

CURRICULUM VITAE

MARIANTHI G. IERAPETRITOU

Department of Chemical & Biochemical Engineering, RUTGERS UNIVERSITY

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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

- 2017- present Distinguished Professor
Department of Chemical & Biochemical Engineering Rutgers University, Piscataway, NJ
- 2016- present Special Government Employee (SGE) Consultant to the FDA under the Advisory Committee for Pharmaceutical Science and Clinical Pharmacology (ACPS-CP)
- 2013- present Chair
Department of Chemical & Biochemical Engineering Rutgers University, Piscataway, NJ
- 2009- 2017 Professor
Department of Chemical & Biochemical Engineering Rutgers University, Piscataway, NJ
- 2004-2009 Associate Professor
Department of Chemical & Biochemical Engineering Rutgers University, Piscataway, NJ
- 2005-2006 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.

ACCOMPLISHMENTS

HONORS –AWARDS

- 2016 **Computing in Chemical Engineering from American Institute of Chemical Engineers (AIChE), Computing And Systems Technology (CAST) division**
- 2016 **Fellow of American Institute of Chemical Engineers**
- 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. Eli-Lilly for 2016-2017 (\$100,000) “Modeling and Optimization of Bioreactors for the production of Biologics” (single PI)
8. GSK for 2016-2017 (\$80,000) “Integration of PAT and control strategies for GSK continuous platform” (PI, co-PI: Rohit Ramachandran)
9. BMS 2015-2016 (\$70,000) “Modeling Development for CDC in BMS” (PI)
10. 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)
11. 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)
12. PSE 2014-2015 (\$80,000) “Material property prediction, database implementation and model validation” (PI, co-PIs Fernando Muzzio, Rohit Ramachandran)
13. FDA 2014-2017 (\$500,000) “Flowsheet Modeling and Analysis Tools for Solid Base Pharmaceutical Products Manufacturing” (PI, co-PIs Fernando Muzzio, Rohit Ramachandran)
14. 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 Vladimiro Nikolakis and Dion Vlachos University of Delaware)
15. NSF Award 2012-2016 (\$342,575) “Integration of scheduling and control using closed loop implementation” (single PI)
16. NSF Award 2010-2015 (\$343,901) “Innovative methodologies for integrated planning and scheduling and industrial applications” (PI)
17. Office of Naval Research 2010-2013 (\$328,128) “Modeling complexities in biofuel combustion” (PI, co-PI Ioannis Androulakis)
18. NSF Award 2009-2012 (\$1,800,000) “Commercializing of Continuous Pharmaceutical Manufacturing Technology” (PI, co-PIs: Fernando Muzzio, Gintaras Reklaitis, James Donald Litster (Purdue), Raj Dave (NJIT))

19. NSF Graduate Research Supplement 2009-2010 (\$53,938) (PI)
20. NSF REU supplement 2009 (\$12,000)
21. NSF Graduate Research Supplement 2008-2009 (\$46,871) (PI)
22. 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)
23. NSF Award 2007-1010 (\$316,317) “Reactive Flow Simulation Using An Adaptive Chemistry Framework” (co-PI with Ioannis Androulakis (PI)).
24. NSF Award 2006-2009 (\$399,572) “Systematic Mathematical Strategies for Stochastic Modeling and Uncertainty in Production Planning and Scheduling” (PI).
25. Office of Naval Research 2006-2009 (\$270,782) “Efficient Characterization of Combustion Fuels” (PI, co-PI Ioannis Androulakis)
26. 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)
27. 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)
28. 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).
29. 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).
30. Office of Naval Research 2003-2006 (\$213,000) “Development of an Adaptive Chemistry Model for Combustion Systems Considering Micromixing Effects” (PI)
31. NSF Award 2002-2005 (\$200,000) “Design of Flexible Reaction Models” (PI)
32. CAREER NSF Award 2000-2004 (\$308,803) “Process Operations: Decision-Making under Uncertainty” (PI).
33. 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)
34. ACS-PRF Type G "Starter" Grant 2000-2002 (\$25,000) “Incorporation of Uncertainty into Complex Kinetic Mechanisms” (PI).
35. New Jersey Space Consortium Grant (NASA) (\$25,000) “Order Reduction of Complex Kinetic Mechanisms Considering Micro-mixing Effects” (PI).
36. NSF International Division Grant, 0071505 (\$13,800) “Multiple Inputs - Multiple Outputs (MIMO) Control Design” (PI).
37. BOC 2000-2001 (\$43,000) to perform research on novel optimization approaches for design under uncertainty (PI).
38. Honeywell Hi-Spec Solutions 1999-2000 (\$25,000) Investigate the application of continuous time formulation for refinery scheduling (PI).
39. Union Carbide 1999-2000 (\$5,000) Optimization of Amerchol Plant operations, (PI).

40. Unisys 1999-2002 (\$278,000) Nationwide Excellence Centers equipped with initial computing network (co-PI with Professor Manish Parashar).
41. Rutgers University 1999-2000 (\$48,000) Modernize the graduate curricula in Chemical Engineering (co-PI along with Professors Narashiman, Khinast, Glasser, and Moghe).
42. Rutgers University 1999-2002 (\$91,400) Advance instructional technology for engineering education (co-PI together with Professors Lehman, Norris, Denda, and Buttner).
43. Rutgers University 1999-2000 (\$1,500) Initialize research efforts towards the application of optimization methods in environmental treatment systems (PI).
44. Rutgers University 2000-2001 (\$1,500) Initialize research efforts towards the consideration of uncertainty into complex kinetic models (PI).
45. Undergraduate Research Fellowship 2001-2002 (\$1,500) to do research in the area of scheduling of batch processes.
46. Undergraduate Research Fellowship 2002-2003 (\$1,500) to do research in the area of refinery scheduling.

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
1999-2000	Advanced Transport Phenomena: Graduate level Core Course:
1999	Process Systems Engineering: Graduate level Course

MENTORING GRADUATE & UNDERGRADUATE STUDENTS AND POSTDOCTORAL SCHOLARS

Assistant Research Professor

Ravendra Singh (12/2011- Present)

Research Area: Process Integration and Control of Pharmaceutical Processes.

Postdoctoral Scholars Supervised

Andres Roman (04/2016 – Present)

Research Area: PAT technologies for continuous pharmaceutical manufacturing

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

Ou Yang	Since January 2017 Thesis Title: Advanced Biopharmaceutical Manufacturing
Atharv Bosekar	Since September 2016 Thesis Title: Black Box Optimization
Abhay Athaley	Since January 2016 Thesis Title: Optimization of Biomass Conversion to Chemicals
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 uncertainty
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
Parham Farzan	Since May 2015 Ph.D. expected 2020 Modeling of Bio-pharmaceutical Manufacturing processes

Master Students

Siddharth Prabhu	Since September 2016 Thesis Title: Techno-economic analysis of biopharmaceutical production
Praneeth Annam	Since September 2015 Thesis Title: Life Cycle Analysis of alternative routes for Biomass Conversion to Chemicals
Shu Yang	Since September 2015 Thesis Title: Modeling and optimization of bioreactors

