Rohit Ramachandran, PhD

Department of Chemical & Biochemical Engineering
Rutgers, The State University of New Jersey
98 Brett Road, Piscataway, NJ 08854, USA
Tel: 1-848-445-6278, Email: rohit.r@rutgers.edu
URL: www.pslrutgers.com

EDUCATION

2005 – 2008 **PhD, Chemical Engineering with Diploma of Imperial College (DIC)**
Centre for Process Systems Engineering (CPSE), Imperial College London
Thesis titled "Multi-scale Population Balance Modelling and Controllability of Granulation Processes".
Advisors: Dr. C. D. Immanuel & Dr. F. Stepanek

2003 – 2005 **M.Eng, Chemical Engineering**
National University of Singapore (NUS)
Thesis titled "Performance Analysis and Troubleshooting of Industrial Control Loops".
Advisors: Prof. S. Lakshminarayanan & Prof. G. P. Rangaiah

1999 – 2003 **B.Eng ,Chemical Engineering (Honors) with a minor in Law**
National University of Singapore (NUS)
Thesis titled "Process Identification using Open-loop and Closed-loop Step Tests".
Advisors: Prof. S. Lakshminarayanan & Prof. G. P. Rangaiah

PROFESSIONAL EXPERIENCE

2016 - **Associate Professor (with Tenure) & Chancellor's Scholar**
Department of Chemical and Biochemical Engineering
Project Leader – Control and Hardware Integration
Engineering Research Center for Structured Organic Particulate Systems (ERC-SOPS)
Rutgers, The State University of New Jersey, USA

2010 - 2016 **Assistant Professor**
Department of Chemical and Biochemical Engineering
Project Leader – Control and Hardware Integration
Engineering Research Center for Structured Organic Particulate Systems (ERC-SOPS)
Rutgers, The State University of New Jersey, USA

2008 – 2009 **Postdoctoral Associate**
Department of Chemical Engineering, Massachusetts Institute of Technology, USA
Process Systems Engineering Laboratory, Novartis-MIT Centre for Continuous Manufacturing
Advisor: Prof. P. I. Barton

2006 – 2007 **Visiting Researcher**
(3 months) Department of Chemical Engineering, University of Queensland, Australia

RESEARCH INTERESTS

Particle Technology, Process systems engineering; process control; Process Simulation; Process Op timization; Mathematical Modelling; Population Balance Modelling; Experimental Studies and Validation; Pharmaceutical Engineering; Particulate and Chemical Processes; Nonlinear Identification and Control; Nonlinear Dynamics and Chaos Theory, Biological Systems, High-Performance Computing.

HONORS & AWARDS

2018 Recipient of AIChE PD2M Drug Product QbD award.
2017 Recipient of Rutgers Board of Trustees award for research excellence
2017 Recipient of Chancellor's Scholar award for outstanding scholarship
2015 Recipient of Outstanding CBE Faculty Award
2015 Recipient of CBE Best Teacher/Mentor/Advisor award
2014 Recipient of NIPTE Young Investigator award
2014 Recipient of NSF CAREER award
2013 Recipient of PSE Model-based Innovation Prize

2013 Editorial Board of American Journal of Modern Chemical Engineering
2013 Recipient of best reviewer award for Computers & Chemical Engineering Journal
2012 Recipient of NIPTE Young Investigator award
2009 Recipient of International Fine Particle Research Institute (IFPRI)
2005 Institute of Electrical and Electronic Engineering (IEEE) honorary membership
2005 Recipient of the best tutor award for Advanced Chemical Engineering Thermodynamics
2004 Recipient of the NUS research scholarship award for academic excellence
2003 Recipient of the NUS research fee allowance + graduate student award for academic excellence

GRANTS AWARDED

2019 **NIPTE / FDA**
Comprehensive training program in continuous solid dose manufacturing
PI: F. Muzzio
Co-PIs: R. Ramachandran, D. Hausner, A. Cuitino (MAE)
Amount: $490,000

2018 **NSF Eager**
Real-D: Smart Decision Making using Data and Advanced Modeling Approaches.
PI: M. Ierapetritou
Co-PIs: R. Ramachandran, S. Jha (ECE)
Amount: $200,000

2018 **Food & Drug Administration (FDA)**
Advanced continuous upstream manufacturing of biotherapeutics
PI: M. Ierapetritou
Co-PIs: R. Ramachandran, R. Singh, H. Zhang, S. Chundawat, G. Tsilomelekis.
Amount: $1,800,000

2018 **Food & Drug Administration (FDA)**
Industry 4.0 Implementation in Continuous Pharmaceutical Manufacturing
PI: M. Ierapetritou
Co-PIs: R. Ramachandran, R. Singh, B. Glasser, F. Muzzio,
Amount: $4,000,000

2018 **CNH Industrial**
Wear prediction and validation of fine particle material
PI: R. Ramachandran
Amount: $118,000

2018 **DOE STTR Phase 2**
Fast fingerprinting and detecting of materials using portable NIR sensing
PI: V. Hanagadi
Co- PI: R. Ramachandran, M. Ierapetritou, S. Jha
Amount: $1,500,000

2018 **Rutgers research council**
Manufacture of hollow-core granules for enhanced tablet dissolution for better patient healthcare.
PI: R. Ramachandran
Amount: $4,800

2017 **NSF**
Intern DCL: Multiscale analysis of reactive granulation processes
PI: R. Ramachandran
Amount: $50,000

2017 **Handok**
RTRT and sensing for drug product manufacturing
PI: R. Ramachandran
Amount: $113,000

2017 **DOE STTR Phase 1**
Fast fingerprinting and detecting of materials using portable NIR sensing
PI: V. Hanagadi
Co- PI: R. Ramachandran, M. Ierapetritou, S. Jha
Amount: $225,000

2016 **Bosch**
Process control in Pharmaceutical Manufacturing
PI: R. Ramachandran

Amount: $7,500

2015 **Food & Drug Administration (FDA)**
Real-time release in continuous solid dose manufacturing: Systematic characterization of material properties and optimal design of sensing & control
PI: F. Muzzio
Co-PIs: R. Ramachandran, M. Ierapetritou, C. Wassgren, A. Cuitino, B. Glasser
Amount: $4,000,000

2015 **NSF (AIR)**
Commercialzing pharmaceutical process modeling for continuous manufacturing
PI: B. Glasser
Co-PIs: R. Dave, M. Ierapetritou, R. Mendez, C. Wassgren, Senior Personnel: R. Ramachandran
Amount: $800,000

