

**Marianthi G. Ierapetritou**

Gore Centennial Professor

Department of Chemical and Biomolecular Engineering, University of Delaware

150 Academy Street, Colburn Laboratory, Newark, DE 19716

E-mail: [mgi@udel.edu](mailto:mgi@udel.edu); URL: <https://www.che.udel.edu/people/faculty/ierapetritou/>**EDUCATION**

Imperial College, London, UK	Ph. D., Chemical Engineering	1995
National Technical University of Athens, Greece	Diploma (Summa cum Laude), Chemical Engineering	1991

**PROFESIONAL EXPERIENCE****University of Delaware**

2019-present Gore Centennial Professor, Department of Chemical and Biomolecular Engineering

**Rutgers University**

2018-2019	Associate Vice President, Office of Women in STEM
2017- 2019	Distinguished Professor, Department of Chemical & Biochemical Engineering
2013- 2018	Chair, Department of Chemical & Biochemical
2009- 2017	Professor, Department of Chemical & Biochemical Engineering
2004-2009	Associate Professor, Department of Chemical & Biochemical Engineering
1998-2004	Assistant Professor Department of Chemical & Biochemical Engineering

**Princeton University**

1996-1998 Post Doctoral Research Associate, Department of Chemical Engineering

**Imperial College**

1995-1996 Post Doctoral Research Associate, Center for Process Systems Engineering

**AFFILIATIONS AND COLLABORATIONS**

2016- 2019	Special Government Employee (SGE) Consultant to the FDA under the Advisory Committee for Pharmaceutical Science and Clinical Pharmacology
2013	Visiting Professor, <i>Department of Information Technology and Electrical Engineering, (ETH) in Zurich, Switzerland</i>
2005-2006	Visiting Associate Professor, <i>Department of Chemical Engineering, MIT, MA.</i>

**HONORS –AWARDS**

2022	AICHE Excellence in Process Development Research Award, sponsored by Pfizer, Inc.
2019	Gore Centennial Professor, Department of Chemical and Biomolecular Engineering, University of Delaware
2019	Twenty Sixth Professor Roger W.H. Sargent Lecture
2018	The Research & Development Council of New Jersey Chairman's Award as part of the Center for Structured Organic Particular Systems, NSF funded ERC center
2017	Distinguished Professor promotion – Rutgers University
2017	Board of Directors of the American Institute of Chemical Engineers (AIChE)
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
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).
2014	Best Teacher award (selected by the students – Engineering Governing Council)
2013	PSE Model-Based Innovation (MBI) Prize for 2013
2012	Outstanding Faculty Award, School of Engineering, Rutgers University
2004	Board of Trustees Research Award for Scholarly Excellence, Rutgers University

2002 Teaching Excellence Award from Chemical Engineering Department, Rutgers University  
 2000 NSF CAREER Award

## ACADEMIC EXPERIENCE

### SCIENTIFIC WORK (SUMMARY):

Extramural funding 1998-2022: _____	>\$50 millions
Articles refereed in top tier journals: _____	283
Papers in conferences: _____	>200
Citations of refereed papers	>14527
H index	66
Graduated students directed: _____	29
Postdoctoral fellows supervised: _____	13
Seminars and colloquia: _____	>100

### EXTRAMURAL FUNDING:

1. FDA (2022-2027) (\$4,535,071) “Advancing continuous biomanufacturing of monoclonal antibodies using an experimentally validated modeling platform” (PI: Marianthi Ierapetritou; co-PIs: Elefterios Papoutsakis, Abraham Lenhoff).
2. NSF (2022-2025) (\$417,504) “Supply Chain Decision Making Framework Considering Uncertainty” (PI: Marianthi Ierapetritou).
3. GSK (2022-2024) (\$180,000) “CFD-Biological modeling Tool Proposal” (PI: Marianthi Ierapetritou).
4. GSK (2022-2023) (\$78,000) “Chromatography Modeling using ML” (PI: Marianthi Ierapetritou).
5. CSL Behring LLC (\$100,000) “Flowsheet model development for isolate plasma components” (PI: Marianthi Ierapetritou).
6. NSF Future Manufacturing Research Grant (2021-2025) (\$3,000,000) “FMRG: Eco: A systems-enabled paradigm shift for modular sustainable chemical manufacturing” (PI: Marianthi Ierapetritou; co-PIs: Dion Vlachos, Raul Lobo, Hui Fang, Karim Shah).
7. NRT- HDR (2022-2026) (\$2,999,011) “Computing and Data Science Training for Materials Innovation, Discovery, AnalyticS (NRT-HDR: CDST-MIDAS)” (PI: Arthi Jayaraman; co-PIs: Marianthi Ierapetritou, Sunita Chandrasekaran, Laurie Kayser, Joshua Enszer, Cathy Wu, Rudolf Eigenmann).
8. DOE (2022-2024) (\$2,752,577) “Bioenergy production based on an engineered mixotrophic coculture for enhanced CO<sub>2</sub> fixation” (PI: Elefterios Papoutsakis; co-PIs: Marianthi Ierapetritou, Nicholas Sandoval (University of Tulane).
9. NSF EPSCoR with University of Kansas (2022-2025) (\$1,737,904) “Advanced Manufacturing of Renewable and Recyclable Polymers” PI: Bala Subramanian (UK); co-PIs: Marianthi Ierapetritou, Raul Lobo, Dion Vlachos, Hui Fang, Kalim Shah).
10. DEVCO Bioenergy (2021-2022) (\$100,000) “Carbon Footprint Tool” PI: Marianthi Ierapetritou
11. NSF GCR (2022-2025) (\$3,699,999): “Life Cycle Management of Materials: Sustainable Biomass to Designer Polymer Systems” (PI: Thomas Epps; co-PIs: Marianthi Ierapetritou, LaShanda Kopley, Dion Vlachos, Delphis Levia, Changqing Wu, Aditya Kunjapur)
12. FDA 2020-2022 (\$350,000 – UD subaward) “Development and Round-Robin Verification of Dynamic RTD models for the on-line Product Quality Analysis” (PI: Fernando Muzzio (Rutgers University); co-PIs: Marianthi Ierapetritou, Ravendra Singh).

13. Rutgers/UCLA/Department of Energy 2020-2021 (\$124,248 plus \$80,000 cost share – UD subaward) “Using smart manufacturing to enable energy-efficient manufacturing of pharmaceutical products” (PI: Rohit Ramachandran – Rutgers University; co-PIs: Marianthi Ierapetritou (UD), Ben Glasser (Rutgers)).
14. FDA 2018-2021 (\$4,000,000) “Industry 4.0 Implementation in Continuous Pharmaceutical Manufacturing” (PI: Marianthi Ierapetritou; co-PIs: Fernando Muzzio, Ben Glasser, Rohit Ramachandran, Doug Hausner, Ravendra Singh, Gintaras Reklaitis, Zoltan Nagy, Marcial Gonzalez).
15. FDA 2018-2021 (\$1,800,000) “Advanced continuous upstream manufacturing of biotherapeutics” (PI: Marianthi Ierapetritou; co-PIs: Rohit Ramachandran, Doug Hausner, George Tsilomelekis, Shishir Chundawat, Haoran Zhang).
16. RAPID Advancement Process Intensification Deployment RAPID Manufacturing Institute (\$600,000) (PI, co-PI: George Tsilomelekis).
17. DOE/SBIR Phase II 2018-2020 (\$1,500,000) “Fast Fingerprinting & Detection of Materials Using Portable / Hand-Held Devices and High Performance Computing for Use in Manufacturing and Supply Chain Applications”. (PI: Vijaykumar Hanagandi; co-PIs: Marianthi Ierapetritou, Shantenu Jha, Rohit Ramachandran).
18. NSF EAGER 2018-2020 (\$200,000) “Smart Decision Making using Data and Advanced Modeling Approaches” (PI, co-PIs: Rohit Ramachandran, Shantenu Jha).
19. DOE/SBIR 2017-2018 (\$270,000) “Fast fingerprinting and detection of materials using portable/hand-held devices and high performance computing for use in manufacturing and supply chain applications”. (PI: Marianthi Ierapetritou; Co-PIs: Shantenu Jha, Rohit Ramachandran).
20. Eli-Lilly 2017-2018 (\$90,000) “Modeling and Optimization of Biopharmaceutical Production”. PI: Marianthi Ierapetritou.
21. 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).
22. 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).
23. NSF EAGER 2015-2017 (\$284,184) “Cybermanufacturing: Advanced Modeling and Information Management in Pharmaceutical Manufacturing” (PI, co-PIs: Rohit Ramachandran, Shantenu Jha).
24. NSF 2014-2015 (\$56,931) “Workshop on Process Intensification” (PI)
25. NSF-REU 2015-2016 (\$12,000) “Integration of scheduling and control using closed loop implementation” (PI)
26. Eli-Lilly for 2016-2017 (\$100,000) “Modeling and Optimization of Bioreactors for the production of Biologics” (PI)
27. GSK for 2016-2017 (\$80,000) “Integration of PAT and control strategies for GSK continuous platform” (PI, co-PI: Rohit Ramachandran)
28. BMS 2015-2016 (\$70,000) “Modeling Development for CDC in BMS” (PI)
29. 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)
30. 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)