Past Graduate Students Advised/Co-Advised

- Ph.D.
1. Nihar Sahay
Thesis Title
Ph.D. December 2015
Modeling of Sustainable Chemical Supply Chain
 2. Zhaojia Lin
Thesis Title
Ph.D. September 2015
Modeling and Optimization of Chemical and Fuel production from Biomass
 3. Jinjun Zhuge
Thesis Title
Ph.D. May 2015
Integration of Process Scheduling and Control
 4. Nikisha Shah
Thesis Title
Ph.D. May 2015
Decomposition Approaches for Enterprise-wide Optimization in Process Industry
 5. Amanda Rogers
Thesis Title
Ph.D. December 2014
Process Systems Engineering Methods for the Development of Continuous Pharmaceutical Manufacturing Processes
 6. Shuliang Zhang
Thesis Title
Ph.D. December 2013 (co-advised by Prof. I.P. Androulakis)
Combustion Characterization and Kinetic Modeling in Reactive Flow Simulations
 7. Fani Boukouvala
Thesis Title
Ph.D. November 2012 (co-advised by Prof. F. Muzzio)
Integrated Simulation and Optimization of Continuous Pharmaceutical Manufacturing
 8. Yijie Gao
Thesis Title
Ph.D. April May 2012 (co-advised by Prof. F. Muzzio)
Modeling and Analysis of Continuous Powder Blending
 9. Aditya Vanarase
Thesis Title
Ph.D. August 2011 co-advised by Prof. F. Muzzio)
Design, Modeling and Real-Time Monitoring of Continuous Powder Mixing Processes
 10. Mehmet Orman
Thesis Title
Ph.D. December 2011 (co-advised by Prof. I.P. Androulakis)
Bioinformatics Analysis of Control Mechanisms of Burn and Sepsis Induced Inflammatory Response
 11. Kai He
Thesis Title
Ph.D. June 2010 (co-advised by Prof. I.P. Androulakis)
Development of Kinetic Model Reduction Framework and its Application in Realistic Flow Simulation
 12. Beverly Smith
Thesis Title
Ph.D. June 2010
Product Design and New Product Portfolio Management Modeled Integration and Optimization
 13. Zukui Li
Thesis Title
Ph.D. May 2010.
Process Operations with Uncertainty and Integration Considerations
 14. Hong Yang
Thesis Title:
Ph.D. December 2009 (co-advised by Prof. C.M.Roth)
Design and analysis of Amino Acid supplementation in Hepatocyte culture using in vitro experiment and mathematical modeling
 15. Eddie Davis
Thesis Title:
Ph.D. August 2008
Modeling and Optimization of Process Engineering Problems Containing Black-Box Systems and Noise
 16. Patricia Portillo
Ph.D. May 2008 (co-advised by Prof. F. Muzzio)

- Thesis Title: Modeling, Control and Optimization of Continuous Pharmaceutical Processes
17. Nripen Sharma Ph.D. January 2007. (co-advised by Prof. M.L.Yarmush)
Thesis Title: Metabolic Engineering of Stem Cell Differentiation
18. Zhenya Jia, Ph.D. September 2005.
Thesis Title: Uncertainty Analysis of Scheduling and Planning Problems.
19. 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.
20. Dan Wu Ph.D. May 2005.
Thesis Title: Unified Frameworks for the Optimal Production Planning and Scheduling.
21. Vishal Goyal Ph.D. Jan 2005.
Thesis Title: Design and Synthesis of Flexible Module-Based Systems.
22. Aditya Bindal Ph.D. October 2004 (co-advised by Prof. J. Khinast)
Thesis Title: Optimization and Stability Analysis of Multidimensional Reacting Systems
- Masters
1. Shishir Vadodaria M.S. July 2016
Thesis Title: Assessment of the Effect of Material Properties on Compressibility of Pharmaceutical Powders
2. Abhay Athaley M.S. July 2016
Thesis Title: Techno-economic Analysis and Life Cycle Assessment of alternative production of chemicals from biomass.
3. Xian Wu M.S. June 2015
Thesis Title: Integration of Scheduling and Control
4. Jierui Liang M.S. June 2015
Thesis Title: Reduction of Combustion Kinetic Modeling
5. Vasilis Niotis M.S. Dec 2011
Thesis Title: Sensitivity Analysis of Complex Systems
6. Amalia Nikolopoulou M.S. Dec 2011
Thesis Title: Hybrid Simulation Based Optimization for Supply Chain Management
7. Steve Guzikowski M.S. January 2008 (co-advised by Prof. C.M.Roth)
Thesis Title: Novel tools towards Improving Hepatocyte Function
8. Tien Phong Huynh M.S. October 2007 (co-advised by Prof. I.P. Androulakis)
Thesis Title: Characterization of Complex Fuels for Combustion Applications
9. Ian Glasgow M.S. Dec 2005 (co-advised by Prof. P. Stuart Ecole Polytechnique de Montreal, Montreal, Canada)
Thesis Title: Optimization Applications in Pulp Paper Process Industry
10. Suhrid Balakrishnan M.S. September 2002 (Co-advised with Prof. P. Georgopoulos).
Thesis Title: Uncertainty considerations in Atmospheric Systems
11. Jeetmanyu Vin M.S. 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
Anwasha 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 English	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

Huiyi Cao	M.S. September 2016 (Primary Advisor: Prof. Ramachandran, CBE Rutgers University) Data Management and Integration for Continuous Pharmaceutical Manufacturing Processes
Anuj V. Prakash	M.S. December 2012 (Primary Advisor: Prof. Ramachandran, CBE Rutgers University) Accelerating population balance model - based particulate process simulations via parallel computing
Sharareh Hashemi	M.S. 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

Nicholas Townsend Haas, Control Design of Continuous Tablet Press, 2016.
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 Mioduszcwski, 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 Decanal Evaluation Committee (DEC)	2013-2014
Henry Rutgers Professor of Earth, Ocean, and Atmospheric Sciences Committee	2015-2016
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
Graduate student Admissions’ Committee	2009-2012
Undergraduate Executive Officer	2004-2008
Advisor Society of Women Engineers (SWE)	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
Chair, School of Engineering Student Discipline Committee	2000-2003
Departmental Admissions and Recruiting Committee	1998-2004
Departmental Qualifying Committee	1998- present

PROFESSIONAL ACTIVITIES

Conference Organizer

- **PSE (Process Systems Engineering) Conference**, 2018 (organized every 3 years – the biggest international conference in the Process Engineering community – more than 600 participants)
- **FOCAPO (Foundations of Computer Aided Process Operations) Conference**, 2008 (organized every 5 years – biggest international conference in the area of Process Operations – more than 200 participants)

Membership in Professional Societies

Elected Fellow of the AIChE – 2016

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 (Vice-Chair).

