2015.
23. Zhuge, J., Ierapetritou, M. Integration of scheduling and control for batch processes using multi-parametric model predictive control. AIChE Journal. **60**, 3169, 2014.
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28. Nguyen, N., Mattick, J., Yang, Q., Orman, M., Ierapetritou, M., Berthiaume, F., Androulakis, I. Bioinformatics analysis of transcriptional regulation of circadian genes in rat liver. BMC Bioinformatics. **15**:83, 1-14, 2014.
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118. Ierapetritou, M.G., N. Sharma, H. Yang, S. A. Guzikowski, M. L. Yarmush, and C. M. Roth. Optimization and Control of Metabolic Activities in Hepatocytes. *AIChE Annual Meeting*, Cincinnati, Nov 2005, paper 246f.
119. Tischfield, S.E., C. M. Roth, M.G. Ierapetritou, and S. Guzikowski. A Bioinformatics Approach to Modeling Cytochrome P450 Gene Regulation in Hepatocytes. *AIChE Annual Meeting*, Cincinnati, Nov 2005, paper 93s.
120. Sharma, N. H. Yang, C.M. Roth, M. L. Yarmush, and M.G. Ierapetritou. Optimal Metabolic Control of Hepatocyte Function. Foundations of Systems Biology in Engineering (FOSBE) 2005 Santa Barbara, CA, August 2005.
121. Goyal, V. and M. G. Ierapetritou. Stochastic MINLP Optimization using Simplicial Approximation. European Symposium on Computer Aided Process Engineering (ESCAPE) 15, Barcelona, Spain, May 2005.
122. Banerjee, I. and M.G. Ierapetritou. A Novel Feasibility Analysis Approach Based on Dimensionality Reduction and Shape Reconstruction. ESCAPE 15, Barcelona, Spain, May 2005.
123. Banerjee, I. and M.G. Ierapetritou. An Adaptive Reduction Scheme to Develop Flexible Reduced Chemistry Models for Reactive Flow Simulations. ESCAPE 15, Barcelona, Spain, May 2005.
124. Davis, E. and M.G. Ierapetritou. Adaptive Optimization of Noisy Black-Box Functions Inherent In Microscopic Models. ESCAPE 15, Barcelona, Spain, May 2005.
125. Banerjee, I. and M.G. Ierapetritou. Feasibility evaluation of nonconvex systems using shape reconstruction techniques. *AIChE Annual Meeting*, Austin, Nov 2004.
126. Banerjee, I. and M.G. Ierapetritou. CFD modeling of combustion systems using an adaptive chemistry scheme. *AIChE Annual Meeting*, Austin, Nov 2004.
127. Portillo P, M. G. Ierapetritou and F. Muzzio. Development of Control Strategies for Blending Operations in Pharmaceutical Processes. *AIChE Annual Meeting*, Austin, Nov 2004.
128. Sharma, N., M.G. Ierapetritou, and M.L. Yarmush. Novel Quantitative Tools for Engineering Analysis of Hepatocyte Cultures used in Bioartificial Liver System. *AIChE Annual Meeting*, Austin, Nov 2004.
129. Sharma, N., A. Bindal, M. Benson, M.G. Ierapetritou, and J. Khinast. Dynamics and Stability Analysis of a Mixed Micro-organism environment in which a bacteria degrades a Polycyclic Aromatic Hydrocarbon contaminant. *AIChE Annual Meeting*, Austin, Nov 2004.
130. Jia, Z., and M.G. Ierapetritou. Scheduling Under Uncertainty Using MILP Sensitivity Analysis. MPO006, ESCAPE 14, Lisbon, 2004.
131. Jia, Z. and M.G. Ierapetritou. Incorporation of Flexibility in Scheduling Decision-Making. PSE, China, January 2004.
132. Goyal, V. and M.G. Ierapetritou. Stochastic Framework For Flexible Module Manufacturing. SPIp010, ESCAPE 14, Lisbon, May 2004.