31. PSE 2014-2015 (\$80,000) “Material property prediction, database implementation and model validation” (PI, co-PIs Fernando Muzzio, Rohit Ramachandran)
32. FDA 2014-2017 (\$500,000) “Flowsheet Modeling and Analysis Tools for Solid Base Pharmaceutical Products Manufacturing” (PI, co-PIs Fernando Muzzio, Rohit Ramachandran)
33. NSF SusChem 2014-2018 (\$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)
34. NSF Award 2012-2016 (\$342,575) “Integration of scheduling and control using closed loop implementation” (single PI)
35. NSF Award 2010-2015 (\$343,901) “Innovative methodologies for integrated planning and scheduling and industrial applications” (PI)
36. Office of Naval Research 2010-2013 (\$328,128) “Modeling complexities in biofuel combustion” (PI, co-PI Ioannis Androulakis)
37. 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))
38. NSF Graduate Research Supplement 2009-2010 (\$53,938) (PI)
39. NSF REU supplement 2009 (\$12,000)
40. NSF Graduate Research Supplement 2008-2009 (\$46,871) (PI)
41. 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)
42. NSF Award 2007-1010 (\$316,317) “Reactive Flow Simulation Using An Adaptive Chemistry Framework” (co-PI with Ioannis Androulakis (PI)).
43. NSF Award 2006-2009 (\$399,572) “Systematic Mathematical Strategies for Stochastic Modeling and Uncertainty in Production Planning and Scheduling” (PI).
44. Office of Naval Research 2006-2009 (\$270,782) “Efficient Characterization of Combustion Fuels” (PI, co-PI Ioannis Androulakis)
45. 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)
46. 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)
47. 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).
48. 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).
49. Office of Naval Research 2003-2006 (\$213,000) “Development of an Adaptive Chemistry Model for Combustion Systems Considering Micromixing Effects” (PI)
50. NSF Award 2002-2005 (\$200,000) “Design of Flexible Reaction Models” (PI)
51. CAREER NSF Award 2000-2004 (\$308,803) “Process Operations: Decision-Making under Uncertainty” (PI).
52. ACS-PRF Type G "Starter" Grant 2000-2002 (\$25,000) “Incorporation of Uncertainty into Complex Kinetic Mechanisms” (PI).

53. New Jersey Space Consortium Grant (NASA) (\$25,000) “Order Reduction of Complex Kinetic Mechanisms Considering Micro-mixing Effects” (PI).
54. NSF International Division Grant, 0071505 (\$13,800) “Multiple Inputs - Multiple Outputs (MIMO) Control Design” (PI).
55. BOC 2000-2001 (\$43,000) to perform research on novel optimization approaches for design under uncertainty (PI).
56. Honeywell Hi-Spec Solutions 1999-2000 (\$25,000) Investigate the application of continuous time formulation for refinery scheduling (PI).
57. Union Carbide 1999-2000 (\$5,000) Optimization of Amerchol Plant operations, (PI).
58. Unisys 1999-2002 (\$278,000) Nationwide Excellence Centers equipped with initial computing network (co-PI with Professor Manish Parashar).

## **MENTORING AND SUPERVISION**

### **POSTDOCTORAL SCHOLARS SUPERVISED**

#### Current Postdoctoral Researchers

Anjana Thimmaiah Puliyanda (02/2022 – present)

Research Area: Technoeconomic Analysis and Life Cycle Assessment for sustainability

Borja Hernandez Blazquez (09/2021- present)

Research Area: Technoeconomic Analysis and Life Cycle Assessment for sustainability

#### Assistant Research Professor

Ravendra Singh (12/2011- 09/2019)

Research Area: Process Integration and Control of Pharmaceutical Processes.

#### Postdoctoral Scholars Supervised

Katerina Anastasopoulou (10/2020 – 10/2021)

Research Area: Life Cycle Assessment and modeling of alternative energy sources

Abhay Athaley (03/2020 – 06/2021)

Research Area: Sustainability systems analysis for biomass conversion to chemicals.

Andres Roman (04/2016 – 09/2019)

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

**GRADUATE STUDENTS ADVISED/CO-ADVISED**Current Ph.D. Students

Arnav Mittal	Since January 2022
Thesis Subject:	Advanced manufacturing for sustainable chemical production Ph.D. expected 2026
Dat Huynh	Since January 2022
Thesis Subject:	Reaction & process network optimization for biomass conversion Ph.D. expected 2026
Ching-Mei Wen	Since January 2022
Thesis Subject:	Biological transformation of CO <sub>2</sub> to fuels Ph.D. expected 2026
Nikola Malinov	Since January 2022
Thesis Subject:	Ph.D. expected 2026 Optimization of continuous production of mAbs
Katherine Raundenbush	Since January 2021
Thesis Subject:	Mechanistic modeling of upstream biologics manufacturing Ph.D. expected 2025
Yingjie Chen	Since September 2018
Thesis Subject:	Industry 4.0 for Pharmaceutical Manufacturing Ph.D. expected 2022
Chaoying Ding	Since January 2020
Thesis Subject:	Advanced Biopharmaceutical Manufacturing Ph.D. expected 2023
Huayu Tian	Since January 2020
Thesis Subject:	Modeling and Optimization of Pharmaceutical manufacturing Ph.D. expected 2023
Jayanth Reddy	Since January 2020
Thesis Subject:	Modeling and Optimization of Bio-Pharmaceutical manufacturing Ph.D. expected 2023
Yuqing Luo	Since January 2020
Thesis Subject:	Techno-economic and Life Cycle Analysis of chemical production from biomass feedstocks Ph.D. expected 2023
Oluwadare Badejo	Since January 2020
Thesis Subject:	Integrated of decision-making approaches from control to SCM Ph.D. expected 2023

Past Graduate Students Advised/Co-AdvisedPh.D.