2015 **BASF**
Model based granulation design approach: Coupling of PBM with DEM
PI: R. Ramachandran
Co-PIs: B. Glasser
Amount: $100,000

2015 **NSF Eager**
Cybermanufacturing: Advanced modeling and information management in pharmaceutical manufacturing
PI: M. Ierapetritou
Co-PIs: R. Ramachandran, S. Jha (ECE)
Amount: $284,184

2015 **Janssen Pharmaceuticals**
Advanced Process understanding through continuous feed of data to empirical and multi-variate models
PI: M. Ierapetritou
Co-PIs: R. Ramachandran, S. Jha (ECE), F. Muzzio
Amount: $115,000

2015 **Rutgers research council**
Understanding effects of formulation properties on heteroaggregates.
PI: R. Ramachandran
Amount: $2,107

2015 **GSK**
Integration of PAT and process models into a continuous manufacturing line
PI: R. Ramachandran
Co-PIs: F. Muzzio, M. Ierapetritou
Amount: $200,000

2015 **Bosch GmbH**
Experimental comparision and characterization of three continuous granulation processes
PI: R. Ramachandran
Co-PIs: F. Muzzio
Amount: $47,500

2014 **Johnson & Johnson**
J&J expansion of continuous pharmaceutical manufacturing
PI: F. Muzzio
Co-PIs: R. Ramachandran, B. Glasser, M. Ierapetritou, A. Cuitino
Amount: $3,500,000

2014 **Johnson & Johnson**
Modeling, PAT and control development for Consigma/Tramacet
PI: R. Ramachandran
Co-PIs: F. Muzzio, M. Ierapetritou, A. Cuitino
Amount: $922,000

2014 **Speciality Chemical Company**
Process modeling and validation of granulation behavior of mixed zirconia oxide powders
PI: R. Ramachandran
Amount: $50,000

2014 **Rutgers Catalyst Consortium**
Process design and sensing of continuous mulling processes
PI: R. Ramachandran
Amount: $46,000

2014 **Food & Drug Administration (FDA)**
Flowsheet modeling and analysis tools for solid base pharmaceutical products manufacturing
PI: M. Ierapetritou
Co-PIs: R. Ramachandran, F. Muzzio
Award: $500,000

2014 **Rutgers Research Council**
Quantifying effect of material properties on granule
PI: R. Ramachandran,
Award: $2,000

2014 **Process Systems Enterprise**
Flowsheet modeling and database development of tabet manufacturing processes
PI: M. Ierapetritou
Co-PI: R. Ramachandran, F. Muzzio
Award: $70,000

2014 **BASF**
Discrete element modeling of the Hosokawa micro nobilta mixer
PI: B. Ramachandran
Co-PI: B. Glasser
Award: $20,000

2014 **Johnson & Johnson**
Discrete element modeling of NIR-probes bin blending processes
PI: R. Ramachandran
Co-PI: Ierapetritou.
Award: $50,000

2014 **Johnson & Johnson**
Flowsheet modeling of Inspire tablet manufacturing line
PI: R. Ramachandran
Co-PI: Muzzio, Ierapetritou.
Amount: $131,273

2014 **Johnson & Johnson**
Rutgers support for Continuation of Continuous Process Development Phase II
PI: F. Muzzio
Co-PI: Ramachandran, Cuitino, Ierapetritou.
Amount: $488,683

2014 **Process Systems Enterprise**
Process modeling of particulate processes
PI: R. Ramachandran
Amount: $34,908

2014 **FDA sponsored National Institute of Pharmaceutical Technology & Education**
Mechanistic modeling of fluid bed wet granulation processes for enhanced QbD of drug product development
PI: Ramachandran
Amount: $104,000

2013 **National Science Foundation (NSF)**
CAREER: Multi-scale modelling and analysis of reactive granulation processes
PI: R. Ramachandran,
Award: $412,000

2013 **Rutgers Research Council**
Quantitative analysis of the effect of granule properties on tablets
PI: R. Ramachandran,
Award: $1,000

2013 **Speciality Chemical Company**
Quantitative analysis of the granulation of mixed-oxide zirconia powders
PI: R. Ramachandran
Co-PI: B. Glasser
Amount: $30,000

2013 **Rutgers Catalyst Consortium**
Process design and sensing of continuous mulling processes
PI: R. Ramachandran
Amount: $40,000

2013 **Syngenta, UK**
Mechanistic modeling of agitated dryers to understand agglomeration behavior
PI: R. Ramachandran
Amount: $ 99,576

2012 **Czech-American S&T Cooperation – Program Kontakt II**
Multi-scale analysis and design of granulation processes
PI: F. Stepanek
Co-PI: R. Ramachandran
Amount: $ 142,000

2012 **Rutgers Catalyst Consortium**
Process design and sensing of continuous mulling processes
PI: R. Ramachandran
Amount: $40,000

2012 **FDA sponsored National Institute of Pharmaceutical Technology & Education**
Mechanistic modeling of high shear wet granulation processes for enhanced QbD of drug product development
PI: Ramachandran
Amount: $55,000

2011 **Bristol-Myers Squibb (Late Phase Chemical Development)**
Multi-dimensional Modeling of Crystallization Processes
PI: R. Ramachandran
Award: $16,000

2011 **Rutgers Faculty Research Grant Program**
Multi-scale modeling and validation of crystallization processes
PI: R. Ramachandran,
Award: $12,500

2010 **Rutgers Research Council**
Experimental Studies on Multi-component Wet Granulation
PI: R. Ramachandran,
Award: $2,000

2010-2016 **NSF-ERC-SOPS**
Process control and hardware integration of continuous tablet manufacturing
PI / project leader: R. Ramachandran
Award: $700,000

GRANTS PENDING / IN PREPARATION

NSF
A cyber-infrastructure enabled virtual-physical framework to support decision making in pharmaceuticals
PI: R. Ramachandran
Co-PIs: M. Ierapetritou, S. Jha (ECE)
Amount: $450,000

DOE
Using smart manufacturing for the energy efficient production of pharmaceuticals
PI: R. Ramachandran
Co-PIs: B. Glasser, R. Singh, M. Ierapetritou (Uni. of Delaware)
Amount: $750,000

REFEREED JOURNAL PUBLICATIONS

101 L. Kotamarthy, N. Metta, R. Ramachandran. Understanding the effect of granulation and milling process parameters on the quality attributes of milled granules. Processes 2020, 8(6), 683.