Supply Chain Management II, AIChE Annual Meeting, November 2004, Austin, TX (Vice-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, Colorado (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 (FOCAPO) /Chemical Process Control (CPC) (FOCAPO-CPC) 2012, 2017

Foundations of Computer Aided process Operations (FOCAPO), 2007

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, Cyber Infrastructure
Petroleum Research Fund (ACS)

EDITORIAL BOARDS

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 (July 2017)

No of citations: 7722; h-index 49 source: Google Scholar

No of citations: 5014; h-index 36 source: Scopus

No of citations: 4149; h-index 33 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 Operations Research Special Issue Benders Decomposition and Its Application in Engineering, Volume 210, Issue 1, Springer, November 2013 (ISSN: 0254-5330 (Print) 1572-9338 (Online) – 432 pages).
3. M. Ierapetritou, M. Bassett, E. N. Pistikopoulos. FOCAPO 2008 - Selected Papers from the Fifth International Conference on Foundations of Computer-Aided Process Operations,

REFEREED JOURNAL PUBLICATIONS AND BOOK CHAPTERS (All Peer Reviewed Full publications)

2017

1. Lin, Z. Wang, J. Nikolakis, V. Ierapetritou, M. Process flowsheet optimization of chemicals production from biomass derived glucose solutions. *Computers and Chemical Engineering*, 102, 258-267, 2017.
2. Sunitha, S. Abhay, A. Weiqing, Z. Ierapetritou, M. Saha, B. Process intensification for cellulosic biorefineries. *CHEMSUCHEM*, 10(12), 2566-2572, 2017.
3. Haas, N. T., Ierapetritou, M., Singh, R. Advanced model predictive feedforward/feedback control of a tablet press. *Journal of Pharmaceutical Innovation*, 12(2), 110-123, 2017.
4. Zhao, H. Ierapetritou, M. Shah, N. Rong, G. Integrated model of refining and petrochemical plant for enterprise-wide optimization. *Computers and Chemical Engineering*, 97, 271-282, 2017.
5. Parham, F. Ierapetritou, M.G. Integrated modeling to capture the interaction of physiology and fluid dynamics in biopharmaceutical bioreactors. *Computers and Chemical Engineering*, 97, 271-282, 2017.
6. Parham, F. Biren, M. Ierapetritou, M.G. Review of the important challenges and opportunities related to modeling of mammalian cell bioreactors. *Aiche Journal*, 63(2), 398-408, 2017.
7. Wang, Z., Ierapetritou, M. A Novel feasibility analysis method for black-box processes using a radial basis function adaptive sampling approach. *Aiche Journal*, 63(2), 532-550, 2017.
8. Farzam, P., Ierapetritou, M. Improving Biopharma Productivity through optimal bioreactor operation. *Pharma Focus Asia*, 2017.
9. Wang, Z. Escotet-Espinoza, Z. M., Ierapetritou, M. Process analysis and optimization of continuous pharmaceutical manufacturing using flowsheet models. *Computers and Chemical Engineering*. DOI: 10.1016/j.compchemeng.2017.02.030.
10. Dias, L. S., Ierapetritou, M. G. From process control to supply chain management: An overview of integrated decision making strategies. *Computers and Chemical Engineering*. DOI: 10.1016/j.compchemeng.2017.02.006.

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11. Sahay, N. Ierapetritou, M. Multienterprise Supply Chain: Simulation and Optimization. *AICHe Journal*, **62** (9), 3392-3403, 2016.
12. Wang, Z., Ierapetritou, M. A Novel Feasibility Analysis Method for Black-Box Processes using a Radial Basis Function Adaptive Sampling Approach. *AICHe Journal*, DOI: 10.1002/aic.15362, In press, 19 pages, 2016.
13. Dias, L.S., Zhuge, J., Ierapetritou, M. Erratum to “An Integrated Framework for Scheduling and Control Using Fast Model Predictive Control”. *AICHe Journal*, **62** (10), 3822-3823

14. Ierapetritou, M., Muzzio, F., Reklaitis, G. Perspectives on the Continuous Manufacturing of Powder-Based Pharmaceutical Processes. *AIChE Journal* **62** (6), 1846-1862, 2016.
15. 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.
16. Rao, R, Yang, Q, Orman, MA., Berthiaume, F., Ierapetritou, MG., Androulakis, IP. Burn trauma disrupts circadian rhythms in rat liver. *International Journal of Burns and Trauma*. 6(2), 12-25, 2016.
17. 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.
18. Ierapetritou, M., Ramachandran, R. Process Simulation and Data Modeling in Solid Oral Drug Development and Manufacture Preface. *Methods in Pharmacology and Toxicology*. Pages:V-VI, Book Preface, 2016.
19. 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.
20. 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.
21. 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.

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22. Shah, N., Sahay, N., Ierapetritou, M. Efficient Decomposition Approach for Large-Scale Refinery Scheduling. *Ind. & Eng. Chem. Res.* **54**, 9964-9991, 2015.
23. 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.
24. 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.
25. 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.
26. 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.

27. 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
28. Zhuge, J., Ierapetritou, M., An integrated framework for scheduling and control using fast model predictive control, *AIChE Journal*, **61**, 3304-3319, 2015
29. Shah, N., Sahay, N., Ierapetritou, M., Efficient Decomposition Approach for Large Scale Refinery Scheduling, *Ind. & Eng. Chem. Res.*, **54**(41), 9964-9991, 2015
30. 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.
31. Shah, N., Ierapetritou, M., Lagrangian decomposition approach to scheduling large-scale refinery operations, *Computers & Chemical Engineering*, **79**, 1-29, 2015
32. Sahay, N., Ierapetritou, M., Flexibility assessment and risk management in supply chains, *AIChE Journal*, **61**, 4166-4178, 2015
33. Lin, Z., Ierapetritou, M., Nikolakis, V., Phthalic anhydride production from hemicellulose solutions: Technoeconomic analysis and life cycle assessment. *AIChE Journal*, **61**, 3708-3718, 2015
34. 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.
35. 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.
36. Rogers, A., Ierapetritou, M. Challenges and Opportunities in Modeling Pharmaceutical Manufacturing Processes. *Computers and Chemical Engineering*. **81**, 32-39, 2015.
37. Lin, Z., Nikolakis, V., Ierapetritou, M. Life Cycle Assessment of Biobased p-Xylene Production. *Industrial & Engineering Chemistry Research*. **54**(8), 2366-2378, 2015.

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38. Zhuge, J., Ierapetritou, M. Integration of scheduling and control for batch processes using multi-parametric model predictive control. *AIChE Journal*. **60**, 3169, 2014.
39. Rogers, A., Ierapetritou, M. Discrete element reduced-order modeling of dynamic particulate systems. *AIChE Journal*. **60**, 3184-3194, 2014.
40. Sahay, N., Ierapetritou, M., Wassick, J. Synchronous and asynchronous decision making strategies in supply chains. *Computers and Chemical Engineering*. **71**, 116-129, 2014.
41. Zhang, S., Broadbelt, L., Androulakis, I., Ierapetritou, M. Reactive Flow Simulation Based on the Integration of Automated Mechanism Generation and On-the-Fly Reduction. *Energy Fuels*. **28**, 4801-4811, 2014.
42. Singh, R., Sahay, A., Karry, K. M., Muzzio, F., Ierapetritou, M., Ramachandran, R. Implementation of a hybrid MPC-PID control strategy using PAT tools into a direct compaction continuous pharmaceutical tablet manufacturing pilot-plant. *International Journal of Pharmaceutics*. **473**(1-2), 38-54, 2014.

43. 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.
44. Rogers, A., Inamdar, C., Ierapetritou, M. An Integrated Approach to Simulation of Pharmaceutical Processes for Solid Drug Manufacture. *Industrial & Engineering Chemistry Research*. **53**, 5128-5147, 2014.
45. Singh, R., Abhishek Sahay, Fernando Muzzio, Ierapetritou, M., Ramachandran, R. A Systematic framework for onsite design and implementation of a control system in a continuous tablet manufacturing process. *Computers and Chemical Engineering*. **66**, 186-200, 2014.
46. Sahay, N., Ierapetritou, M. Hybrid Simulation Based Optimization Framework for Centralized and Decentralized Supply Chains. *Industrial & Engineering Chemistry Research*. **53**, 3996-4007, 2014.
47. Boukouvala, F., Ierapetritou, M. Derivative-free optimization for expensive constrained problems using a novel expected improvement objective function. *AIChE Journal*. **60**, 2462-2474, 2014.
48. Singh, R., Barrasso, D., Chaudhary, A., Sen, M., Ierapetritou, M., Ramachandran, R. Closed-loop feedback control of a continuous pharmaceutical tablet manufacturing process via wet granulation. *Journal of Pharmaceutical Innovation*. **9**, 16-37, 2014.