133. Sharma, N., M.G. Ierapetritou and M.L. Yarmush. Novel Quantitative Tools for Engineering Analysis of Hepatocyte Cultures used in Bioartificial Liver Systems. NCp015, ESCAPE 14, Lisbon, May 2004.
134. Jia, Z. and M.G. Ierapetritou. Scheduling with Parameter Uncertainty Based on Sensitivity Analysis. ESCAPE 14, Lisbon, May 2004.
135. Jia, Z. and M.G. Ierapetritou. Short-term Scheduling Under Uncertainty Using MILP Sensitivity Analysis. *AIChE Annual Meeting*, San Francisco, Nov 2003.
136. Wu D., and M.G. Ierapetritou. Hierarchical Approach for Production Planning and Scheduling Under Uncertainty Using Continuous-Time Formulation. *AIChE Annual Meeting*, San Francisco, Nov 2003.
137. Banerjee, I. and M.G. Ierapetritou. A Framework for Coupling Adaptively Reduced Chemistry with Detailed Flow Field Models. *AIChE Annual Meeting*, San Francisco, Nov 2003.
138. Goyal, V., and M.G. Ierapetritou. Effective Convex Hull Approximation Approach for MINLP Optimization. *AIChE Annual Meeting*, San Francisco, Nov 2003.
139. Ierapetritou M.G., and V. Goyal. Design of Flexible Module Manufacturing. *AIChE Annual Meeting*, San Francisco, Nov 2003.
140. Ierapetritou, M.G., S. Balakrishnan, A. Makeev, I. Kevrekedis and A. Armaou. Coarse Computational Optimization Using Time-steppers. *AIChE Annual Meeting*, San Francisco, Nov 2003.
141. Jia, Z. and M.G. Ierapetritou. Efficient Spatial Decomposition and Scheduling of Refinery Operations Based on Continuous Time Formulation. *AIChE Annual Meeting*, Indianapolis, Nov 2002.
142. Androulakis, I.P. J.M. Grenda, J.W. Bozzelli, and M.G. Ierapetritou. Uncertainty Propagation Analyses of Chemically Activated Reaction Pathways in Gas Phase Compbustion Systems. *AIChE Annual Meeting*, Indianapolis, Nov 2002.
143. Ierapetritou M.G., and V. Goyal. Process Synthesis Optimization Based on Market Data Analysis. AIChE Annual Meeting, Indianapolis, Nov 2002.
144. Banerjee, I. and M.G. Ierapetritou. Adaptive Kinetic Model Reduction Considering Micromixing Effects. AIChE Annual Meeting, Indianapolis, Nov 2002.
145. Banerjee, I. and M.G. Ierapetritou. Design Optimization under Parameter Uncertainty for General Black Box Models. AIChE Annual Meeting, Indianapolis, Nov 2002.
146. Ierapetritou M.G., and V. Goyal. A Novel Framework for Evaluating the Feasibility/Operability of General Non-Convex Processes. Annual Meeting, Indianapolis, Nov 2002.
147. Ierapetritou M.G., and V. Goyal, A Simpicial Approximation Approach to Quantify Process Feasibility. *AIChE Annual Meeting*, Reno, Nov 2001.
148. Wu D., and M.G. Ierapetritou, Using Decomposition Techniques to Solve Short-Term Scheduling Problem. *AIChE Annual Meeting*, Reno, Nov 2001.
149. Balakrishnan S., J. Benarjee and M.G. Ierapetritou, Coping with Uncertainty in the Description of Complex Kinetic Mechanisms. *AIChE Annual Meeting*, Reno, Nov 2001.
150. Ierapetritou M.G., An Efficient Approach to Quantify Process Feasibility based on Convex Hull Evaluation, ESCAPE11, Denmark, May 2001.
151. Hauksdottir A.S., and M.G. Ierapetritou, Simultaneous Decoupling and Pole Placement without Cancelling Invariant Zeros *2001 American Control Conference*, April 2001.