1. Pooja Bhalode  
Thesis Subject: Ph.D. May 2022  
Modeling and Optimization of Pharmaceutical manufacturing
2. Ou Yang  
Thesis Subject: Ph.D. May 2021  
Modeling and Optimization of Biopharmaceutical Manufacturing
3. Atharv Bosekar  
Thesis Title: Ph.D. September 2020  
Supply chain optimization and modular process design using machine learning-based frameworks
4. Abhay Athaley  
Ph.D. December 2019

- Thesis Title: Integrated design, analysis and optimization of chemical production from biomass feedstocks
5. Nirupaplava Metta  
Thesis Title: Model development and analysis of solid oral dosage manufacturing processes involving particle size change  
Ph.D. December 2019
  6. Lisia Dias  
Thesis Title: Enterprise-wide optimization: Integrating planning, scheduling and control problems using feasibility analysis and surrogate models  
PhD June 2019
  7. Zilong Wang  
Thesis Title: Flowsheet simulation and Optimization of continuous Manufacturing of Pharmaceutical products  
Ph.D. May 2018
  8. Sebastian Escotet  
Thesis Title: Analysis and Optimization of Pharmaceutical process development  
Ph.D. May 2018
  9. Parham Farzan  
Thesis Title: Modeling of Bio-pharmaceutical Manufacturing processes  
Ph.D. December 2017
  10. Nihar Sahay  
Thesis Title: Modeling of Sustainable Chemical Supply Chain  
Ph.D. March 2016
  11. Zhaojia Lin  
Thesis Title: Modeling and Optimization of Chemical and Fuel production from Biomass  
Ph.D. September 2015
  12. Jinjun Zhuge  
Thesis Title: Integration of Process Scheduling and Control  
Ph.D. March 2015
  13. Nikisha Shah  
Thesis Title: Decomposition Approaches for Enterprise-wide Optimization in Process Industry  
Ph.D. December 2014
  14. Amanda Rogers  
Thesis Title: Process Systems Engineering Methods for the Development of Continuous Pharmaceutical Manufacturing Processes  
Ph.D. December 2013 (co-advised by Prof. I.P. Androulakis)
  15. Shuliang Zhang  
Thesis Title: Combustion Characterization and Kinetic Modeling in Reactive Flow Simulations  
Ph.D. November 2012 (co-advised by Prof. F. Muzzio)
  16. Fani Boukouvala  
Thesis Title: Integrated Simulation and Optimization of Continuous Pharmaceutical Manufacturing  
Ph.D. April May 2012 (co-advised by Prof. F. Muzzio)
  17. Yijie Gao  
Thesis Title: Modeling and Analysis of Continuous Powder Blending  
Ph.D. December 2011 (co-advised by Prof. I.P. Androulakis)
  18. Mehmet Orman  
Thesis Title: Bioinformatics Analysis of Control Mechanisms of Burn and Sepsis Induced Inflammatory Response  
Ph.D. June 2010 (co-advised by Prof. I.P. Androulakis)
  19. Kai He  
Thesis Title: Development of Kinetic Model Reduction Framework and its Application in Realistic Flow Simulation  
Ph.D. June 2010
  20. Beverly Smith  
Thesis Title: Product Design and New Product Portfolio Management Modeled Integration and Optimization  
Ph.D. May 2010.
  21. Zukui Li  
Thesis Title: Process Operations with Uncertainty and Integration Considerations  
Ph.D. December 2009 (co-advised by Prof. C.M.Roth)
  22. Hong Yang

- Thesis Title: Design and analysis of Amino Acid supplementation in Hepatocyte culture using in vitro experiment and mathematical modeling
23. Eddie Davis Ph.D. August 2008  
Thesis Title: Modeling and Optimization of Process Engineering Problems Containing Black-Box Systems and Noise
24. Patricia Portillo Ph.D. May 2008 (co-advised by Prof. F. Muzzio)  
Thesis Title: Modeling, Control and Optimization of Continuous Pharmaceutical Processes
25. Nripen Sharma Ph.D. January 2007. (co-advised by Prof. M.L.Yarmush)  
Thesis Title: Metabolic Engineering of Stem Cell Differentiation
26. Zhenya Jia, Ph.D. September 2005.  
Thesis Title: Uncertainty Analysis of Scheduling and Planning Problems.
27. 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.
28. Dan Wu Ph.D. May 2005.  
Thesis Title: Unified Frameworks for the Optimal Production Planning and Scheduling.
29. Vishal Goyal Ph.D. Jan 2005.  
Thesis Title: Design and Synthesis of Flexible Module-Based Systems.
30. Aditya Bindal Ph.D. October 2004 (co-advised by Prof. J. Khinast)  
Thesis Title: Optimization and Stability Analysis of Multidimensional Reacting Systems

#### Masters Students

1. Yue Zhang M.S. June 2019  
Thesis Title: Life cycle assessment of biomass conversion to specialty chemicals
2. Siddharth Prabhu M.S. December 2018  
Thesis Title: Techno-economic analysis of biopharmaceutical production
3. Praneeth Annam M.S. December 2017  
Thesis Title: Life Cycle Analysis of alternative routes for Biomass Conversion to Chemicals
4. Shu Yang M.S. July 2017  
Thesis Title: Modeling and optimization of bioreactors
5. Shishir Vadodaria M.S. July 2016  
Thesis Title: Assessment of the Effect of Material Properties on Compressibility of Pharmaceutical Powders
6. Abhay Athaley M.S. July 2016  
Thesis Title: Techno-economic Analysis and Life Cycle Assessment of alternative production of chemicals from biomass.
7. Xian Wu M.S. June 2015  
Thesis Title: Integration of Scheduling and Control
8. Jierui Liang M.S. June 2015  
Thesis Title: Reduction of Combustion Kinetic Modeling
9. Vasilis Niotis M.S. Dec 2011  
Thesis Title: Sensitivity Analysis of Complex Systems
10. Amalia Nikolopoulou M.S. Dec 2011



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|-------------------------|--|
| Thesis Title            | Hybrid Simulation Based Optimization for Supply Chain Management                                   |
| 11. Steve Guzikowski    | M.S. January 2008 (co-advised by Prof. C.M.Roth)   |
| Thesis Title:           | Novel tools towards Improving Hepatocyte Function  |
| 12. Tien Phong Huynh    | M.S. October 2007 (co-advised by Prof. I.P. Androulakis)   |
| Thesis Title            | Characterization of Complex Fuels for Combustion Applications                                      |
| 13. Ian Glasgow         | M.S. Dec 2005 (co-advised by Prof. P. Stuart Ecole<br>Polytechnique de Montreal, Montreal, Canada) |
| Thesis Title:           | Optimization Applications in Pulp Paper Process Industry   |
| 14. Suhrud Balakrishnan | M.S. September 2002 (Co-advised with Prof. P. Georgopoulos).                                       |
| Thesis Title:           | Uncertainty considerations in Atmospheric Systems  |
| 15. Jeetmanyu Vin       | M.S. July 2000   |
| Thesis Title:           | Short Term Scheduling of Batch Plants under Uncertainty.   |

### UNDERGRADUATE STUDENTS' THESES ADVISED

1. Prahalad Srinivasan      TEA and LCA analysis for biological transformation of biomass to alcohols., 2021.
2. Eric Liu                      Life Cycle Assessment using eco-efficiency for the production of p-Xylene, 2021.
3. Nicholas Townsend Haas,      Control Design of Continuous Tablet Press, 2017.
4. Charles Foster,                  Discrete Element Method (DEM) of continuous powder mixing, 2016.
5. Jingyao Wang,                  Process Design and Simulation of Bio-Based Hydroxymethylfufural (HMF), 2015.
6. Sohyun Jeong,                  Sensitivity Analysis of Continuous Pharmaceutical Manufacturing, 2015.
7. Chaitali Inamdar,              Uncertainty propagation in pharmaceutical modeling, 2012.
8. Jonathan E. Gajda,              Segregation studies in continuous mixing, 2012.
9. Lukasz Mioduszewski,        Modeling of Pharmaceutical Processes. 2011.
10. Catherine Polyakov,         Analyzing flux data for liver exposure to toxicants. Summer 2010.
11. Chris Doe,                      Studying hepatotoxicity due to environmental toxicants. 2009.
12. Nikisha Shah,                  Centralized – Decentralized Optimization for Refinery Scheduling, Slade Scholar honor student, 2008.
13. Roentgen Hau,                 Examining the Content Uniformity of Powder Blends Using Near-Infrared Spectroscopy, Slade Scholar honor student, 2008.
14. Lily Cheung Chang,         Cell Growth and Urea Production in Hepg2 Cells under Different Insulin and Glucose Concentration in the Media, Slade Scholar honor student, 2008
15. Sarah Abdelsayed,            Optimization of supplementation for hepatocyte utilization in Bioartificial liver devices, 2007.
16. Timothy Lin,                  Understanding of acetaminophen (APAP) metabolism and induced-hepatotoxicity, 2006
17. Adebola Ogunniyi,         Development of Response Surfaces for Optimization of Noisy Black-Box Systems, Fall 2004-Spring 2005
18. Yuliana Lugo,                 Application of MATLAB's model predictive control toolbox to mixing processes, 2006, RISE student.
19. Fred Bidrawn,                 Sensitivity analysis for Mixed Integer Linear Programming problems, Fall 2004.
20. Victor Low,                    Reduction of combustion chemistry, Spring- Summer 2007.
21. Salah Issa,                    Investigating the performance of hepatocyte cultures, 2006.