100 I. Muthancheri, B. Long, K.M. Ryan, L. Padrela, R. Ramachandran. Development and Validation of a Two-dimensional Population Balance Model for a Supercritical CO2 Anti-Solvent Batch Crystallization Process. Advanced Powder Technology (Accepted June 2020)

99 C. Sampat, Y. Baranwal, R. Ramachandran. : Accelerating multi-dimensional population balance model simulations via a highly scalable framework using GPUs. Computers and Chemical Engineering (Accepted May 2020).

98 I. Muthancheri, R. Ramachandran. Mechanistic understanding of granule growth behavior in bi-component wet granulation processes with wettability differentials. Powder Technology. 367, 841-859, 2020

97 A. Chauturbedi, S. Patil, R. Ramachandran, N. Shapley. Adsorption of positively and negatively charged heavy metal ions from wastewater by heteroaggregates of biopolymer particles. Colloids and Surfaces A: Physicochemical and Engineering Aspects.124789, May 2020

96 K. Moroney, P. Cronin, O. Adeleye, B. Schaller, B. Castro-Dominguez, R. Ramachandran, G. Walker. An evaluation of the Johanson model for roller compaction process development for a high dose API. Powder Technology, 366, 82-95, 2020.

95 T. Gao, A. Singaravelu, S. Oka, **R. Ramachandran**, F. Stepanek, N. Chawla, H. N. Emady. Powder Bed Packing and API Content Homogeneity of Granules in Single Drop Granule Formation. Powder Technology, 366, 12-21, 2020.

94 A. Tamrakar, A. Zheng, P. Piccione, **R. Ramachandran.** Investigating particle-level dynamics to understand bulk behaviour in a lab-scale agitated filter dryer (AFD) using discrete element analysis (DEM). Advanced Powder Technology, 31 (1), 477-492, 2020.

93 A. Román-Ospino, A. Tamrakar, B. Igne, E. Dimaso, C. Airiau, D. Clancy, G. Pereira, F. Muzzio, R. Singh, **R. Ramachandran**. Characterization of NIR interfaces for the feeding and in-line monitoring of a continuous granulation process. International Journal of Pharmaceutics and Biopharmaceutics 574, 118848, 2020.

92 W. Meng, J. Dvorak, R. Kumar, R. Hofmeister, F. Stepanek, **R. Ramachandran**, F.J. Muzzio. Continuous high-shear granulation: mechanistic understanding of the influence of process parameters on critical quality attributes via elucidating the internal physical and chemical microstructure. *Advanced Powder Technology*, 30(9), 1765-1781, 2019.

91 Y. Baranwal, A.D. Roman-Ospino, G. Kevyan, J.M. Ha, E.P Hong, F.J. Muzzio, **R. Ramachandran**. Prediction of dissolution profiles by non-destructive NIR spectroscopy in bilayer tablets. *International Journal of Pharmaceutics*, 565, 419-436, 2019.

90 S. Karkala, N. Davis, C. Wassgren, Y. Shi, X. Liu, C. Riemann, G. Yacobian, **R. Ramachandran**. Calibration of Discrete Element Method Parameters for Cohesive Materials using Dynamic Yield Strength and Shear Cell Experiments. *Processes*, 278, 1-16, 2019.

89 N. Metta, M. Ghijs, E. Schafer, A. Kumar, P. Cappuyns, I. Van Assche, R. Singh, **R. Ramachandran**, T. De Beer, M. Ietapetritou, I. Nopens. Dynamic flowsheet model development and sensitivity analyses of a continuous pharmaceutical tablet manufacturing process using the wet granulation route. *Processes*, 7(4), 1-35, 2019.

88 N. Metta, **R. Ramachandran**, M. Ierapetritou. A computationally efficient surrogate based reduction of a multi-scale comill model. Journal of Pharmaceutical Innovation, Accepted, 2019.

87 W. Meng, A. Román-Ospino, S. Panikar, C. O'Callaghan, S. Gilliam, **R. Ramachandran**, F. Muzzio. Advanced process design and understanding of continuous twin-screw granulation via implementation of in-line process analytical technologies. Advanced Powder Technology, 30(4), 879-894, 2019.

86 A. Tamrakar, D. Reddy, **R. Ramachandran**. CFD-DEM-PBM Coupled Model Development and Validation of a 3D Top-spray Fluidized Bed Wet Granulation Process. Computers and Chemical Engineering, 41, 159-187, 2019.

85 A. Tamrakar, S. Chen, **R. Ramachandran**. A DEM model based study to quantitatively compare the effect of wet and dry binder addition in high shear wet granulation processes, Chemical Engineering Research and Design, 142, 307-326, 2019.

84 W. Meng, K. S. Rao, R.D. Snee, **R. Ramachandran**, F. Muzzio. A comprehensive analysis and optimization of continuous twin-screw granulation processes via sequential experimentation strategy. International Journal of Pharmaceutics, 556, 349-362, 2019.

83 T. Gao, A. Singaravelu, S. Oka, **R. Ramachandran**, F. Stepanek, N. Chawla, H.N. Emady. Granule Formation and Structure from Single Drop Impact on Heterogeneous Powder Beds. International Journal of Pharmaceutics (Accepted 2018)

82 G. Pereira, S. Muddu, A. Roman, D. Clancy, B. Igne, C. Airiau, F. Muzzio, M. Ierapetritou, **R. Ramachandran**, R. Singh. Combined Feedforward/Feedback Control of an Integrated Continuous Granulation Process. Journal of Pharmaceutical Innovation, 5, 1-27, 2018.

81 S. Muddu, A.Tamrakar, P. Pandey, **R.Ramachandran.** Model Development and Validation of Fluid Bed Wet Granulation with Dry Binder Addition using a Population Balance Model Methodology. Processes , 6(9), 154, 2018)

80 C. Sampat, F.Bettencourt Y. Baranwal, I. Paraskevakos, A. Chaturbedi, S. Karkala, S. Jha, **R. Ramachandran,** M. Ierapetritou, A parallel unidirectional coupled DEM-PBM model for the efficient simulation of computationally intensive particulate process systems. Computers and Chemical Engineering, 119, 128-142, 2018

79 N. Metta, M. verstraten, M. Ghijs, A. Kumar, E. Schaefer, R. Singh, T. De Beer, I. Nopens, P. Cappyuns, I. Van Asche, M. Ierapetritou, **R. Ramachandran.** Model development and prediction of particle size distribution, density and friability of a comilling operation in a continuous pharmaceutical manufacturing process. International Journal of Pharmaceutics. Accepted 2018

78 A.Chaturbedi, P. Pandey, D. Bindra, J.P. Reddy, B. Lang, D. Buckley, **R. Ramachandran.** Predictive population balance model development and validation of the effect of HSWG process parameters on granule properties, Powder Technology, 338, 391-401,2018

77 H.Cao, S.Mushnoori, B.Higgins, C.Kollipara, A.Fermier, D.Hausner, S.Jha, R.Singh, M.Ierapetritou and **R.Ramachandran.** A Systematic Framework for Data Management and Integration in a Continuous Pharmaceutical Manufacturing Processing Line. Process, 6(5), 53, 2018.