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49. Muzzio, F., Singh, R., Sahay, A., Oka, S., Ramachandran, R., Ierapetritou, M., Liu, X. Online monitoring, advanced control and operation of robust continuous pharmaceutical tablet manufacturing process. *BioPharma Asia*. **2**, 2013.
50. Sahay, N., Ierapetritou, M. Supply chain management using an optimization driven simulation approach. *AIChE Journal*. **59**, 4612-4626, 2013.
51. Rogers, A., Hashemi, A., Ierapetritou, M. Review: Modeling of Particulate Processes for the Continuous Manufacture of Solid-Based Pharmaceutical Dosage Forms. *Processes*. **1**(2), 67-127, 2013.
52. Sen, M., Rogers, A., Singh, R., Chaudhury, A., John, J., Ierapetritou, M., Ramachandran, R. Flowsheet optimization of an integrated continuous purification-processing pharmaceutical manufacturing operation. *Chemical Engineering Science*. **102**(11), 56-66, 2013.
53. Ierapetritou, M., Rogers, A., Ramachandran, R., Singh, R., Chaudhury, A., Muzzio, F. Model-predictive design, control and optimization: Applying model-predictive methods and a continuous process-control framework to a continuous tablet-manufacturing process. *Pharmaceutical Technology*. **37**(6), 2013.
54. Boukouvala, F., Ierapetritou, M. Surrogate-Based Optimization of Expensive Flowsheet Modeling for Continuous Pharmaceutical Manufacturing. *Journal of Pharmaceutical Innovation*. **8**(2), 131-145, 2013.
55. Gao, Y., Boukouvala, F., Engisch, W., Meng, W., Muzzio, F., Ierapetritou, M. Improving Continuous Powder Blending Performance Using Projection to Latent Structures Regression. *Journal of Pharmaceutical Innovation*. **8**(2), 99-110, 2013.
56. Singh, R., Ierapetritou, M., Ramachandran, R. System-wide hybrid model predictive control of a continuous pharmaceutical tablet manufacturing process via direct

- compaction. *European Journal of Pharmaceutics and Biopharmaceutics*. **85**(3) 1164-1182, 2013.
57. Boukouvala, F., Ierapetritou, M. Reduced-order discrete element method modeling. *Chemical Engineering Science*. **95**, 12-26, 2013.
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59. Boukouvala, F., Chaudhury, A., Sen, M., Zhou, R., Mioduszewski, L., Ierapetritou, M., Ramachandran, R. Computer-Aided Flowsheet Simulation of a Pharmaceutical Tablet Manufacturing Process Incorporating Wet Granulation. *Journal of Pharmaceutical Innovation*. **8**, 11-27, 2013.
60. Lin, Z., Nikolakis, V., Ierapetritou, M. Aromatics from lignocellulosic biomass: Economic analysis of the production of p-xylene from 5-hydroxymethylfurfural. *AIChE Journal*. **59**(6) 2079-2087, 2013.
61. Zhang, S., Androulakis, I.P., Ierapetritou, M.G. A Hybrid Kinetic Mechanism Reduction Scheme based on the On-the-fly Reduction and Quasi-steady-state Approximation. *Chemical Engineering Science*. **93**, 150-162 2013.
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65. Gao, Y., Ierapetritou, M.G., and Muzzio, F.J. Determination of the Confidence Interval of the Relative Standard Deviation Using Convolution. *Journal of Pharmaceutical Innovation*. **8**(2), 72-82 2013.
66. Gao, Y., Muzzio, F.J., and Ierapetritou, M.G. Scale-up strategy for continuous powder blending process. *Powder Technology*. **235**(0), 55-69, 2013.
67. Ovacik, M.A., Sen, B., Euling S.Y., Gaido, K.W., Ierapetritou, M.G., Androulakis I.P. Pathway modeling of microarray data: A case study of pathway activity changes in the testis following in utero exposure to dibutyl phthalate (DBP). *Toxicology and Applied Pharmacology*, **271**(3), 386-394, 2013.

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81. Shah, N.K., Ierapetritou, M.G. Integrated production planning and scheduling optimization of multisite, multiproduct process industry. *Computers and Chemical Engineering*. **37**, 214-226, 2012.
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213. Visweswaran V., Floudas C.A., Ierapetritou, M.G. and Pistikopoulos E.N. A Decomposition Based Global Optimization Approach for Bi-Level Convex Programming Problems. *State of the Art in Global Optimization: Computational Methods and Applications* C.A. Floudas and P.M. Pardalos (eds), Springer, pages: 139-162, 1996.

1995

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215. Pistikopoulos, E.N. and M.G. Ierapetritou. A Novel Approach for Optimal Process Design under Uncertainty. *Comp. Chem. Engng.* **19**(10), 1089-1110, 1995.

1994

216. Ierapetritou, M.G. and E. N. Pistikopoulos. A Novel Optimization Approach of Stochastic Planning Models. *Ind. Eng. Chem. Res.* **33**(8), 1930-1942, 1994.
217. Ierapetritou, M.G. and E. N. Pistikopoulos. Simultaneous incorporation of flexibility and economic risk in operational planning under uncertainty. *Comp. Chem. Eng.* **18**(3), 163-189, 1994.

REFEREED CONFERENCE PROCEEDINGS

1. Vertical Integration of Production Scheduling and Process Control: Progress, opportunities and challenges. Marianthi Ierapetritou, and Lisia Dias, Rutgers University; Michael Baldea and Richard C. Pattison, The University of Texas at Austin, FOCAPO/CPC January 2017.
2. Zhuge, J. and M.G. Ierapetritou. Simultaneous Scheduling and Control with Closed Loop Implementation on Parallel Units. Paper # 51, Foundations Of Computer Aided Process Operations (FOCAPO), Savannah, GA, January 2012.
3. Shah, N.K., and M.G. Ierapetritou. Inequalities for Continuous-Time Model for Scheduling of Continuous Processes. Paper # 74, Foundations Of Computer Aided Process Operations (FOCAPO), Savannah, GA, January 2012.
4. Shah, N.K., and M.G. Ierapetritou. Integrated production planning and scheduling optimization of multi-site, multi-product process industry. Paper # 395 European Symposium on Computer Aided Process Engineering (ESCAPE) 21, Greece, May 2011.
5. Boukouvala, F., R. Ramachandran, A. Vanarase, F.J. Muzzio, and M. G. Ierapetritou. Computer Aided Design and Analysis of Continuous Pharmaceutical Manufacturing Processes. Paper # 136, European Symposium on Computer Aided Process Engineering (ESCAPE) 21, Greece, May 2011.
6. Boukouvala, F., F.J. Muzzio, and M. G. Ierapetritou. Feasibility Analysis of Black- Box Processes Using an Adaptive Sampling Kriging Based Method. Paper # 43 European Symposium on Computer Aided Process Engineering (ESCAPE) 21, Greece, May 2011.