22. Enrique Coronado, Short-term Scheduling of Pharmaceutical Plants, Fall 2002.  
 23. Kimberly Ward, Design of a Graphical Interface for Scheduling of Batch Plants, 2001.  
 24. Melissa Gregory, Integrating Energy Price Forecasting with Design Optimization of Energy Intensive Plants, Spring 2001.  
 25. Regina Galie, Scheduling of Refinery Operations, Fall 2001.  
 26. Miral Parikh Design and Optimization of Air Separation Plant, SUPER Douglass College of women Student, Spring 2001  
 27. Rinku Parikh, Model Reduction of Complex Kinetic Networks, Slade Scholar honor student- Fall 2000 – Spring 2002.  
 28. Claire Pinto, Short-term Scheduling of Multi-Product Batch Plants, Spring 2000.  
 29. Nisha Batra, Uncertainty Considerations In Atmospheric Kinetic Modeling, Spring 1999.  
 30. Pauline Voung, Flexibility Evaluation of Batch Processes. Fall 1998.  
 31. Grace Zougheib, Modeling of Short-term Scheduling of Batch Plants, Fall 1998.

## **PROFESSIONAL MEMBERSHIP AND SERVICE**

### Conference Organizer

- **PSE (Process Systems Engineering) Conference**, 2018 (organized every 3 years – the biggest international conference in the Process Engineering community – more than 500 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

Past Director of the AIChE Board of Directors – 2017-2020

Fellow of the AIChE – elected 2016

AIChE Computing and Systems Technology (CAST) Chair 2013

AIChE Computing and Systems Technology (CAST) Vice Chair 2011

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

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

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

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)

### Conference Organizing Committees

Organizing Committees: 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, 7<sup>th</sup> 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).

#### REFEREING/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), 2003,2007  
Foundations of Computer Aided Process Design FOCAPD 2009, 2014, 2019  
European Symposium of Computer Aided Process Engineering (ESCAPE)- 27 (2017), 26 (2016),  
25 (2015), 23 (2013), 22 (2012), 21 (2011)  
Process Systems Engineering International Meeting PSE 2009, 2015, 2006  
17<sup>th</sup> 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

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

Science Foundation Ireland  
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

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Editorial Advisory Board of Computers and Chemical Engineering – Elsevier  
Editorial Board of the Operational Research: An International Journal (ORIJ) – Springer

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6. Luo, Y.; Kuo, M.; Ye, M.; Lobo, R.; Ierapetritou, M. Comparison of 4,4'-Dimethylbiphenyl from Biomass-Derived Furfural and Oil-Based Resource: Technoeconomic Analysis and Life-Cycle Assessment, *Industrial & Engineering Chemistry Research*, 2022.
7. Yang, O.; Tao, Y.; Qadan, M.; Ierapetritou, M., Process Design and Comparison for Batch and Continuous Manufacturing of Recombinant Adeno-Associated Virus, *Journal of Pharmaceutical Innovation*, 2022.
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**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 (February 2021)**

No of citations: 13127; h-index 64 source: Google Scholar

No of citations: 8862; h-index 51 source: Scopus

No of citations: 8111; h-index 48 source: Web of Science: Science Citation Index

**BOOKS AUTHORSHIP**

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2. M. Eden, M. Ierapetritou, and G. Towel. 13th International Symposium On Process Systems Engineering – PSE 2018, July 1-5 2018, Elsevier, 2912 pages, 1<sup>st</sup> edition (July 15, 2018).
3. 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).
4. 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).
5. 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 CONFERENCE PROCEEDINGS**

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2. Luo, Y., O'Dea, R., Epps, T., Ierapetritou, M., Comparative Study of Different Hybrid Life Cycle Assessment Methodologies Applied to Biomass-based Chemical Production, *Computer Aided Chemical Engineering.* **50** (2021) 1683-1688.

3. Efficient Data-based Methodology for Model Enhancement and Flowsheet Analyses for Continuous Pharmaceutical Manufacturing, Pooja Bhalode, Nirupaplava Metta, Yingjie Chen, Marianthi Ierapetritou, ESCAPE 30, Milan, Italy, May 24-27, 2020 (held virtually August 2020).
4. Surrogate-Based Modeling and Optimization for Advanced Decision Making. Marianthi Ierapetritou, FOCAPD, Colorado, July 2019.
5. Discrete Element Modeling (Dem) Parametric Study of Feeder Unit in Continuous Pharmaceutical Industry, Pooja Bhalode and Marianthi Ierapetritou, FOCAPD, Colorado, July 2019.
6. Data-Driven Feasibility Analysis for Modular Design under Demand Variability. Lisia Dias, Atharv Bhosekar and Marianthi Ierapetritou. FOCAPD, Colorado, July 2019.
7. 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, FOCAPD/CPC January 2017.
8. 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.
9. 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.
10. 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.
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13. 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.
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17. Portillo, P.M., 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.
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19. Davis, E., 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.
20. Yang, H., 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.
21. 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.
22. 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.
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24. 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.
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32. Ierapetritou, M.G., I.P. Androulakis, Uncertainty considerations in the reduction of chemical reaction mechanisms, *Proceedings of the 5<sup>th</sup> International Conference on Foundations of Computer-Aided Process Design*, (2000).
33. Ierapetritou, M.G. and C.A. Floudas, Modeling and Optimization of Short-term Scheduling of Batch and Semi-Continuous Processes, *Proceedings of 2<sup>nd</sup> Hellenic Scientific Chemical Engineering Conference*, Thessaloniki, Athens, Greece (1999).

## INVITED PRESENTATIONS – KEYNOTE and PLENARY LECTURES

### 2022

1. PSE 2022 Keynote Lecture “PSE tools and challenges in the development of advanced pharmaceutical manufacturing”, Kyoto, Japan, June 2022.
2. PSE Asia Invited Speaker “Data Revolution and Process Systems Engineering - Challenges and Opportunities” Indian Institute of Technology Madras, December 2022.



3. Invited presentation in honor of Prof. Gintaras Reklaitis 80<sup>th</sup> birthday Paper #259 “Process Systems Engineering in the Era of Big-Data and Industry 4.0 Revolution”, Boston, MA, November 2021.
4. 2022 Richard S.H. Mah Lectures on Modeling and Computation in Chemical Engineering, Northwestern University, December 2022.
5. Invited talk on Digital twin in Pharmaceutical manufacturing, Pharmaceutical Workshop, Rutgers September 22<sup>nd</sup>, 2022.

## 2021

6. Invited presentation in honor of Prof. Venkat Venkatasubramanian’s 65<sup>th</sup> birthday Paper #259 “Process Systems Engineering in the Era of Big-Data and Industry 4.0 Revolution”, Boston, MA, November 2021.
7. Invited presentation in memory of Prof. Floudas Paper #212d “Data-Based Process Systems Methods and Applications”, Boston, MA, November 2021.
8. Invited Lecture Department of Chemical Engineering and Materials Science, University of Minnesota, December 7<sup>th</sup>, 2021.
9. Invited talk Vertex Pharmaceuticals, September 22<sup>nd</sup>, 2021.
10. Invited Lecture IFPAC 2021, Continuous Manufacturing - Residence Time Distribution Approaches. March 3<sup>rd</sup>, 2021.
11. Invited talk Bernal Institute University of Limerick, Ireland. Towards a Digital Twin: Advances in Process Modeling and Integration of Pharmaceutical Manufacturing, January 14<sup>th</sup>, 2021.
12. **DB Robinson Lecture University of Alberta**, Process Systems Integration Modeling and Optimization of Pharmaceutical processes. March 11<sup>th</sup> 2021.