76 A.Kataria, S. Oka, D. Smrcka, Z. Grof, F. Stepanek, **R. Ramachandran**. " A quantitative analysis of drug migration during granule drying " Chemical Engineering Research and Design, 136, 199-206, 2018.

75 N. Metta, M. Ierapetritou, **R. Ramachandran.** A multiscale DEM-PBM approach for a continuous comilling process using a mechanistically developed breakage kernel. Chemical Engineering Science, Accepted.

74 S. Oka, D. Smrcka, A. Kataria, H. Emady, F. Muzzio, F. Stepanek, **R. Ramachandran.** Analysis of the origins of content non-uniformity in high-shear wet granulation. International Journal of Pharmaceutics, 528, 1–2, 578-585, 2017.

73 W. Meng, S. Oka, X. Liu, T. Omar, **R. Ramachandran,** F. Muzzio. Effects of process and design parameters on granule size distribution in a continuous high shear granulation process. Journal of Pharmaceutical Innovation, 12-4, 283-295, 2017..

72 M. Sen, S. Karkala, S. Panikar, O. Lyngberg, M. Johnson, A. Marchut, E. Schaefer, **R. Ramachandran.** Analyzing the Mixing Dynamics of an Industrial Batch Bin Blender via Discrete Element Modeling Method, Processes, 5(2), 22, 2017.

71 A. Chaturbedi, C. Bandi, D. Reddy, P. Pandey, A. Narang, D. Bindra, L. Tao, J. Zhao, J. Li, M. Hussain, **R. Ramachandran**. Compartment Based Population Balance Model Development of a High Shear Wet Granulation Process via Dry and Wet Binder Addition. *Chemical Engineering Research & Design*, 123, 187-200, 2017.

70 F. Bettencourt, A. Chaturbedi, **R. Ramachandran.** Parallelization methods for efficient simulation of high dimensional population balance models of granulation. *Computers & Chemical Engineering,* 107, 150-170, 2017

69 W. Meng, L. Kotamarthy, S. Panikar, M. Sen, S. Pradhan, M. Marc, J. Lister, F. Muzzio, **R. Ramachandran.** Statistical analysis and comparison of a continuous high shear granulator with a twin screw granulator: effect of process parameters on critical quality attributes and granule mechanisms. *International journal of pharmaceutics,* 513, 357-375, 2016.

68 A.Tamrakar, A. Gunadi, P. Piccione, **R. Ramachandran**. Dynamic agglomeration profile during the drying phase in an agitated filter dryer: parametric investigation and regime map studies. *Powder Technology*, 303, 109-123, 2016.

67 A.Roman, R. Singh, C. Zuniga, R. Mendez, **R. Ramachandran**, M. Ierapetritou, F. Muzzio, R. Romanach. Near Infrared spectroscopic calibration models for real time monitoring of powder density, *International journal of pharmaceutics,* 52, 61-74, 2016.

66 A.Chaturedi, C. Pathak, K. Deshpande, N. Shapley, **R. Ramachandran**. Population balance model development and experimental validation of the heteroaggregation of oppositely charged micro and nano particles. *Chemical Engineering research and design*, 113, 96-111, 2016.

65 M.O. Besenhard, S. Karkala, E. Faulhammer, S. Fathollahi, **R. Ramachandran**, J.G Khinast. Continuous feeding of low dose APIs via periodic micro dosing, *International Journal of Pharmaceutics*, 509, 123-134, 2016.

64 S. Wu, S. Panikar, J. Zhang, R. Singh, B. Glasser, **R. Ramachandran**. A systematic framework to monitor mulling processes using Near Infrared spectroscopy. *Advanced Powder Technology*, 27, 1115-1127, 2016

63 M. Adepu, S. Hate, A. Betard, S. Oka, M. Schongut, Y. Sood, F. Stepanek, F. Muzzio, D. Wolf, S. Wieland, B. Glasser, **R. Ramachandran**. Quantitative validation of the regime map approach for the wet granulation of industrially relevant zirconium hydroxide powders. *Powder Technology*, vol, 177-184, 2016.

62 D. Barrasso and ***R. Ramachandran**. Qualitative assessment of a multi-scale, compartmental PBM-DEM model of a continuous twin-screw wet granulation process. *Journal of Pharmaceutical Innovation,* 1-19, 2015.

61 R. Singh, A. Roman, R. Romanach, M. Ierapetritou, ***R. Ramachandran**. Real time monitoring of blend 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.

60 R. Singh, F. Muzzio, M. Ierapetritou, ***R. Ramachandran**. A combined feed-forward/feed-back control system for a QbD based continuous tablet manufacturing process. *Processes*, 3 (2), 339-356, 2015.

59 R. Singh, F.J. Muzzio, M.G. Ierapetritou, ***R. Ramachandran**. Plant-wide control of a continuous tablet manufacturing process for Quality-by-Design based pharmaceutical manufacturing. *Computer Aided Chemical*

Engineering, 37, 2177-2182, 2015.

58 R. Singh, M. Sen, M. Ierapetritou, ***R. Ramachandran**. Integrated moving horizon based real time optimization and hybrid MPC-PID control of a direct compaction continuous tablet manufacturing process. *Journal of Pharmaceutical Innovation,* 1-21, 2015.

57 D. Barrasso, A. Tamrakar, ***R. Ramachandran.** Model order reduction of a multi-scale PBM-DEM description of a wet granulation process via ANN. Procedia Engineering, 102, 1295-1304, 2015.

56 S. Oka, H. Emady, O. Kaspar, V. Tokarova, F. Muzzio, F. Stepanek, ***R. Ramachandran.** The effects of improper mixing and preferential mixing of active and excipient ingredients on content uniformity in high shear wet granulation. *Powder Technology*, 278, 266-277, 2015.

55 A. Chaudhury, A. Tamrakar, M. Schongut, D. Smrcka, F. Stepanek, ***R. Ramachandran.** Multi-dimensional population balance model development and validation of reactive granulation processes. *Industrial & Engineering Chemistry Research*, 54(3), 842–857, 2014.