152. Ierapetritou M.G., A. Sirdeshpande and I.P. Androulakis, Incorporation of Uncertainty into Complex Kinetic Mechanisms. *AIChE Annual Meeting*, Los Angeles, Nov 2000.
153. Ierapetritou M.G., A New Approach for Quantifying Process Feasibility. *AIChE Annual Meeting*, Los Angeles, Nov 2000.
154. Ierapetritou M.G., J. G. Khinast and A. Bindal. A Novel Domain Decomposition Approach for Complex Multiscale Dynamic Systems. *AIChE Annual Meeting*, Los Angeles, Nov 2000.
155. Ierapetritou M.G., J. Vin. A Systematic Approach to Improve Scheduling Performance under Uncertainty. *AIChE Annual Meeting*, Los Angeles, Nov 2000.
156. Ierapetritou M.G., A. Sirdeshpande and I.P. Androulakis. Kinetic Model Reduction Considering System Variability. *AIChE Annual Meeting*, Los Angeles, Nov 2000.
157. Ierapetritou M.G., A. Sirdeshpande and I.P. Androulakis, Incorporation of Uncertainty into Complex Kinetic Mechanisms. *AIChE Annual Meeting*, Dallas, Nov 1999.
158. Floudas C.A, M.G. Ierapetritou and Z.H. Gumus, Global Optimization in Design under Uncertainty: Feasibility Test and Flexibility Index Problems. *AIChE Annual Meeting*, Dallas, Nov. 1999.
159. Hauksdottir A.S. and M.G. Ierapetritou, Simultaneous Decoupling and Pole Placement without Cancelling Invariant Zeros. *AIChE Annual Meeting*, Dallas, Nov. 1999.
160. Ierapetritou M.G., Reactive Scheduling under Uncertainty Considerations for Multiproduct Batch Plants. *AIChE Annual Meeting*, Dallas, Nov. 1999.
161. Switzer C.A., I.Massry, D.H.Berler, M.G.Ierapetritou and D.Kosson, Field Application of a Multi-Pore Regime Mass Transport Model to Evaluate Soil-Vapor Extraction and Air Sparging Remediation of Trichloroethylene Contamination. *AIChE Annual Meeting*, Dallas, Nov. 1999.
162. Ierapetritou, M.G, and I.P. Androulakis, Uncertainty Considerations in the Reduction of Chemical Reaction Mechanisms *FOCAPD*, Colorado, July 1999.
163. Ierapetritou, M.G, T. S. Hene, and C.A. Floudas, Continuous-Time Formulation for Short-Term Scheduling with Multiple Intermediate Due Dates *ESCAPE 9*, Budabest, May 1999.
164. Ierapetritou, M.G, and C.A. Floudas, Effective Continuous-Time Formulation for Short-Term Scheduling: Multiple Intermediate Due Dates *AIChE Annual Meeting*, Miami Beach, Nov 1998.
165. Ierapetritou, M.G, C.A. Floudas, S. Vansantharajan and A.S. Gullick, A Decomposition Based Approach for Optimal Location of Vertical Wells *AIChE Annual Meeting*, Miami Beach, Nov 1998.
166. Ierapetritou, M.G, and C.A. Floudas, Short-Term Scheduling: New Mathematical Models vs Algorithmic Improvements ESCAPE8 conference, Bruge, May 1998.
167. Ierapetritou M.G. and C.A. Floudas, Effective Continuous-Time Formulation for Short-Term Scheduling: Multipurpose Batch Processes *AIChE Annual Meeting*, Los Angeles November 1997.
168. Androulakis I.P., M. G. Ierapetritou, N. N. Nayak, D.S. Monos and C.A. Floudas A Predictive Method for the Evaluation of Peptide Binding in Pocket 1 of HLA-DRB1 via Global Minimization of Energy Interactions *AIChE Annual Meeting*, Los Angeles November 1997.