## 2020

13. **Keynote lecture:** Towards a Digital Twin: Advances in Process Modeling and Integration of Pharmaceutical Manufacturing, AAPS, PharmSci 360, Tuesday October 27, 2020.
14. Application of Models for Advanced Biomanufacturing Towards a Digital Twin, BPI International 2020, September, 2020 (held virtually).
15. Process Systems Engineering in the Era of Big-Data and Industry 4.0 Revolution. University of Austin, TX, February, 2020.
16. Digital Twin Development Framework in Pharmaceutical Industry. PharmSci Small Molecule Digital Twin Meeting, Pfizer, March 4, 2020.
17. Digital Twin Development Framework in Pharmaceutical Industry. Siemens/PSE, May 13<sup>th</sup> 2020.

## 2019

18. The Twenty Sixth **Professor Roger W.H. Sargent Lecture**. Process Systems Engineering in the Era of Big-Data and Industry 4.0 Revolution, Imperial College, December 5<sup>th</sup>, 2019.
19. **Plenary lecture**, FOCAPD 2019 Surrogate-Based Modeling and Optimization for Advanced Decision Making, Copper Mountain Resort Colorado, July 14 - 18, 2019.
20. 2019 CPSE Seminar Series Imperial College London, invited to present at “30 Years of CPSE”, March 2019.
21. Rensselaer Polytechnic Institute, Fall Seminar Series, Department of Chemical and Biological Engineering, Troy, NY, November 2019.
22. Fall Seminar series invited lecture, Moving towards Advanced Manufacturing of Pharmaceutics using Process Systems Engineering Approaches, Department of Chemical and Biomolecular Engineering, University of Notre Dame. October 2019.

23. Invited seminar. A Process Systems Engineering Perspective to Advanced Pharmaceutical Manufacturing. Department of Chemical Engineering, University of Padova, September 2019.
24. Invited talk Advanced Continuous Upstream Manufacturing of Biotherapeutics. IFPAC Summit, Puerto Rico, June 2019.
25. Invited talk Advanced Advances of Process Modeling in Continuous Manufacturing of Solid Oral Dosage Pharmaceutical Products: Towards Industry 4.0. IFPAC Summit, Puerto Rico, June 2019.
26. Invited Short Course on process modeling and optimization in process operations and pharmaceutical manufacturing, PLAPIQUI, Bahia Blanca, Argentina, January 2019.
27. Invited Seminar, A Process Systems Engineering Perspective to Advanced Pharmaceutical Manufacturing, PLAPIQUI, Bahia Blanca, Argentina, January 2019.
28. 2nd Process System Engineering (PSE) - State of the Art Workshop, Invited talk A Surrogate Model Based Decision Making Framework, Nuevo Vallarta, Nayarit, México, 27-30 January, 2019.
29. 2nd Process System Engineering (PSE) - State of the Art Workshop, Invited talk, Integration of planning, scheduling and control, Nuevo Vallarta, Nayarit, México, 27-30 January, 2019.

### 2018

30. CMAC Future Manufacturing Research Hub Open Day 2018 **Keynote Speaker** “Continuous Pharmaceutical Manufacturing: Challenges and Opportunities”, October 2018.
31. Invited seminar Department of Chemical and Biomolecular Engineering University of Houston “Process Systems Engineering Applications in Advanced Pharmaceutical Manufacturing”, March 2018.
32. **2018 Ralph Peck Lecturer**, Department of Chemical & Biological Engineering, Illinois Institute of Technology, “A Simulation-based Decision Making Framework”, April 2018.
33. Invited Special Guest Seminar, Delaware Energy Institute, “Advanced Pharmaceutical Manufacturing: A New Frontier for Process Systems Engineering”, May 2018.
34. Invited seminar Department of Chemical and Biological Engineering, Northwestern University, “A Process Systems Engineering Perspective to Advanced Pharmaceutical Manufacturing”, June 2018.

### 2017

35. Invited seminar Department of Chemical and Biomolecular Engineering UPenn “Advanced Pharmaceutical Manufacturing Using Process Systems Engineering”, November 29<sup>th</sup>.
36. **Invited plenary lectures in two Symposia** in Japan. The first one on “Process Systems Engineering Applications in Advanced Pharmaceutical Manufacturing” in Kyoto October 20<sup>th</sup> and the second one on “Continuous Pharmaceutical Manufacturing: Challenges and Opportunities” in Tokyo October 23<sup>rd</sup>.
37. **Keynote lecture** on “Surrogate-based Optimization for Pharmaceutical Manufacturing Processes”, Barcelona, October 2017.
38. Invited Seminar, A Systems Perspective for Advancing Pharmaceutical Manufacturing, Aristotle University of Thessaloniki, Greece, June 26, 2017.
39. Invited Seminar, A Systems Perspective for Advancing Pharmaceutical Manufacturing, UC Davis, Department of Chemical Engineering, May 18, 2017.
40. C-SOPS and I2APM Present OSD Continuous Manufacturing in the Current Regulatory Landscape, Invited participation in academic panel, May 8-9, 2017.
41. Invited Lecture, Christodoulos A. Floudas Memorial Symposium, A tribute to an advisor, a mentor and a friend, May 6, 2017.

42. Invited Seminar, REI Energy Policy Seminar, "Techno-economic and Life Cycle Analysis of Alternative Production Routes for Biomass based Chemicals" April 21, 2017.
43. Invited Seminar, A Systems Perspective for Advancing Pharmaceutical Manufacturing, Clemson University, April 20, 2017.
44. 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.
45. Invited Seminar, A Systems Perspective for Advancing Pharmaceutical Manufacturing, Department of Chemical and Biological Engineering, IIT, March 29, 2017.
46. **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

47. **Broadcast of the lecture on "Modeling for Advanced Pharmaceutical Manufacturing" (<https://www.youtube.com/watch?v=7n8bPPkWiOk>) has been viewed more than 88000 times.**
48. **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).
49. **Keynote speaker**, Process Design and Optimization of Chemical Production from Biomass Feedstocks, **SCPPE June, China**, 2016. Organized every 3 years. 4<sup>th</sup> International Conference on Sustainable Chemical Product and Process Engineering (only 4 keynote speakers).
50. Integration of Systems Thinking in Biopharmaceutical Manufacturing, **Eli Lilly**, May 2016.
51. ERC: C-SOPS capabilities towards continuous manufacturing of solid based drug products, **PSE Advanced Process Modeling Forum, London, UK**, April 2016 (Annual meeting).
52. Simulation based Optimization for Supply Chain Management, **Fields Institute of Research in Mathematical Sciences, University of Toronto**, March 29<sup>th</sup> 2016.
53. A Systems Perspective for Advancing Pharmaceutical Manufacturing, Department of Chemical Engineering, **Penn State University**, May 5<sup>th</sup>, 2016
54. Advanced Pharmaceutical Manufacturing- A New Frontier for Process Systems Engineering, School of Chemical Engineering, **Oklahoma State University**, March 1<sup>st</sup> 2016.
55. A General Framework of Process Design and Evaluation of Renewable Production of Chemicals from Biomass Feedstocks, **Rutgers Energy Institute**, April 22<sup>nd</sup> 2016.

## 2015

56. Advanced Pharmaceutical Manufacturing: A New Frontier for Process Systems Engineering, **Princeton University**, Department of Chemical and Biological Engineering, September 30<sup>th</sup>, 2015.
57. Advanced Pharmaceutical Manufacturing: A New Frontier for Process Systems Engineering, **Carnegie Mellon University**, Department of Chemical Engineering, September 24<sup>th</sup>, 2015.
58. **Keynote Speaker** "Decision Making Across Different Scales: From Process Control to Supply Chain Management", 3<sup>rd</sup> Olympus International Conference on Supply Chains, Athens, Greece, November 7-8, 2015.
59. **Keynote speaker** at Division of Particulate Preparations and Design (PPD) of **The Society of Powder Technology, Japan (SPTJ)**, Annual Symposium, October 22-23, 2015.
60. Webinar AIChE CAST Division, Modeling for Advanced Pharmaceutical Manufacturing, Marianthi Ierapetritou, May 19, 2015, 11 AM EDT, Announcement: <http://goo.gl/QMWdjD>.