54 D. Barrasso, T. Eppinger, F. Perera, R. Aglave, K. Debus, S. Bermingham, ***R. Ramachandran.** A multi-scale, mechanistic model of a wet granulation process using a novel bi-directional PBM-DEM coupling algorithm. *Chemical Engineering Science*, 123, 500-513 2015.

53 A. Chaudhury, M. Armenante and ***R. Ramachandran.** Compartment based population balance modeling of a high shear wet granulation process using data analytics. *Chemical Engineering Research & Design*, 95, 211–228, 2015.

52 S. Oka, O. Kaspar, V. Tokarova, K. Sowrirajan, H. Wu, M. Khan, F. Muzzio, F. Stepanek, ***R. Ramachandran**. A quantitative study of the effect of process parameters on key granule characteristics in a high shear wet granulation process wet granulation process involving a two component pharmaceutical blend. *Advanced Powder Technology*, 26(1), 315–322, 2015.

51 M. Sen, A. Chaudhury. R. Singh, ***R. Ramachandran**. Two-dimensional population balance development and validation of a pharmaceutical crystallization process. *American Journal of Modern Chemical Engineering*, 1 13-29, 2014.

50 J. Zhang, Y. Ying, B. Pielecha-Safira, E. Bilgili, **R. Ramachandran**, R. Rodolfo, R. Dave, Z. Iqbal. Raman spectroscopy for in-line and off-line quantification of poorly soluble drugs in strip films. *International Journal of Pharmaceutics*, 475(1-2), 428-437, 2014.

49 D. Barrasso, A. Tamrakar, ***R. Ramachandran**. A reduced order PBM-ANN model of a multi-scale PBM-DEM description of a wet granulation process. *Chemical Engineering Science*, 119, 319-329, 2014.

48 M.O. Besenhard, A. Chaudhury, T. Vetter, **R. Ramachandran,** J. Khinast. Evaluation of parameter estimation methods for crystallization processes modeled via population balance equations. *Chemical Engineering Research & Design*, 94, 275-289, 2014.

47 D. Barrasso, A. El Hagrasy, J.D. Litster, ***R. Ramachandran**. Multi-dimensional population balance model development and validation for a twin screw granulation process, *Powder Technology,* 270B, 612-621, 2015.

46 R. Singh, A. Sahay, K.M. Karry, F. Muzzio, M. Ierapetritou, ***R. Ramachandran**. Implementation of an advanced hybrid MPC-PID control system using PAT tools into a direct compaction continuous pharmaceutical tablet manufacturing pilot plant. *International Journal of Pharmaceutics*, 473, (1-2), 38-54, 2014.

45 M. Ghodbane, A. Kulesa, H.H. Yu, T.J. Maguire, R.R. Schloss, **R. Ramachandran,** J.D. Zahn, and M.L. Yarmush, "Development of a Low Volume, Highly Sensitive Microimmunoassay using Computational Fluid Dynamics Driven Multi-Objective Optimization", *Microfluidics and Nanofluidics*, 18(2), 199-214, 2014.

44 M. Sen, R. Singh, ***R. Ramachandran.** A hybrid MPC-PID control system design for the continuous purification and processing of active pharmaceutical ingredients, *Processes,* 2 (2), 392-418, 2014

43 D. Barrasso, ***R. Ramachandran**. Multi-scale modeling of granulation processes: bi-directional coupling of PBM with DEM via collision frequencies. *Chemical Engineering Research & Design*, 93, 304-317, 2015.

42 R. Singh, A. Sahay, F.J. Muzzio, M.G. Ierapetritou, ***R. Ramachandran.** A systematic framework for onsite design and implementation of a control system in a continuous tablet manufacturing process. Computers & Chemical Engineering, 66, 186-200, 2014.

41 M. Sen, D. Barrasso, R. Singh, ***R. Ramachandran**. A Multi-scale Hybrid CFD-DEM-PBM Description of a Fluid-bed Granulation Process. *Processes*, 2(1), 89-111, 2014.

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42 R. Singh, M. Ierapetritou, **R. Ramachandran.** Design of an efficient control system for a flexible continuous pharmaceutical manufacturing process. *AIChE Annual Meeting*, San Francisco, CA, 2013.

41 R. Singh, M. Ierapetritou, **R. Ramachandran.** Implementation of advanced hybrid MPC-PID control for a continuous tablet manufacturing process. *AIChE Annual Meeting*, San Francisco, CA, 2013.

40 R. Singh, M. Ierapetritou, **R. Ramachandran.** Design and implementation of an efficient control system in a continuous pharmaceutical manufacturing process via roller compaction. *IFPAC,* Baltimore, MD, USA, 2013

39 Singh, R., Paul Brodbeck, **Ramachandran**, R. **(2013)**. Advanced MPC based closed-loop control of a continuous pharmaceutical tablet manufacturing process using PAT on-line spectral analysis. *Workshop at Emerson global user exchange*, Grapevine, Texas, **USA**.

38 Singh, R., Oka, S., Rogers, A., **Ramachandran, R**., Marianthi Ierapetritou, Fernando Muzzio, F. **(2013)**. Development of infrastructure for predictive model control of continuous pharmaceutical manufacturing. Analytical Methods for Process and Product Quality, *Virtual Meeting, Pharmaceutical Manufacturing*, Putman Media, Inc., **USA**, 3rd October. http://www.putmanmedia.com/our-brands/pharmaceutical-manufacturing/downloads-7.

37 Sahay, A., Krizia Karry, K., Oka, S., **Singh, R.,** Roman, A., Colón, Y.M., **Ramachandran, R.,** Muzzio, F. J., Romañach, R. J. **(2013)**. NIR in Continuous Mixing: Transitioning from Monitoring to Control. On-Demand: Analytical Methods for Small Molecule Pharmaceutical Product & Process Optimization, *Virtual Meeting, Pharmaceutical Manufacturing*, Putman Media, Inc., **USA**, 1st October. http://www.putmanmedia.com/our-brands/pharmaceutical-manufacturing/downloads-7.

36 S. Oka, K. Sowrirajan, O. Kaspar, V. Tokarova, A. Chaudhury, F. Stepanek, **R. Ramachandran**. Understanding Content Non-Homogeneity in High Shear Wet Granulation: Effects of Powder Segregation, Preferential Wetting and Solubility. *6th International Granulation workshop*, Sheffield, UK, 2013.