7. Shah, N., G. Saharidis, Z. Jia, M.G. Ierapetritou. Centralized-Decentralized Optimization for Refinery Scheduling. Foundations of Computer Aided Process Operations (FOCAPO), Paper # 92, Cambridge, MA, June, 2008.
8. Li, Z. and M.G. Ierapetritou. Robust Scheduling Optimization. Foundations of Computer Aided Process Operations (FOCAPO), Paper # 84, Cambridge, MA, June, 2008.
9. Foteinou, P.T., E. Yang, G.K Saharidis, M.G. Ierapetritou and I.P. Androulakis, A Mixed Integer Optimization Algorithm to Reverse Engineer Transcriptional Regulatory Networks, Proceeding of the 5th International Conference on the Foundations of Computer-Aided Process Operations, Paper #83, Cambridge, MA, June 2008.
10. L. Liang, J.G. Stevens, J.T. Farrell, P.T. Huynh, I.P. Androulakis, and M.G. Ierapetritou. An adaptive approach for coupling detailed chemical kinetics and multidimensional CFD. 5th US Combustion Meeting, San Diego, March 2007.
11. P.M. Portillo, F.J. Muzzio, M.G. Ierapetritou, Modeling and designing powder mixing processes utilizing compartment modeling. Paper #1.24, European Symposium on Computer Aided Process Engineering (ESCAPE) 16/PSE'06, Garmisch-Partenkirchen, Germany, July 2006.
12. Z. Jia, M.G. Ierapetritou, Scheduling under demand uncertainty using a new multiparametric programming approach. Paper #1.42, European Symposium on Computer Aided Process Engineering (ESCAPE) 16/PSE'06, Garmisch-Partenkirchen, Germany, July 2006.
13. E. Davis, M. Ierapetritou, Solving MINLP containing noisy variables and black-box functions using branch-and-bound. Paper #3.16, European Symposium on Computer Aided Process Engineering (ESCAPE) 16/PSE'06, Garmisch-Partenkirchen, Germany, July 2006.
14. H. Yang, M.L. Yarmush, C. Roth, M.G. Ierapetritou, Minimal reaction sets and metabolic pathways for cultured hepatocytes. Paper #3.54, European Symposium on Computer Aided Process Engineering (ESCAPE) 16/PSE'06, Garmisch-Partenkirchen, Germany, July 2006.
15. Goyal, V. and M. G. Ierapetritou. Stochastic MINLP Optimization using Simplicial Approximation. CM-058, page 61, European Symposium on Computer Aided Process Engineering (ESCAPE) 15, Barcelona, Spain, May 2005.
16. Banerjee, I. and M.G. Ierapetritou. A Novel Feasibility Analysis Approach Based on Dimensionality Reduction and Shape Reconstruction. CM-017, page 85, ESCAPE 15, Barcelona, Spain, May 2005.
17. Banerjee, I. and M.G. Ierapetritou. An Adaptive Reduction Scheme to Develop Flexible Reduced Chemistry Models for Reactive Flow Simulations. MS-036, page 247, ESCAPE 15, Barcelona, Spain, May 2005.
18. Davis, E. and M.G. Ierapetritou. Adaptive Optimization of Noisy Black-Box Functions Inherent In Microscopic Models. CM-043, page 193, ESCAPE 15, Barcelona, Spain, May 2005.
19. Jia, Z., and M.G. Ierapetritou. Scheduling Under Uncertainty Using MILP Sensitivity Analysis. MPO006, page 931, ESCAPE 14, Lisbon, 2004.
20. Sharma, N., M.G. Ierapetritou, and M.L. Yarmush. Novel Quantitative Tools for Engineering Analysis of Hepatocyte Cultures used in Bioartificial Liver Systems. NCp015, Page 1057, ESCAPE 14, Lisbon, 2004.
21. Goyal, V. and M.G. Ierapetritou. Scenario-Based Approach for Robust Modular Design Generation. SPIp008 p 421. ESCAPE 14, Lisbon, 2004.

22. Banerjee, I., and M.G. Ierapetritou. Adaptive Chemistry Model Development for Combustion. 16th ONR Propulsion Meeting, Los Angeles, CA (2003).
23. Jia, Z., and M.G. Ierapetritou. Flexibility Incorporation in Scheduling Decision Making, 8th International Symposium of Process Systems Engineering, (2003).
24. Jia, Z., and M.G. Ierapetritou. Efficient short-term scheduling of refinery operation based on continuous time formulation. *Proceedings of the Foundations of Computer-Aided Process Operations*, (2003).
25. Wu, D., and M.G. Ierapetritou. A Novel Continuous-Time Formulation and Solution Approach for Simultaneous Consideration of Planning and Scheduling Decisions. *Proceedings of the Foundations of Computer-Aided Process Operations*, (2003).
26. Ierapetritou, M.G., I.P. Androulakis, Uncertainty considerations in the reduction of chemical reaction mechanisms, *Proceedings of the 5th International Conference on Foundations of Computer-Aided Process Design*, (2000).
27. Ierapetritou, M.G. and C.A. Floudas, Modeling and Optimization of Short-term Scheduling of Batch and Semi-Continuous Processes, *Proceedings of 2nd Hellenic Scientific Chemical Engineering Conference*, Thessaloniki, Athens, Greece (1999).

INVITED PRESENTATIONS – KEYNOTE and PLENARY LECTURES

2017

1. Invited Seminar, A Systems Perspective for Advancing Pharmaceutical Manufacturing, Aristotle University of Thessaloniki, Greece, June 26, 2017.
2. Invited Seminar, A Systems Perspective for Advancing Pharmaceutical Manufacturing, UC Davis, Department of Chemical Engineering, May 18, 2017.
3. SOPS and I2APM Present OSD Continuous Manufacturing in the Current Regulatory Landscape, Invited participation in academic panel, May 8-9, 2017.
4. Invited Lecture, Christodoulos A. Floudas Memorial Symposium, A tribute to an advisor, a mentor and a friend, May 6, 2017.
5. Invited Seminar, REI Energy Policy Seminar, "Techno-economic and Life Cycle Analysis of Alternative Production Routes for Biomass based Chemicals" April 21, 2017.
6. Invited Seminar, A Systems Perspective for Advancing Pharmaceutical Manufacturing, Clemson University, April 20, 2017.
7. Invited Seminar Office of the Vice President for Research series on Sustainability. "Process Intensification for Biomass-Based Chemical Production using Techno-economic and Life-Cycle Analysis." Wayne State University, April 4, 2017.
8. Invited Seminar, A Systems Perspective for Advancing Pharmaceutical Manufacturing, Department of Chemical and Biological Engineering, IIT, March 29, 2017.
9. **Plenary lecture on** "Vertical Integration of Production Scheduling and Process Control: Progress, opportunities and challenges." Marianthi Ierapetritou, and Lisia Dias, Rutgers University; Michael Baldea and Richard C. Pattison, The University of Texas at Austin, FOCAPO/CPC January 2017.