61. Decision Making Across Different Scales: From Process Control to Supply Chain Management, **McMaster Advanced Control Consortium (MACC)** Workshop, May 12-14, 2015.
62. **Keynote Speaker**, Modeling and Optimization of Continuous Pharmaceutical Manufacturing Processes, PSE2015/ESCAPE25, Copenhagen, May 31-June 4, 2015.
63. Taking Continuous Processing from Good to Great: The Application of Advanced Process Controls and Real-Time Analytics. **50<sup>th</sup> AAPS Arden Conference: Continuous Manufacturing of Solid Oral Drug Products**, Baltimore, March 16-18, 2015.
64. 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

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

#### 2013

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

#### 2010-2012

72. 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.
73. Process simulation and Optimization of Pharmaceutical Processes. **University of Connecticut**, March 2012.
74. Optimization of Process Design and Operations of Pharmaceutical Systems. **Columbia University**, March 2012.
75. Computer-aided design and analysis of continuous pharmaceutical manufacturing processes, **National Technical University of Athens, Greece**, October 2011.
76. Dynamic flowsheet simulation of integrated continuous pharmaceutical manufacturing processes. **5th International Graz Congress on Pharmaceutical Engineering, Graz, Austria**, September 2011
77. Systems Approaches to Analyze Complex Engineering Problems. **Illinois Institute of technology**, April 2010.
78. Going from Simple to Complex and back to Simple: The process systems paradigm. **Imperial College, London**, March 2010.

#### 2008-2010

79. **Keynote lecture**, Integration of Planning and Scheduling and Consideration of Uncertainty in Process Operations. **20<sup>th</sup> International Symposium of Process Systems Engineering (PSE), Brazil**, August 2009.
80. Systems approaches for analyzing complex process engineering problems. **Carnegie Mellon University**, March 2009.
81. 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.
82. Systems Approaches for Analyzing Complex Process Engineering Problems. **Princeton University**, February 2008.

#### **2006-2008**

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

#### **2004-2006**

92. Process Design and Operations: Modeling and Optimization. **12<sup>th</sup> Symposium in Chemical Engineering, Puerto Rico**, October 2005.
93. Uncertainty issues in process design and operations. **Texas A&M**, November 2005.
94. Combustion modeling including detailed adaptive chemistry. **Lab for Surface Modification, Physics Departments, Rutgers University**, 2005.
95. Uncertainty analysis for process design and operations. **Pan American Advanced Studies Institute Program on Process Systems Engineering (PASI), Iguassu Falls, Brazil**, August 2005.
96. Adaptive Kinetic Model Reduction Framework Considering Micromixing Effects. **Imperial College, London, UK**, May 2004.
97. Women in Engineering: The Myth and Reality. **Society of Women Engineers**, Rutgers University, April 2004.
98. Development of an Adaptive Chemistry Model for Reactive Flow Simulations. **University of Rhode Island**, March 2004.
99. Process Operations in Dynamic Environment. **University of Kansas**, February 2004.
100. Process Synthesis and Design within a Dynamic Environment. **University of Southern California**, February 2004.

#### **2002-2004**

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

### **2000-2002**

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

### **1997-2000**

115. Parameter Variability in Plant Design and Synthesis. **BOC Gases Technical Group**, October 1998.
116. Process Design and Operations: Uncertainty and Scheduling. **Department of Chemical Engineering, Carnegie Mellon University**, April 1998.
117. Uncertainty in Process Systems Engineering. Department of Chemical Engineering, **Lehigh University**, April 1997.
118. Uncertainty in Process Design and Operations. Department of Chemical Engineering, **University of Arizona**, Tucson, June 1997.
119. Process Design and Operations: Uncertainty and Scheduling. Department of Chemical Engineering, **Berkeley, CA**, April 1997.

### **OTHER PRESENTATIONS**

1. Chaoying Ding, Marianthi Ierapetritou. "Surrogate-based Feasibility analysis for the Identification of Design Space of Multicolumn Counter-current Continuous Protein A Chromatography", Poster #160h, **AIChE Annual Meeting**, Boston, MA, November 2021.
2. Huayu Tian, Pooja Bhalode, Sonia M. Razavi, Andres Roman-Ospino, Fernando Muzzio, Marianthi Ierapetritou "Development of RTD-Based Flowsheet Modeling Including Process Uncertainty for Continuous Solid-Based Drug Manufacturing", Paper #308c, **AIChE Annual Meeting**, Boston, MA, November 2021.

3. Pooja Bhalode, Sonia M Razavi, Andrés Roman-Ospino, Atul Dubey, Fernando J Muzzio, Marianthi Ierapetritou, "Data pre-treatment for meaningful analysis of residence time distribution (RTD) profiles for pharmaceutical manufacturing applications", Paper #185d, AIChE Annual Meeting, Boston, MA, November 2021.
4. Pooja Bhalode, Yi Tao, Fernando J. Muzzio, Marianthi Ierapetritou "Development of discrete element method calibration approach for pharmaceutical applications", Paper #103f, AIChE Annual Meeting, Boston, MA, November 2021.
5. Yuqing Luo, Marianthi Ierapetritou "Integrated Biorefinery Design Under Multi-Scale Uncertainties", Paper #23e, AIChE Annual Meeting, Boston, MA, November 2021.
6. Oluwadare Badejo, Marianthi Ierapetritou "Integration of Planning and Scheduling using Data-Driven Feasibility Analysis ", Paper #476g, AIChE Annual Meeting, Boston, MA, November 2021.
7. Oluwadare Badejo, Atharv Bhosekar, Marianthi Ierapetritou "Supply Chain Optimization for Modular Manufacturing with Production Feasibility Analysis Under Uncertainty", Paper #612f, AIChE Annual Meeting, Boston, MA, November 2021.
8. Yingjie Chen, Shashwat Gupta, Andres Roman-Ospino, Fernando Muzzio, Marianthi Ierapetritou "Adaptive Strategies for Updating Unit Operation Models and in-Line Monitoring of Blend Uniformity in Continuous Pharmaceutical Manufacturing Process", Paper 75b, AIChE Annual Meeting, Boston, MA, November 2021.
9. Luo, Y., Robert, O., Epps, T., Ierapetritou, M., Process design and techno-economic analysis of pressure-sensitive adhesive polymer production from lignin. Presentation at 25th Annual Green Chemistry Engineering Conference, June 14-18, 2021.
10. Bhosekar A., & Ierapetritou, M., "Integration of Modular Processing in Supply Chain Optimization", 2020 Virtual AIChE Annual Meeting, November 2020.
11. Ou Yang, Marianthi Ierapetritou "Modeling CHO Cell Glycosylation Process Using Dynamic Kriging", Paper #498d, AIChE Annual Meeting, San Francisco, CA, November 2020.
12. Michael Abramovitch and Marianthi Ierapetritou "Responsible Innovation in Chemical Process Design: Stakeholder-Driven Multi-Objective Optimization of a Modular Food Waste Valorization Process", Paper #486a, AIChE Annual Meeting, San Francisco, CA, November 2020.
13. Pooja Bhalode, Marianthi Ierapetritou "A Multi-Scale Hybrid Modeling Approach for Continuous Pharmaceutical Unit Operations", Paper #377b, AIChE Annual Meeting, San Francisco, CA, November 2020.
14. Pooja Bhalode, Yingjie Chen, and Marianthi Ierapetritou "Towards the Development of Digital Twin Framework for Continuous Pharmaceutical Manufacturing: Real-Time Model Maintenance and System Analyses", Paper #195a, AIChE Annual Meeting, San Francisco, CA, November 2020.
15. Yingjie Chen and Marianthi Ierapetritou, "Implementation of Hybrid Models to Perform System Analyses with Model Maintenance in Continuous Pharmaceutical Manufacturing", Paper #287c, AIChE Annual Meeting, San Francisco, CA, November 2020.
16. Abhay Athaley, David Sheng, and Marianthi Ierapetritou "Scalable Platform Technology for Bio-Based p-Xylene Production Using a Novel Continuous Flow Micro-Reactor", Paper #743g, AIChE Annual Meeting, San Francisco, CA, November 2020.
17. Pooja Bhalode, Nirupaplava Metta, Yingjie Chen, Marianthi Ierapetritou. "Efficient Data-based Methodology for Model Enhancement and Flowsheet Analyses for Continuous Pharmaceutical Manufacturing", ESCAPE 30<sup>th</sup>, Held virtually August 2020.
18. Pooja Bhalode and Marianthi Ierapetritou, "Discrete Element Modeling (Dem) Parametric Study of Feeder Unit in Continuous Pharmaceutical Industry", Paper#115, FOCAPD, Colorado, July 2019.