35 Boukouvala, F., **Singh, R.,** Jayjock, E., Ierapetritou, M., Muzzio, F., Ramachandran, R. **(2013)**. Flowsheet Modeling Methods for Design and Optimization of Continuous Powder Processes. Oral presentation at *IFPAC*, 2013 Baltimore, MD, USA.

34 M. Armenante, A. Chaudhury, **R Ramachandran.** Multi-scale modeling of fluid bed granulation processes. ISPE Annual meeting, Washington D.C., 2013.

33 M. Armenante, A. Chaudhury, **R Ramachandran.** Multi-scale modeling of fluid bed granulation processes. ISPE meeting NJ Chapter, New Brunswick, NJ, 2013.

32 M. Sen, A. Chaudhury, J. John, R. Singh, **R. Ramachandran.** Multi-scale flowsheet simulation for the purification and processing of active pharmaceutical ingredients. *AIChE Annual Meeting*, Pittsburg, PA, 2012.

31 D. Barrasso and **R. Ramachandran**. Multi-scale modeling and validation of twin screw granulation processes. *AIChE Annual Meeting*, Pittsburg, PA, 2012.

30 R. Singh, M. Ierapetritou and **R. Ramachandran**. Design and implementation of an efficient control system in a continuous pharmaceutical manufacturing process via roller compaction. *AIChE Annual Meeting*, Pittsburg, PA, 2012.

29 R. Singh, M. Ierapetritou and **R. Ramachandran**. Plant-wide hybrid MPC of a continuous pharmaceutical tablet manufacturing process via direct compaction. *AIChE Annual Meeting*, Pittsburg, PA, 2012.

28 **R. Ramachandran**, R. Singh, M. Ierapetritou. Model-based control of an integrated and continuous downstream pharmaceutical process. *IFPAC*, Baltimore, MD, USA, 2012.

27 F. Boukouvala, **R. Ramachandran**, F. Muzzio, M. Ierapetritou. Dynamic flowsheet simulation of continuous pharmaceutical manufacturing. *IFPAC*, Baltimore, MD, USA, 2012.

26 M. Sen and **R. Ramachandran.** A Multi-scale Approach to Continuous Blending Processes. *AIChE Annual Meeting*, Minneapolis, MN, 2011.

25 A. Nizolek, A. Chaudhury, **R Ramachandran.** Multi-scale modeling of fluid bed granulation processes. ISPE Annual meeting, Dallas, TX, 2011.

24 A. Nizolek, A. Chaudhury, **R Ramachandran.** Multi-scale modeling of fluid bed granulation processes. ISPE meeting NJ Chapter, New Brunswick, NJ, 2011.

23 **R. Ramachandran**, A. Chaudhury, P. Pandey, J. Tao, J. Gao, D. Bindra, A. Narang. Model-based control of high-shear wet granulation processes. *AAPS Annual Meeting & Exposition,* Washington DC, USA, 2011.

22 A. Prakash and **R. Ramachandran**. Efficient Simulation of Population Balance Models via Parallel and Distributed Computing. *AIChE Annual Meeting*, Minneapolis, MN, 2011.

21 A. Chaudhury, P. Pandey and **R. Ramachandran**. A multi-dimensional population balance model validation approach to high-shear wet granulation (HSWG) processes. *AIChE Annual Meeting*, Minneapolis, MN, 2011.

20 **R. Ramachandran,** A. Chaudhury and M. Ierapetritou. Model-based control of an integrated continuous pharmaceutical manufacturing process. *AIChE Annual Meeting*, Minneapolis, MN, 2011.

19 A. Chaudhury, J.E. Tabora, B. Remy and **R. Ramachandran**. Application of a 2-D Population Balance Model to Pharmaceutical Crystallization Processes. *AIChE Annual Meeting*, Minneapolis, MN, 2011.

18 P. Pandey, J. Tao, J.Z. Gao, D. Bindra, A. Narang, **R. Ramachandran** and A. Chaudhury. A combined experimental and modeling approach to the scale-up of high-shear wet granulation.

AIChE Annual Meeting. Minneapolis, MN, 2011.

17 F. Boukouvala, V. Niotis, L. Miodusezewski, A.U. Vanarase, **R. Ramachandran,** F.J. Muzzio and M.G. Ierapetritou. Dynamic flowsheet modeling and sensitivity analysis of continuous pharmaceutical manufacturing. *AIChE Annual Meeting*, Minneapolis, MN, 2011.

16 **R. Ramachandran.** Hierarchical control of a MIMO granulation process. *5th International Granulation Workshop Lausanne,* Switzerland, 2011.

15 **R. Ramachandran**. Modeling the effect of relative humidity on median granule size and distribution width. *AIChE Annual Meeting*, Salt Lake City, UT, USA, 2010.

14 **R. Ramachandran**. Efficient Evaluation of Multi-dimensional Source Term Integrals in Population Balance Models. *AIChE Annual Meeting*, Salt Lake City, UT, USA, 2010.

13 **R. Ramachandran**. Multi-dimensional population balance modeling and control of granulation processes. *Population balance modeling conference 2010,* Berlin, Germany, 2010.

12 **R. Ramachandran** and P. I. Barton. Effective Parameter Estimation within a Multi-Dimensional Population Balance Model Framework. *AIChE Annual Meeting, Nashville*, TN, USA, 2009.

11 **R. Ramachandran** and P. I. Barton. A Quantitative Assessment of the Effect of Primary Particle Size Distribution on Granule Inhomogeneity: Modelling and Experiments. *AIChE Annual Meeting, Nashville*, TN, USA, 2009.

10 **R. Ramachandran** and P. I. Barton. Controllability Analysis and Identification of Optimal Control-Loop Pairings in a Multiple-Input Multiple-Output Granulation Process. *AIChE Annual Meeting, Nashville*, TN, USA, 2009.

9 **R. Ramachandran** and P. I. Barton. Effective Parameter Estimation within a Multi-Dimensional Population Balance Model Framework. *IFPRI Annual General Meeting*, Ann Arbor, MI, USA, 2009.

8 **R. Ramachandran**, F.J. Doyle III, J.D. Litster, F. Stepanek, and C.D. Immanuel. A Combined Mechanistic model for Nucleation, Aggregation and Breakage in Population Balances of Granulation. *AIChE Annual Meeting*, Philadelphia , PA, USA, 2008.

7 **R. Ramachandran**, J. Poon, C.F.W. Sanders, T. Glaser, F.J. Doyle III, J.D. Litster, F. Stepanek, F.Y. Wang, I.T. Cameron and C.D. Immanuel. A Mechanistic model for Nucleation and Aggregation in Population Balances of Granulation: Batch Characterisation and Validation. *AIChE Annual Meeting*, Salt Lake City, Utah, USA, 2007.