2016

1. **Broadcast of the lecture on "Modeling for Advanced Pharmaceutical Manufacturing" (<https://www.youtube.com/watch?v=7n8bPPkWiOk>) has been viewed more than 26000 times.**

2. **Keynote speaker**, Decision Making Across Different Scales: From Process Control to Supply Chain Management, European Symposium on Computer Aided Process Engineering (ESCAPE), Slovenia, June 12-15, 2016 (Annual conference - one of 8 keynote lecturers).
3. **Keynote speaker**, Process Design and Optimization of Chemical Production from Biomass Feedstocks, **SCPPE June, China**, 2016. Organized every 3 years. 4th International Conference on Sustainable Chemical Product and Process Engineering (only 4 keynote speakers).
4. Integration of Systems Thinking in Biopharmaceutical Manufacturing, **Eli Lilly**, May 2016.
5. ERC: C-SOPS capabilities towards continuous manufacturing of solid based drug products, **PSE Advanced Process Modeling Forum, London, UK**, April 2016 (Annual meeting).
6. Simulation based Optimization for Supply Chain Management, **Fields Institute of Research in Mathematical Sciences, University of Toronto**, March 29th 2016.
7. A Systems Perspective for Advancing Pharmaceutical Manufacturing, Department of Chemical Engineering, **Penn State University**, May 5th, 2016
8. Advanced Pharmaceutical Manufacturing- A New Frontier for Process Systems Engineering, School of Chemical Engineering, **Oklahoma State University**, March 1st 2016.
9. A General Framework of Process Design and Evaluation of Renewable Production of Chemicals from Biomass Feedstocks, **Rutgers Energy Institute**, April 22nd 2016.

2015

10. Advanced Pharmaceutical Manufacturing: A New Frontier for Process Systems Engineering, **Princeton University**, Department of Chemical and Biological Engineering, September 30th, 2015.
11. Advanced Pharmaceutical Manufacturing: A New Frontier for Process Systems Engineering, **Carnegie Mellon University**, Department of Chemical Engineering, September 24th, 2015.
12. **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.
13. **Keynote speaker** at Division of Particulate Preparations and Design (PPD) of **The Society of Powder Technology, Japan (SPTJ)**, Annual Symposium, October 22-23, 2015.
14. Webinar AIChE CAST Division, Modeling for Advanced Pharmaceutical Manufacturing, Marianthi Ierapetritou, May 19, 2015, 11 AM EDT, Announcement: <http://goo.gl/QMWdjD>.
15. Decision Making Across Different Scales: From Process Control to Supply Chain Management, **McMaster Advanced Control Consortium (MACC)** Workshop, May 12-14, 2015.
16. **Keynote Speaker**, Modeling and Optimization of Continuous Pharmaceutical Manufacturing Processes, PSE2015/ESCAPE25, Copenhagen, May 31-June 4, 2015.

17. 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.
18. A general framework of process design and evaluation of renewable production of chemicals from biomass feedstocks, **QAFCO-Texas A&M at Qatar Conference 2015**.

2014

19. Challenges and opportunities in pharmaceutical manufacturing modeling and optimization, **BMS**, Syracuse, March 2014.
20. **Plenary talk**, Challenges and Opportunities in Pharmaceutical Manufacturing Modeling and Optimization, **8th International Conference on Foundation of Computer-Aided Process Design (FOCAPD) 2014** (organized every 4 years, 8 plenary talks), Cle Elum, Washington.

2013

21. Process Systems Approaches to Design of Pharmaceutical Products and Processes, Imperial College, London, April 2013.
22. Design and Optimization of Pharmaceutical Products and Processes: Challenges and Opportunities, **Technical University of Denmark**, April 2013.
23. Design and Optimization of Pharmaceutical Products and Processes: Challenges and Opportunities, **ETH, Zurich**, March 2013.
24. Challenges and Opportunities in Addressing Problems of High Complexity in Process Industry, **ETH, Zurich**, March 2013.
25. Process Operation and Effects of Uncertainty in Decision Making. **Eli Lilly, Indianapolis**, January 2013.

2010-2012

26. 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.
27. Process simulation and Optimization of Pharmaceutical Processes. **University of Connecticut**, March 2012.
28. Optimization of Process Design and Operations of Pharmaceutical Systems. **Columbia University**, March 2012.
29. Computer-aided design and analysis of continuous pharmaceutical manufacturing processes, **National Technical University of Athens, Greece**, October 2011.
30. Dynamic flowsheet simulation of integrated continuous pharmaceutical manufacturing processes. **5th International Graz Congress on Pharmaceutical Engineering, Graz, Austria**, September 2011
31. Systems Approaches to Analyze Complex Engineering Problems. **Illinois Institute of technology**, April 2010.
32. Going from Simple to Complex and back to Simple: The process systems paradigm. **Imperial College, London**, March 2010.

2008-2010

33. **Keynote lecture**, Integration of Planning and Scheduling and Consideration of Uncertainty in Process Operations. **20th International Symposium of Process Systems Engineering (PSE), Brazil**, August 2009.
34. Systems approaches for analyzing complex process engineering problems. **Carnegie Mellon University**, March 2009.
35. 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.
36. Systems Approaches for Analyzing Complex Process Engineering Problems. **Princeton University**, February 2008.

2006-2008

37. Process Systems Engineering Across Different Scales. Rice University, November 2007.
38. Analysis of Complex Kinetic Networks Using Systems Approaches. **Lehigh University**, March 2007.
39. Mathematical programming techniques to analyze complex reaction networks. **CCNY**, May 2007.
40. Uncertainty in Process Scheduling using Parametric Programming. **INFORMS (Institute for Operations Research and the Management Science)**, 2006.
41. Frameworks for Analyzing Complex Networks from Combustion to Metabolism: Effects of Uncertainty, **MIT**, March 2006.
42. A Systems Approach for Analyzing Complex Processes. **University of Massachusetts at Amherst**, March 2006.
43. Mathematical Programming as a tool for Learning. **Tufts University**, May 2006.
44. Modeling Reactive Flows using Adaptive Chemistry. **Northeastern University**, February 2006.
45. Keynote lecture, Short term scheduling of Chemical Processes, **ADCHEM (Advanced Control of Chemical Processes) Gamado, Brazil**, 2006.

2004-2006

46. Process Design and Operations: Modeling and Optimization. **12th Symposium in Chemical Engineering, Puerto Rico**, October 2005.
47. Uncertainty issues in process design and operations. **Texas A&M**, November 2005.
48. Combustion modeling including detailed adaptive chemistry. **Lab for Surface Modification, Physics Departments, Rutgers University**, 2005.
49. Uncertainty analysis for process design and operations. **Pan American Advanced Studies Institute Program on Process Systems Engineering (PASI), Iguassu Falls, Brazil**, August 2005.
50. Adaptive Kinetic Model Reduction Framework Considering Micromixing Effects. **Imperial College, London, UK**, May 2004.
51. Women in Engineering: The Myth and Reality. **Society of Women Engineers**, Rutgers University, April 2004.
52. Development of an Adaptive Chemistry Model for Reactive Flow Simulations. **University of Rhode Island**, March 2004.
53. Process Operations in Dynamic Environment. **University of Kansas**, February 2004.

54. Process Synthesis and Design within a Dynamic Environment. **University of Southern California**, February 2004.

2002-2004

55. Design of Flexible Module-Based manufacturing. **New Jersey Institute of Technology**, October 2003.
56. Modeling and Optimization of Process Design and Operations. **ExxonMobil, Houston**, August 2003.
57. Product Portfolio and Capacity Planning Under Uncertainty. **Purdue University**, February 2003.
58. Product and Process Design Optimization under Uncertainty. **Ecole Polytechnique de Montreal, Canada**, March 2003.
59. Optimization of Process Design and Operations Including Uncertainty. **ABB** July 2002.
60. Uncertainty Quantification and its Uses. **Brooklyn Polytechnic**, April 2002.
61. Efficient Scheduling of Refinery Operations. **Honeywell Hi-Spec Solutions, Toronto, Canada**, July 2002.