19. Lisia Dias, Atharv Bhosekar and Marianthi Ierapetritou, “Data-Driven Feasibility Analysis for Modular Design under Demand Variability”, Paper#57, FOCAPD, Colorado, July 2019.
20. Abhay Athaley, Yue Zhang and Marianthi Ierapetritou “Design and Analysis of the Integrated Process for Algae Conversion to mix Alcohols”, Paper #82d, AIChE Annual Meeting, Orlando, FL, November 2019.
21. Yingjie Chen and Marianthi Ierapetritou “Development of Data-Driven and Hybrid Models for Continuous Pharmaceutical Manufacturing Lines Under Industry 4.0 Framework”, Paper #259g, AIChE Annual Meeting, Orlando, FL, November 2019.
22. Ou Yang and Marianthi Ierapetritou “Mathematical Modeling and Optimization of the Upstream Monoclonal Antibody Production” Paper #499f, AIChE Annual Meeting, Orlando, FL, November 2019.
23. Ravendra Singh, Rohit Ramachandran, Marianthi Ierapetritou and Fernando J. Muzzio “Industry 4.0: Advanced Bi-Layer Control System for Continuous Pharmaceutical Manufacturing Pilot-Plant”, Paper #577g, AIChE Annual Meeting, Orlando, FL, November 2019.
24. Lisia S Dias, Atharv Bhosekar and Marianthi Ierapetritou “Data-Driven Feasibility Analysis for Modular Design Under Demand Variability” Paper #635c, AIChE Annual Meeting, Orlando, FL, November 2019.
25. Nirupaplava Metta, Marianthi Ierapetritou, Rohit Ramachandran and Atharv Bhosekar “An Efficient Data-Based Methodology to Identify the Design Space of Continuous Pharmaceutical Manufacturing Processes” Paper #642h, AIChE Annual Meeting, Orlando, FL, November 2019.
26. Abhay Athaley, Yue Zhang and Marianthi Ierapetritou “Integrated Design, Analysis and Optimization of Chemical Production from Biomass Feedstocks Considering Process and Market Uncertainty” Paper #724a, AIChE Annual Meeting, Orlando, FL, November 2019.
27. Athanasios Kritikos, Yung Wei Hsiao, Dionisios G. Vlachos, Marianthi Ierapetritou and George Tsilomelekis “Adsorption of Biomass-Derived Value-Added Chemicals in a Micro-Packed-Bed Reactor a CFD Study” Paper #724a, AIChE Annual Meeting, Orlando, FL, November 2019.
28. Abhay Athaley, Yue Zhang and Marianthi Ierapetritou “Optimal Bio-Refinery Configuration using Economic Metrics and Environmental Impacts considering Supply, Demand and Process Uncertainties ” Paper #395f, AIChE Annual Meeting Pittsburgh, October 2018.
29. Atharv Bhosekar and Marianthi Ierapetritou “Surrogate-based optimization in process systems engineering” Paper # 52f , AIChE Annual Meeting Pittsburgh, October 2018.
30. Atharv Bhosekar, Lisia Dias, Zilong Wang, and Marianthi Ierapetritou "Surrogate-Based Derivative-Free Optimization of a Multi-Enterprise Supply Chain Simulation" Paper #598c , AIChE Annual Meeting Pittsburgh, October 2018.
31. Nirupaplava Metta, Marianthi Ierapetritou and Rohit Ramachandran "Sensitivity Analysis and Identification of Feasible Region of a Wet Granulation Continuous Pharmaceutical Manufacturing Process" Paper#470g, AIChE Annual Meeting Pittsburgh, October 2018.
32. Ou Yang, Siddharth Prabhu and Marianthi Ierapetritou " Continuous Biopharmaceutical Antibody Production Based on Techno-Economic Analysis" Paper# 200m, AICHE Annual Meeting Pittsburgh, October 2018.
33. Lisia Dias and Marianthi Ierapetritou. "Integration of Planning, Scheduling and Control Using Feasibility Analysis and Surrogate Models". Paper #136c, AIChE Annual Meeting Pittsburgh, October 2018.
34. Abhay Athaley, Praneeth Annam, Basudeb Saha and Marianthi Ierapetritou “Integrated Design and Analysis of Chemical Production from Biomass Feedstocks” Paper #28d, AIChE Annual Meeting Minneapolis, October 2017.



35. Zilong Wang and Marianthi Ierapetritou. “A Surrogate-Based Method for Constrained Optimization with Black-Box Noisy Simulations” Paper #419a, AIChE Annual Meeting Minneapolis, October 2017.
36. Nirupaplava Metta, Marianthi Ierapetritou and Rohit Ramachandran. “Reduced Order-Discrete Element Method Modeling of Comilling for Efficient Integration into Continuous Process” Paper # 137f, AIChE Annual Meeting Minneapolis, October 2017.
37. Andrés D. Román-Ospino, Sarang Oka, Sara Moghtadernejad, M. Sebastian Escotet-Espinoza, Ravendra Singh, Rohit Ramachandran, Marianthi Ierapetritou and Fernando Muzzio, “Residence Time Distribution and Segregation Studies Through Real Time Measurements By Near Infrared Spectroscopy” Paper #565a, AIChE Annual Meeting Minneapolis, October 2017.
38. Ravendra Singh, Fernando J. Muzzio, Marianthi Ierapetritou and Rohit Ramachandran. “Integrated Control and Data Management System for Continuous Pharmaceutical Manufacturing Process” Paper #438f, AIChE Annual Meeting Minneapolis, October 2017.
39. Ravendra Singh, Fernando Muzzio, Marianthi Ierapetritou and Rohit Ramachandran. “Advanced Model Predictive Control of Powder Level in Continuous Pharmaceutical Manufacturing Pilot-Plant” Paper #778f, AIChE Annual Meeting Minneapolis, October 2017.
40. Parham Farzan and Marianthi Ierapetritou. “A Framework for Development of Integrated and Computationally Feasible Models of Large-Scale Mammalian Cell Bioreactors” Paper #523c, AIChE Annual Meeting Minneapolis, October 2017.
41. Sebastian Escotet-Espinoza, Sarang Oka, Sara Moghtadernejad, Andrés D. Román-Ospino, Fernando Muzzio and Marianthi Ierapetritou, “Effect of Material Properties on the Mass Hold up Dynamics and Residence Time Distribution in Continuous Powder Blenders” Paper 723f, AIChE Annual Meeting Minneapolis, October 2017.
42. 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.
43. 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
44. 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.
45. 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.
46. 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.
47. 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.
48. 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.

49. 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.
50. 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.
51. 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.
52. 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.
53. 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.
54. 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.
55. 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.
56. 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.
57. 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.
58. Jinjun Zhuge and Marianthi G. Ierapetritou. Integration of Scheduling and Control Using Fast MPC, AIChE Annual Meeting, Atlanta, Nov 2014, Paper 697e.
59. 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.
60. 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.
61. 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.
62. 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.
63. 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.

64. 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.
65. 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.
66. 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.
67. 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.
68. 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.
69. 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.
70. 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.
71. 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.
72. 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.
73. Nihar Sahay and Marianthi G. Ierapetritou. Centralized vs. Decentralized Supply Chain Management Optimization, AIChE Annual Meeting, San Francisco, November 2013, Paper 518a.
74. 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.
75. 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.
76. 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.
77. 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.
78. 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.