6 T. Glaser, C.F.W. Sanders, F.Y. Wang, I.T. Cameron, J.D. Litster, J. Poon, **R. Ramachandran**, C.D. Immanuel and F.J. Doyle III. Model Predictive Control of Continuous Drum Granulation of Limestone. *AIChE Annual Meeting*, Salt Lake City, Utah, USA, 2007.

5 **R. Ramachandran**, J. Poon, C.F.W. Sanders, T. Glaser, F.J. Doyle III, J.D. Litster, F. Stepanek, F.Y. Wang, I.T. Cameron and C.D. Immanuel, "A Three-dimensional Population Balance Model of Granulation with Mechanistic and Phenomenological Kernels. *3rd International Conference on the Population Balance Modelling*, Québec city, Quebec, Canada, 2007.

4 **R. Ramachandran**, J. Poon, F.J. Doyle III, J.D. Litster, F. Stepanek and C.D. Immanuel. Batch Characterisation Studies on Drum Granulation: Formulation Properties and Growth Kinetics. *Third International Granulation Workshop*, University of Sheffield, Sheffield, United Kingdom

3 **R. Ramachandran**, J. Poon, F. Stepanek, C.D. Immanuel, F.J. Doyle III, J.D. Litster and I.T. Cameron. A Mechanistic Kernel for Aggregation and Nucleation Phenomena in Population Balance Models of Granulation. *AIChE Annual Meeting*, San Francisco, California, USA, 2006.

2 **R. Ramachandran**, J. Poon, C.D. Immanuel, F.J. Doyle III and F. Stepanek. A Mechanistic Description of the Aggregation Phenomenon in Population Balances Granulation. Engineering Conferences *International Control of Particulate Processes VII*, Harrison Hot Springs, British Columbia, Canada, 2006.

1 **R. Ramachandran**, J. Poon, F. Stepanek, C.D. Immanuel, F.J. Doyle III, J.D. Litster and I.T. Cameron. A Mechanistic Kernel for Aggregation and Nucleation Phenomena in Population Balance Models of Granulation. *UK Particle Technology Forum*, London, UK, 2006.

INVITED SEMINARS/COURSES

49 **R. Ramachandran.** PSE based solutions for solid dose pharmaceutical manufacturing processes. Roche, Basel, Switzerland, 2019.

48 **R. Ramachandran.** PSE based solutions for solid dose pharmaceutical manufacturing processes. Imperial College London, London, United Kingdom, 2019.

47 **R. Ramachandran.** PSE based solutions for solid dose pharmaceutical manufacturing processes. University of Limerick, Limerick, Republic of Ireland, 2019.

46 **R. Ramachandran.** Process modeling and control of solid dose forms via continuous manufacturing. Cork Institute of Technology, Cork, Republic of Ireland, 2019.

45 **R. Ramachandran.** Mixing and segregation in wet granulation processes. Blending and segregation conference, Purdue University, West Lafayette, IN, USA, 2019.

44 **R. Ramachandran.** Mechanistic modeling of wet granulation processes. TU Hamburg, Hamburg, Germany, 2018.

43 **R. Ramachandran.** The genesis of content non-uniformity in high shear wet granulation. ICT Prague, Prague, Czech Republic, 2018.

42 **R. Ramachandran.** Process control, sensing and automation of continuous tablet manufacturing processes: toward QbD and RTRT. PMTC, Limerick, Republic of Ireland, 2018.

41 **R. Ramachandran.** Dynamic flowsheet modeling: effect of CPPs and CMAs on CQAs. IFPAC Annual meeting, Bethesda, MD, USA, 2017.

40 **R. Ramachandran.** Multi-phase CFD-DEM-PBM model for fluid bed wet granulation. STAR CCM+ conference, Berlin, Germany, 2017.

39 **R. Ramachandran.** Process control, sensing and automation of continuous tablet manufacturing proesses: toward QbD and RTRT. University of Limerick, Limerick, Republic of Ireland, 2016.

38 **R. Ramachandran.** Modeling wet granulation: The basis of dynamic flowsheet modeling. *AAPS Annual meeting and exposition*, Denver, CO, 2016.

37 **R. Ramachandran.** Process control, sensing and automation of continuous tablet manufacturing proesses: toward QbD and RTRT. TU Hamburg, Hamburg, Germany, 2016.

36 **R. Ramachandran.** Process control, sensing and automation of continuous tablet manufacturing proesses: toward QbD and RTRT.University of Tokyo,Tokyo, Japan, 2016.

35 **R. Ramachandran.** Process control, sensing and automation of continuous tablet manufacturing proesses: toward QbD and RTRT. RCPE, TU Graz, Graz, Austria, 2016.

34 **R. Ramachandran.** Integrated PBM-DEM modeling of a continuous granulation process. STAR CCM+ conference, Prague, Czech Republic, 2016.

33 **R. Ramachandran.** Modeling wet granulation: Challenges in discrete element methods and population balance models. *AAPS Annual meeting and exposition*, Orlando, FL, 2015.

32 **R. Ramachandran.** Process control, integration and mechanistic modeling of particulate processes. Brewer Science, Rolla, MO, 2015. (1 day course)

31 **R. Ramachandran.** Predictive modeling of wet granulation processes in catalyst manufacturing. Evonik, Marl, Germany, 2015.

30 **R. Ramachandran.** Multi-scale model development and validation of wet granulation processes: toward QbD in pharmaceutical manufacturing. *Novartis*, Basel, Switzerland, 2015.

29 **R. Ramachandran.** Multi-scale model development and validation of wet granulation processes. BASF, Ludwigshafen, Germany, 2015.

28 **R. Ramachandran.** Advanced process control and sensor integration on continuous pharmaceutical manufacturing processes. Dept of Chemical Engineering, University of Tokyo, Tokyo, Japan, 2015.

27 **R. Ramachandran.** Integration of PAT, process modeling and control in the continuous manufacture of pharmaceutical tablets, 13th New Pharmaceutical Technology and Engineering (NPTE) Conference, Tokyo, Japan, 2015.

26 **R. Ramachandran.** Flowsheet modeling and control of continuous pharmaceutical manufacturing processes. Janssen supply chain (JSC) leadership meeting, Newark, NJ, 2015.

25 **R. Ramachandran.** Mechanistic modeling of mixer-granulator processes: toward QbD in pharmaceutical manufacturing. NIPTE research conference: Pharmaceutical critical path manufacturing-2015, Rockville, MD, 2015.