169. Klepeis J.L., I.P. Androulakis, M.G. Ierapetritou and C.A. Floudas Predicting Solvated Peptide Conformations via Global Minimization *AIChE Annual Meeting*, Los Angeles November 1997.
170. Epperly T., M.G. Ierapetritou and E.N. Pistikopoulos, On the global and efficient solution of stochastic batch plant design problems *AIChE Annual Meeting,* Chicago November 1996.
171. Ierapetritou M.G., J. Acevedo and E.N. Pistikopoulos, Stochastic Optimization of Manufacturing Systems Under Uncertainty *AIChE Annual Meeting*, Chicago November 1996.
172. Pistikopoulos, E.M, T.V. Thomaidis, M. G. Ierapetritou and A. Melin, Flexibility, Reliability and Maintenance considerations in Batch Plant Design *ESCAPE6*, Rhodes, May 1996.
173. Ierapetritou, M.G. and E.N. Pistikopoulos, Design of Multiproduct Batch Plants with Uncertain Demands. *ESCAPE5*, Bled, June 1995.
174. Visweswaran V., Floudas C.A., Ierapetritou, M.G. and Pistikopoulos E.N., A Decomposition Based Global Optimization Approach for Bi-Level Convex Programming *Problems Global Optimization: Computational methods and Applications*, Princeton University, April 1995.
175. Ierapetritou, M.G. and E. N. Pistikopoulos, Design of Multiproduct Batch Plants under Uncertainty: A Global Optimization Approach. *AIChE Annual Meeting*, San Francisco November 1994.
176. Ierapetritou, M.G. and E. N. Pistikopoulos, An Optimization Approach for Process Engineering Problems under Uncertainty. *PSE4*, Korea, May 1994.
177. Pistikopoulos, E.N. and M. G. Ierapetritou, Optimization of Production and Capacity Planning under Uncertainty*. TIMS/ORSA*, Boston, April 1994 (Chairman of the Session ``Models for Production Capacity Planning'').
178. Ierapetritou, M.G. and E. N. Pistikopoulos, Long Range Planning under Uncertainty. *ESCAPE4*, Dublin, March 1994.
179. Ierapetritou, M.G. and E. N. Pistikopoulos, Production and Capacity Planning under Uncertainty. *IChemE94* London, January 1994.
180. Ierapetritou, M.G., E.N. Pistikopoulos and C.A. Floudas, Operational Planning Under Uncertainty. *ESCAPE3*, Graz, June 1993.
181. Ierapetritou, M.G. and E. N. Pistikopoulos, Measuring Decision Flexibility and Economic Risk in Operational Planning. *IFORS 93*, Lisbon, July 1993.
182. Ierapetritou, M.G. and E. N. Pistikopoulos, Integration of Decision Flexibility and Economic Risk in Operational Planning. *IChemE93* Birmingham, January 1993.

**INVITED PRESENTATIONS**

1. Invited speaker at the Fields Institute of the University of Toronto. Process Operations under Uncertainty, March 29th 2016.
2. Invited seminar speaker, Department of Chemical Engineering, Penn State University, May 5th, 2016
3. Invited seminar speaker, School of Chemical Engineering, Oklahoma State University, March 1st 2016.
4. Invited speaker, A General Framework of Process Design and Evaluation of Renewable Production of Chemicals from Biomass Feedstocks, Rutgers Energy Institute, April 22nd 2016.
5. Advanced Pharmaceutical Manufacturing: A New Frontier for Process Systems Engineering, Princeton University, Department of Chemical and Biological Engineering, September 30th, 2015.
6. Advanced Pharmaceutical Manufacturing: A New Frontier for Process Systems Engineering, CMU, Department of Chemical Engineering, September 24th, 2015.
7. Invited Keynote Speaker “Decision Making Across Different Scales: From Process Control to Supply Chain Management”, 3rd Olympus International Conference on Supply Chains, Athens, Greece, November 7-8, 2015.