2000-2002

62. Developing Efficient Approaches to Quantify and Manage Uncertainty in Process Operations. **City College of New York**, October 2001.
63. Decomposition Approaches for the Efficient Solution of Short-Term Scheduling Problem. **2nd Pan American Workshop on Process Systems Engineering, Brazil** Sep 19-21, 2001.
64. Plenary Speaker, Short-term Scheduling under Uncertainty: Issues and Answers, ENPROMER 2001, **3rd Mercosur Congress on Process Systems Engineering, Argentina**, September 16-20, 2001.
65. Developing Efficient Approaches to Quantify and Manage Uncertainty in Process Operations, **University of Iceland**, May 2001.
66. "NSF Young Faculty Panel Discussion". **AIChE** Annual Meeting, Los Angeles, 2000.
67. **Women in Academia the myth and the reality**. Panel Discussion. Princeton University, April 2000.
68. Process Operations in an Uncertain Environment. **Rutgers Center of Operations Research (RUTCOR)**, March 2000.

1997-2000

69. Parameter Variability in Plant Design and Synthesis. **BOC Gases Technical Group**, October 1998.
70. Process Design and Operations: Uncertainty and Scheduling. **Department of Chemical Engineering, Carnegie Mellon University**, April 1998.
71. Uncertainty in Process Systems Engineering. Department of Chemical Engineering, **Lehigh University**, April 1997.
72. Uncertainty in Process Design and Operations. Department of Chemical Engineering, **University of Arizona**, Tucson, June 1997.
73. Process Design and Operations: Uncertainty and Scheduling. Department of Chemical Engineering, **Berkeley, CA**, April 1997.

PRESENTATIONS

1. Escotet Espinoza, MS; Cappuyns, P; Van Assche, I; Muzzio FJ; Ierapetritou, M. "Modeling Presentation: Flowsheet and Residence Time Distribution Models in Pharmaceutical Manufacturing." IFPAC Meeting, Washington D.C. January 2017.
2. Athaley A., Annam P., Saha B., Ierapetritou M., Techno-economic and Life Cycle Analysis of Chemical Production from Biomass Feedstocks, AIChE Annual Meeting, San Francisco, 2016
3. Zilong Wang, M. Sebastian Escotet-Espinoza, Ravendra Singh, Fernando J. Muzzio and Marianthi G. Ierapetritou. "Surrogate-Based Optimization Methodology for Pharmaceutical Tablet Manufacturing Processes". 2016 AIChE Annual Meeting, San Francisco, CA, November 17, 2016.
4. Lisia S. Dias and Marianthi G. Ierapetritou. Integration of Production Scheduling and Model Predictive Control Under Process Uncertainties, AIChE Annual Meeting, San Francisco, November 2016.
5. Escotet Espinoza, MS; Vadodaria, S; Muzzio FJ; Ierapetritou, M. "Correlations of Unit Operation Models to Raw Material Properties: Moving Towards In silico Modeling of Drug Product Manufacturing." AAPS Annual Conference, Denver, Colorado. November 2016.
6. Zilong Wang, M. Sebastian Escotet-Espinoza, Ravendra Singh, Fernando J. Muzzio and Marianthi G. Ierapetritou. "Feasibility Analysis of Flowsheet Models in Continuous Pharmaceutical Manufacturing Processes Considering the Effects of Noise". 2016 AIChE Annual Meeting, San Francisco, CA, November 14, 2016.
7. Andrés D. Román-Ospino, Ravendra Singh, Marianthi Ierapetritou, Rohit Ramachandran, Carlos Ortega, Rafael Méndez, Rodolfo J. Romañach. Development of Calibration Models for Real Time Prediction of Powder Density by Near Infrared Spectroscopy, IFPAC, Arlington, VA, January 2016.
8. Ravendra Singh, Fernando J. Muzzio, Marianthi Ierapetritou, Rohit Ramachandran. Combined feedforward/feedback control and automation of direct compaction continuous pharmaceutical tablet manufacturing plant. IFPAC, Arlington, VA, January 2016.
9. Jin Maeda, Ravendra Singh, Marianthi Ierapetritou. Real-time monitoring and control of API concentration in a tablet press for continuous manufacturing of tablets. IFPAC, Arlington, VA, January 2016.
10. Jinjun Zhuge and Marianthi G. Ierapetritou. An Integrated Framework for Scheduling and Control Using Fast Model Predictive Control, AIChE Annual Meeting, Atlanta, Nov 2015, Paper 647a.
11. M. Sebastian Escotet-Espinoza, Ravendra Singh, Eric Jayjock, Aditya Vanarase, Fernando J. Muzzio, Marianthi Ierapetritou. "Characterization and Modeling of Feeders: A Critical Component in Continuous Pharmaceutical Manufacturing." AIChE Annual Meeting, Salt Lake City, Nov 2015, Paper 572a.
12. Charles J. Foster, M. Sebastian Escotet-Espinoza, Marianthi Ierapetritou. "Modeling Mixing of Cohesive Particulate Systems in Rotating Cylinders using Discrete Element Modeling (DEM)." AIChE Annual Meeting, Salt Lake City, Nov 2015, Paper 479a.
13. M. Sebastian Escotet-Espinoza, Zilong Wang, Marianthi Ierapetritou, Fernando J. Muzzio. "ERC-SOPS - a Pre-Competitive Model for Strategically-Driven Research and Technology Development and Commercialization." AIChE Annual Meeting, Salt Lake City, Nov 2015, Paper 228f.