79. 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.
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211. 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.
212. 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.
213. Ierapetritou, M.G, and C.A. Floudas, Short-Term Scheduling: New Mathematical Models vs Algorithmic Improvements *ESCAPE8* conference, Bruge, May 1998.
214. 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.
215. 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.
216. 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.
217. 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.
218. Ierapetritou M.G., J. Acevedo and E.N. Pistikopoulos, Stochastic Optimization of Manufacturing Systems Under Uncertainty *AICHE Annual Meeting*, Chicago November 1996.
219. 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.
220. Ierapetritou, M.G. and E.N. Pistikopoulos, Design of Multiproduct Batch Plants with Uncertain Demands. *ESCAPE5*, Bled, June 1995.

221. 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.
222. 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.
223. Ierapetritou, M.G. and E. N. Pistikopoulos, An Optimization Approach for Process Engineering Problems under Uncertainty. *PSE4*, Korea, May 1994.
224. 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").
225. Ierapetritou, M.G. and E. N. Pistikopoulos, Long Range Planning under Uncertainty. *ESCAPE4*, Dublin, March 1994.
226. Ierapetritou, M.G. and E. N. Pistikopoulos, Production and Capacity Planning under Uncertainty. *ICHEME94* London, January 1994.
227. Ierapetritou, M.G., E.N. Pistikopoulos and C.A. Floudas, Operational Planning Under Uncertainty. *ESCAPE3*, Graz, June 1993.
228. Ierapetritou, M.G. and E. N. Pistikopoulos, Measuring Decision Flexibility and Economic Risk in Operational Planning. *IFORS 93*, Lisbon, July 1993.
229. Ierapetritou, M.G. and E. N. Pistikopoulos, Integration of Decision Flexibility and Economic Risk in Operational Planning. *ICHEME93* Birmingham, January 1993.

## **SELECTED ADMINISTRATIVE/LEADERSHIP EXPERIENCE**

### **Associate Vice President Women in Science, Technology and Engineering (WISEM)**

- Provide Leadership and Professional Development Opportunities
  - OASIS Leadership and Professional Development Program
  - Special events and projects with Institute for Women's Leadership consortium
  - Faculty Leading Change
- Foster Interdisciplinary Research Collaborations
  - Mentoring Networking Luncheons
- Provide Funding Opportunities to Advance Career Development
  - Women in Science Research Awards
- Increase the Visibility of the Accomplishments of Female Scientists
  - WISEM's My Story Database
  - Website Featured News, Social Media and Media Relations Projects
- Partner to Develop and Sponsor Programs for STEM Equity
  - American Association of University Women
  - New Jersey Council of Teaching Hospitals
  - Girl Scouts of America
  - Association for Women in Science
- Advance Institutional Diversity and Inclusion
  - Climate assessments, focus groups, data collection
  - Dual-Career Faculty Initiative
  - Recruitment and retention of female faculty
  - Roundtable discussion with university leaders
  - Faculty Search Committee Tools

### **Chair, Department of Chemical and Biochemical Engineering, Rutgers University 2013-2018**

- Human resource and growth of the department:
  - Created and coordinated new faculty mentoring program
  - Restructure department administration structure
  - Created and established graduate student symposium
  - Hire an instructional assistant professor
  - Increased research budget to ~\$9 million from \$2 million
  - Successfully managed the promotion and reappointments of four faculty
  - Triple the number of teaching assistants in the department
  - Double the number of graduate fellowships
  - Oversaw curriculum redesign
  - Initiated educational innovations planning
  - Established and oversight three working groups that led to the development of three graduate level certificates
  - Established and implemented a learning assistant program
- Financial planning and management
  - Double departmental revenue from \$1.7 to \$3.5million
  - Developed the first alumni-based fellowship
- Diversity and inclusion
  - Hire two female staff members

- Mentoring program for women faculty members (23% female faculty)
- Outreach
  - Established an active external advisory board involving industrial and academic members that meets annually
  - Initiated departmental newsletter to improve department visibility and engage alumni
  - Redesign department website and establish active presence in social media
  - Established industrial sponsored seminar series
  - Established distinguished professor lectureship sponsored by industry
  - Initiated a successful industry meet and greet event for student and faculty network interaction – participation of 20 companies in the first year
- Fundraising and alumni relations
  - Developed the first alumni-based fellowship
  - Established annual alumni events
- Facilities and infrastructure
  - Precinct plan for department relocation
- Interdisciplinary initiatives
  - Coordinated and implemented department strategic plan to align with school and university strategic plans
  - Implemented strategic plan initiative focusing on energy and sustainability
    - Hire 3 assistant professors in the area of energy
    - Coordinated the establishment of new laboratories
  - Developed and implemented a successful master program
    - Triple the number of master students
    - Implemented new graduate level courses
    - Established graduate level internship program

#### **Co-Director, Engineering Research Center**

- Research thrust leader: Integrative Modeling Systems Thrust: leading coordination of 4 institutions, 30 major pharmaceutical companies and FDA
- Test bed leader: continuous manufacturing leading to the first continuous pharmaceutical production of drug to be approved by FDA
- Project leader coordinating research efforts among two schools and three industries
- Leader of commercialization effort funded by NSF for the continuous manufacturing initiative

#### **University Strategic Planning 2013-2014**

- Participated as a member of the faculty excellence committee
  - Year-long process participating and leading discussions in monthly meetings among faculty and students from different campuses

#### **Women leadership program 2014-2018**

- Conceive and propose a new program for leadership for women in academia
- Successful fund raising activities to implementing the program twice the last 3 years
- Leading the institutionalization of the program to involve the entire University

**Undergraduate Executive Officer 2004-2008**

- Restructure of departmental curriculum
  - Streamline prerequisites
  - Improve design experience
- Implement student mentoring program
- Propose laboratory experience throughout the curriculum
- Lead a successful ABET accreditation

**CACHE Organization – Elected president (2013 – 2016) Elected member since 2005**

(The leading organization within the Chemical Engineering community promoting computational applications)

- Led Strategic planning and vision re-design for the organization
- Developed and implemented a number of outreach activities
  - Breakfast with chairs at AIChE annual meeting
  - Surveys for member schools
- Led the development of ABET toolbox task force
- Restructure the organization structure to new working groups and task forces.

**AICHE – Elected Board of Directors 2017-2020**

- Board Award Committee
- Constitution and Bylaws Committee
- CTOC Liaison

**AICHE – Elected chair of the CAST (Computing and Systems technology Division) 2013**

(Director 2008-2010, Second Vice Chair 2011, Vice Chair 2012)

- Established the graduate student presentation award to improve student engagement
- Responsible for fund raising for division awards and banquet
- Initiated free membership of undergraduate students to improve division visibility and outreach

**SELECTED OTHER UNIVERSITY SERVICE – RUTGERS UNIVERSITY**

Campus-wide search committee for Provost position (2017)

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 (School of Engineering) (2010-2011)

Member of Committee on Appointments and Promotions (School of Engineering) (2009-2011)

Scholastic Standing Committee (2008-2011)

College Planning Committee (2008-2011)

Faculty Secretary, SOE (2009-2011)

Dean's Advising Committee (2009-2011)

Chair of the Graduate student Admissions' Committee (2009-2012)

Society of Women Engineers (SWE) Faculty Advisor (2007-2008)

School of Engineering Rules of Procedure Committee (2003-2004)

Department class advisor (2000-2008)

Departmental Web Site Coordinator (2000-2008)

Chair, School of Engineering Student Discipline Committee (2000-2004)  
Departmental Graduate Qualifying Committee (2008-2017)

**SELECTED OTHER UNIVERSITY SERVICE –UNIVERSITY OF DELAWARE**

Faculty recruitment committee – Chemical and Biomolecular Engineering Department (2021)  
Colburn Community Committee – Chemical and Biomolecular Engineering Department (2021-2022)