8. Invited Keynote speaker at Division of Particulate Preparations and Design (PPD) of The Society of Powder Technology, Japan (SPTJ), Annual Symposium, October 22-23, 2015.
9. Invited Webinar AIChE CAST Division, Modeling for Advanced Pharmaceutical Manufacturing, Marianthi Ierapetritou, May 19, 2015, 11 AM EDT, Announcement: <http://goo.gl/QMWdjD>, Join Webinar: <https://goo.gl/z9VI8N>
10. Decision Making Across Different Scales: From Process Control to Supply Chain Management, McMaster Advanced Control Consortium (MACC) Workshop, May 12-14, 2015.
11. Modeling and Optimization of Continuous Pharmaceutical Manufacturing Processes, Keynote Speaker, PSE2015/ESCAPE25, Copenhagen, May 31-June 4, 2015.
12. Taking Continuous Processing from Good to Great: The Application of Advanced Process Controls and Real-Time Analytics. 50th AAPS Arden Conference: Continuous Manufacturing of Solid Oral Drug Products, Baltimore, March 16-18, 2015.
13. A general framework of process design and evaluation of renewable production of chemicals from biomass feedstocks, QAFCO-Texas A&M at Qatar Conference 2015.
14. Challenges and opportunities in pharmaceutical manufacturing modeling and optimization, BMS, Syracuse, March 2014.
15. Challenges and Opportunities in Pharmaceutical Manufacturing Modeling and Optimization, Plenary Talk, FOCAPD 2014.
16. Process Systems Approaches to Design of Pharmaceutical Products and Processes, Imperial College, April 2013.
17. Design and Optimization of Pharmaceutical Products and Processes: Challenges and Opportunities, Technical University of Denmark, April 2013.
18. Design and Optimization of Pharmaceutical Products and Processes: Challenges and Opportunities, ETH, Zurich, March 2013.
19. Challenges and Opportunities in Addressing Problems of High Complexity in Process Industry, ETH, Zurich, March 2013.
20. Process Operation and Effects of Uncertainty in Decision Making. Eli Lilly, Indianapolis, January 2013.
21. Integration of Scheduling with Control and the Effects of Uncertainty in Short Term Decisions. International Seminar of Planning and Scheduling, Rio de Janeiro, Oct 2012.
22. Process simulation and Optimization of Pharmaceutical Processes. University of Connecticut, March 2012.
23. Optimization of Process Design and Operations of Pharmaceutical Systems. Columbia University, March 2012.
24. Computer-aided design and analysis of continuous pharmaceutical manufacturing processes, National Technical University of Athens, October 2011.
25. Dynamic flowsheet simulation of integrated continuous pharmaceutical manufacturing processes. 5th International Graz Congress on Pharmaceutical Engineering, Graz, Austria, September 2011
26. Systems Approaches to Analyze Complex Engineering Problems. Illinois Institute of technology, April 2010.
27. Going from Simple to Complex and back to Simple: The process systems paradigm. Imperial College, London, March 2010.
28. Integration of Planning and Scheduling and Consideration of Uncertainty in Process Operations. Keynote lecture, 20th International Symposium of Process Systems Engineering (PSE), Brazil, August 2009.
29. Systems approaches for analyzing complex process engineering problems. Carnegie Mellon University, March 2009.
30. Analysis of complex reaction networks using mathematical programming approaches Pan American Advanced Studies Institute Program on Process Systems Engineering (PASI), Mar Del Plata, Argentina, August 2008.
31. Systems Approaches for Analyzing Complex Process Engineering Problems. Princeton University, February 2008.
32. Process Systems Engineering Across Different Scales. Rice University, November 2007.
33. Analysis of Complex Kinetic Networks Using Systems Approaches. Lehigh University, March 2007.
34. Mathematical programming techniques to analyze complex reaction networks. CCNY, May 2007.
35. Uncertainty in Process Scheduling using Parametric Programming. Co-author with Li, Z., INFORMS (Institute for Operations Research and the Management Science) 2006.