14. Zilong Wang, M. Sebastian Escotet-Espinoza, Ravendra Singh, Fernando J. Muzzio and Marianthi Ierapetritou. "Flowsheet Modeling for Oral Solid Drug Product Manufacturing." AIChE Annual Meeting, Salt Lake City, Nov 2015, Paper 697b.
15. Ravendra Singh, M. Sebastian Escotet-Espinoza, Shishir Vadodaria, Jun Zhang, Fernando J. Muzzio, Rohit Ramachandran and Marianthi Ierapetritou. "Dynamic Modeling and Advanced Control of Tablet Press." AIChE Annual Meeting, Salt Lake City, Nov 2015, Paper 697f.
16. Sebastian Escotet-Espinoza, Amanda Rogers, Fernando J. Muzzio, and Marianthi Ierapetritou. Modeling of Residence Time Distribution in Continuous Solid Oral Dose Pharmaceutical Manufacturing Processes AIChE Annual Meeting, Atlanta, Nov 2014, Paper 668c.
17. Jinjun Zhuge and Marianthi G. Ierapetritou. Integration of Scheduling and Control Using Fast MPC, AIChE Annual Meeting, Atlanta, Nov 2014, Paper 697e.
18. Zilong Wang, M. Sebastian Escotet-Espinoza, Ravendra Singh, Fernando J. Muzzio and Marianthi Ierapetritou, Surrogate-based Optimization for Oral Solid Drug Product Manufacturing, INFORMS Annual Meeting, Philadelphia, Nov 2015, MD12, Cluster: Surrogate-Based and Derivative-Free Optimization II.
19. Nihar Sahay and Marianthi Ierapetritou. Multi-Criteria Decision Making Supplier Selection and Auction Based Procurement in Supply Chain Management. AIChE Annual Meeting, Salt Lake City, Nov 2015, Paper 234e.
20. Nihar Sahay and Marianthi Ierapetritou. Surrogate Based Derivative Free Optimization Methodology for Supply Chain Management. AIChE Annual Meeting, Salt Lake City, Nov 2015, Paper 508a.
21. Parham Farzan, Marianthi Ierapetritou. "Simulation of Biopharmaceutical Bioreactor Using an Integrated CFD-Population Balance Modeling Approach." AIChE Annual Meeting, Salt Lake City, Nov 2015, Paper 652f.
22. Ravendra Singh, Fernando J. Muzzio, Marianthi Ierapetritou, Rohit Ramachandran. Implementation of Advanced Multilayer Plant-Wide Control Architecture into a Direct Compaction Continuous Pharmaceutical Manufacturing Process. AIChE Annual Meeting, Salt Lake City, Nov 2015, Paper 183d.
23. Jun Zhang, Frances Pereira, Ravendra Singh, Sean Bermingham, Rohit Ramachandran, Fernando J. Muzzio, Marianthi Ierapetritou. A Systematic Approach of Using Material Properties Data for Pharmaceutical Process Simulation. AIChE Annual Meeting, Salt Lake City, Nov 2015, Paper 721b.
24. Nihar Sahay and Marianthi G. Ierapetritou. Assessing Flexibility and Risk in Supply Chains Using Hybrid Simulation Based Optimization, AIChE Annual Meeting, Atlanta, November 2014, Paper 655a.
25. Nihar Sahay, Marianthi G. Ierapetritou and John Wassick. Agent Based Simulations for Synchronous and Asynchronous Decision Making Strategies in Supply Chains, AIChE Annual Meeting, Atlanta, November 2014, Paper 632d.
26. Zhaojia Lin, Vladimiro Nikolakis, and Marianthi G. Ierapetritou, A Techno-Economic Analysis of the Renewable Production of Phthalic Anhydride, AIChE Annual Meeting, Atlanta, GA, November 2014, Paper 307a.
27. Zhaojia Lin, Vladimiro Nikolakis, and Marianthi G. Ierapetritou, A Life Cycle Assessment on the Renewable p-Xylene Production, AIChE Annual Meeting, Atlanta, GA, November 2014, Paper 196a.

28. Ravendra Singh, Abhishek Sahay, Fernando Muzzio, Marianthi G. Ierapetritou, Rohit Ramachandran. Plant-wide advanced hybrid model predictive closed-loop control of continuous pharmaceutical tablet manufacturing pilot-plant for QbD based manufacturing, AIChE Annual Meeting, Atlanta, GA, November 2014, Paper 739c.
29. Ravendra Singh, Maitraye Sen, Fernando Muzzio, Marianthi G. Ierapetritou, Rohit Ramachandran. Integrated dynamic real time optimization and advanced hybrid MPC-PID control of direct compaction continuous tablet manufacturing process, AIChE Annual Meeting, Atlanta, GA, November 2014, Paper 668e.
30. Ravendra Singh, Abhishek Sahay, Krizia M. Karry, Maitraye Sen, Fernando Muzzio, Marianthi G. Ierapetritou, Rohit Ramachandran. Advanced hybrid MPC-PID based closed-loop control of continuous pharmaceutical tablet manufacturing pilot-plant, IFPAC, Arlington, VA (Washington DC), January 2014.
31. Jinjun Zhuge and Marianthi G. Ierapetritou. On-Line Integration of Scheduling and Control Using Mp-MPC, AIChE Annual Meeting, San Francisco, November 2013, Paper 696c.
32. Nihar Sahay and Marianthi G. Ierapetritou. Centralized vs. Decentralized Supply Chain Management Optimization, AIChE Annual Meeting, San Francisco, November 2013, Paper 518a.
33. Nihar Sahay, Nikisha Shah and Marianthi G. Ierapetritou. Efficient Heuristic Algorithm for Short-Term Scheduling of Large-Scale Oil Refinery Operations, AIChE Annual Meeting, San Francisco, November 2013, Paper 755c.
34. Ravendra Singh, Abhishek Sahay, Paul Brodbeck, Marianthi G. Ierapetritou, Rohit Ramachandran. Implementation of advanced hybrid MPC-PID control system into a continuous pharmaceutical tablet manufacturing pilot-plant, AIChE annual meeting, San Francisco, CA, November, 2013, paper 404e.
35. Ravendra Singh, Abhishek Sahay, Marianthi G. Ierapetritou, Rohit Ramachandran. Design of an efficient control system for flexible continuous tablet manufacturing process, AIChE annual meeting, San Francisco, CA, November, 2013, paper 586o.
36. Amanda Rogers and Marianthi G. Ierapetritou. Dynamic Reduced-Order Modeling of Particulate Systems for Pharmaceutical Unit Operations. AIChE Annual Meeting, San Francisco, November 2013. Paper 120f.
37. Amanda Rogers, Marianthi G. Ierapetritou and Chaitali Inamdar. (586r) Simulation and Global Sensitivity Analysis of Pharmaceutical Processes for Solid Drug Manufacture. AIChE Annual Meeting, San Francisco, November 2013. Paper 586r.
38. Zhaojia Lin, Vladimiro Nikolakis and Marianthi G. Ierapetritou. A Techno-Economic Comparison of the Biobased p-Xylene Production, AIChE Annual Meeting, San Francisco, November 2013, Paper 412d.
39. Ravendra Singh, Fani Boukouvala, Eric Jayjock, Marianthi G. Ierapetritou, Fernando Muzzio, Rohit Ramachandran. Optimal operation and advanced control of a flexible multipurpose continuous pharmaceutical tablet manufacturing process, IFPAC, Baltimore, MD, Jan 2013.
40. Ravendra Singh, Marianthi G. Ierapetritou, Rohit Ramachandran. Hybrid advanced control of a flexible multipurpose continuous pharmaceutical tablet manufacturing process via direct compaction, ESCAPE 23, Finland, 9 – 12 June, 2013.
41. Shuliang Zhang, Linda J. Broadbelt, Ioannis P. Androulakis, and Marianthi G. Ierapetritou. Reactive flow simulation based on automated mechanism generation and on-

- the-fly mechanism reduction: a demonstrative study, AIChE Annual Meeting, San Francisco, November 2013, Paper 27d.
42. Yijie Gao, Alberto M. Cuitino, Ben J. Glasser, Fernando J. Muzzio, Marianthi G. Ierapetritou, Jean W. Beeckman, Natalie A. Fassbender, William G. Borghard. Determination of Residence Time Distribution in Rotary Calciner, AIChE Annual Meeting, Pittsburgh PA, October 2012, Paper 521b.
 43. Jinjun Zhuge and Marianthi G. Ierapetritou. Integrated Scheduling and Control for Multiproduct Continuous and Batch Processes, AIChE Annual Meeting, Pittsburgh, October 2012, Paper 368e.
 44. Fnu Nihar and Marianthi G. Ierapetritou. Supply Chain Management Optimization Using a Hybrid Simulation Based Optimization Approach, AIChE Annual Meeting, Pittsburgh, October 2012, Paper 723a.
 45. Shuliang Zhang, Ioannis P. Androulakis, and Marianthi G. Ierapetritou. A Hybrid Scheme for Kinetic Mechanism Reduction Based On the On-the-Fly Reduction and Quasi-Steady-State Approximation, AIChE Annual Meeting, Pittsburgh, PA, October 2012, Paper 376b.
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