36. Frameworks for Analyzing Complex Networks from Combustion to Metabolism: Effects of Uncertainty, MIT, March 2006.
37. A Systems Approach for Analyzing Complex Processes. University of Massachusetts at Amherst, March 2006.
38. Mathematical Programming as a tool for Learning. Tufts University, May 2006.
39. Modeling Reactive Flows using Adaptive Chemistry. Northeastern University, February 2006.
40. Short term scheduling of Chemical Processes, Keynote lecture ADCHEM (Advanced Control of Chemical Processes) Gamado, Brazil, 2006.
41. Process Design and Operations: Modeling and Optimization. 12th Symposium in Chemical Engineering, Puerto Rico, October 2005.
42. Uncertainty issues in process design and operations. Texas A&M, November 2005.
43. Combustion modeling including detailed adaptive chemistry. Lab for Surface Modification, Physics Departments, Rutgers University, 2005.
44. Uncertainty analysis for process design and operations. Pan American Advanced Studies Institute Program on Process Systems Engineering (PASI), Iguassu Falls, Brazil, August 2005.
45. Adaptive Kinetic Model Reduction Framework Considering Micromixing Effects. Imperial College, London, UK, May 2004.
46. Women in Engineering: The Myth and Reality. Society of Women Engineers, Rutgers University, April 2004.
47. Development of an Adaptive Chemistry Model for Reactive Flow Simulations. University of Rhode Island, March 2004.
48. Process Operations in Dynamic Environment. University of Kansas, February 2004.
49. Process Synthesis and Design within a Dynamic Environment. University of Southern California, February 2004.
50. Design of Flexible Module-Based manufacturing. New Jersey Institute of Technology, October 2003.
51. Modeling and Optimization of Process Design and Operations. ExxonMobil, Houston, August 2003.
52. Product Portfolio and Capacity Planning Under Uncertainty. Purdue University, February 2003.
53. Product and Process Design Optimization under Uncertainty**.** Ecole Polytechnique de Montreal, Canada, March 2003.
54. Optimization of Process Design and Operations Including Uncertainty. ABB July 2002.
55. Uncertainty Quantification and its Uses. Brooklyn Polytechnic, April 2002.
56. Efficient Scheduling of Refinery Operations. Honeywell Hi-Spec Solutions, Toronto, Canada, July 2002.
57. Developing Efficient Approaches to Quantify and Manage Uncertainty in Process Operations. City College of New York, October 2001.
58. Decomposition Approaches for the Efficient Solution of Short-Term Scheduling Problem. 2nd Pan American Workshop on Process Systems Engineering, Brazil Sep 19-21, 2001.
59. Short-term Scheduling under Uncertainty: Issues and Answers. Plenary Speaker, ENPROMER 2001, 3rd Mercosur Congress on Process Systems Engineering, Argentina, September 16-20, 2001.
60. Developing Efficient Approaches to Quantify and Manage Uncertainty in Process Operations, University of Iceland, May 2001.
61. “NSF Young Faculty Panel Discussion”. AIChE Annual Meeting, Los Angeles, 2000.
62. Women in Academia the myth and the reality. Panel Discussion. Princeton University, April 2000.
63. Process Operations in an Uncertain Environment. Rutgers Center of Operations Research (RUTCOR), March 2000.
64. Parameter Variability in Plant Design and Synthesis. BOC Gases Technical Group, October 1998.
65. Process Design and Operations: Uncertainty and Scheduling. Department of Chemical Engineering, Carnegie Melon University, April 1998.
66. Uncertainty in Process Systems Engineering. Department of Chemical Engineering, Lehigh University, April 1997.
67. Uncertainty in Process Design and Operations. Department of Chemical Engineering, University of Arizona, Tucson, June 1997.
68. Process Design and Operations: Uncertainty and Scheduling. Department of Chemical Engineering, Berkeley, CA, April 1997.