24 **R. Ramachandran.** Integration of sensors, process modeling, and control in the continuous manufacture of pharmaceutical tablets and strip films: toward QbD and PAT. Brewer Science, Rolla, MO, 2015.

23 **R.Ramachandran**. Modeling, control and optimization of continuous direct compaction pharmaceutical manufacturing processes. IFPAC SUMMIT 2015 Conference, San Juan, PR, USA, 2015.

22 **R. Ramachandran**. Control systems in continuous manufacturing. Bristol Myers Squibb (BMS) day event, New Brunswick, NJ, USA, 2015.

21 **R. Ramachandran**. Multi-scale model development and validation of wet granulation processes. Bristol Myers Squibb (BMS) day event, New Brunswick, NJ, USA, 2014.

20 **R. Ramachandran.** A novel continuous pharmaceutical tablet manufacturing process integrated with inline PAT tools and an automated control system. Annual International Society of Pharmaceutical Engineering (ISPE), Las Vegas, NV, USA, 2014.

19 **R. Ramachandran**. Multi-scale model development and validation of wet granulation processes. City College of New York (CCNY), New York, NY, USA, 2014.

18 **R. Ramachandran**. Multi-scale model development and validation of wet granulation processes. Bristol Myers Squibb (BMS) day event, New Brunswick, NJ, USA, 2014.

17 **R.Ramachandran**. Modeling, control and optimization of continuous direct compaction pharmaceutical manufacturing processes. IFPAC SUMMIT 2013 Conference, San Juan, PR, USA, 2013.

16 **R. Ramachandran.** Introductions and application of advanced process control in Pharmaceutical processes. Bristol Myers Squibb, New Brunswick, USA, 2013. (1 day course)

15 **R. Ramachandran.** Multi-scale modeling of particulate processes. Leeds University, Leeds, UK, 2013.

14 **R. Ramachandran**. Flexible multipurpose continuous processing of a pharmaceutical tablet manufacturing process. Advanced Process Modeling Forum, London, UK, 2013.

13 **R. Ramachandran.** Agglomeration modelling of wet granulation processes. Western Michigan University, Kalamazoo, MI, USA, 2013.

12 **R. Ramachandran**. Modeling and control of particulate processes. Purdue University, West Lafayette, USA, 2013.

11 **R. Ramachandran**. Towards QbD in continuous pharmaceutical manufacturing: Modeling and control strategies. Werum user meeting, Luneburg, Germany, 2012.

10 **R. Ramachandran**. Dynamic flowsheet simulation of continuous pharmaceutical manufacturing processes. Advanced Process Modeling Forum, London, UK, 2012.

9 **R. Ramachandran**. Modeling and experimental validation of spray drying processes. Unilever, Bedford, UK, 2012.

8 **R. Ramachandran**. Population balance modeling of biological systems. New York Academy of Sciences, New York, USA, 2012

7 **R. Ramachandran.** Aggregation modeling in wet granulation processes. P&G, Newcastle, UK, 2011.

6 **R. Ramachandran.** Modeling and control of downstream pharmaceutical processes. NJAIChE, Scotch Plains, NJ, USA, 2011.

5 **R. Ramachandran.** Aggregation modeling in wet granulation processes. P&G, Cincinnati, OH, USA, 2011.

4 **R. Ramachandran.** Modeling and control of downstream pharmaceutical processes. Merck, West Point, PA, USA, 2010.

3 **R. Ramachandran.** Modeling and control of downstream pharmaceutical processes. Association of Consulting Chemists & Chemical Engineers, Inc, Scotch Plains, NJ, USA, 2010

2 **R. Ramachandran.** Modeling and control of downstream pharmaceutical processes. Bristol Myers Squibb, New Brunswick, USA, 2010.

1 **R. Ramachandran**. Introduction to MATLAB and its application to Engineering Problems. Institute of Electrical and Electronic Engineers Singapore Chapter, National University of Singapore, Singapore, 2005.

EXTERNAL ACADEMIC COLLABORATORS

Dr. Jerry Heng – Imperial, Prof. Krist Gernaey – DTU, Prof. Stefan Heinrich, Dr. Maksym Dosta – Hamburg Uni, Prof. Gerald Warnecke – Uni of Magdeburg, Prof. Johannes Khinast – TU Graz, Profs. Rex Reklaitis, Zoltan Nagy – Purdue Uni., Prof. Gavin Walker, Uni. of Limerick, Prof. Gavin Andrews – QUB, Prof. Jim Litster, Uni. of Sheffield, Prof. Venkat Venkatasubramanian, Columbia Uni.

EXTERNAL INDUSTRIAL COLLABORATORS

Dr. P. Pandey – BMS, USA, Dr. H. Ahmedian - P&G, UK, Dr. M. Ansari – Unilever, UK, Dr. P. Piccione – Roche – Switzerland, Dr. J. Tabora – BMS, USA, Dr. S. Bermingham – Process Systems Enterprise, UK, Dr. P. Schmal, Process Systems Enterprise, USA, Dr. Mauricio Futram, Janssen, USA. Dr. Benoit Inge, GSK, USA. Dr. Thomas O'Connos, U.S. Food & Drug Administration, USA.

PROFESSIONAL ACTIVITIES & SERVICE

Conferences and Meetings

World Congress of Particle Technology – Chair for session on Granulation, 2010.
PSE Asia 10 – Chair for session on Data Reconciliation Methods, 2010.
AIChE Annual Meeting – Chair for session on Population Balance Modeling, Mixing and Segregation, 2010, 2011, 2012, 2013, 2014, 2015
Control and Optimization of particle and solids production processes, 2014
American Institute of Chemical Engineers (AIChE) – Chair of Particle Technology Forum program Area 3A
Population Balance Modeling 2013 – Co-head and Member of Scientific committee
Population Balance Modeling 2016 – Member of Scientific committee
Granulation workshop 2015, 2017, 2019 – Member of Scientific committee, Session Chair.

Proposal Reviewer

Research Council for Natural Sciences and Engineering at the Academy of Finland, 2010
NSF Panel – Particulate and Multiphase Processes, 2011, Process & Reaction Engineering CAREER panel, 2014, SBIR & STTR, 2016 – Present.
NSF email – Metals and Metallic Nanostructures, 2013
Science Foundation Ireland, Investigator program, 2014.
Elsevier, Linked Engineering and Manufacturing platform book proposal, 2015.

Journal Reviewer

Chemical Engineering Science
Computers and Chemical Engineering
AIChE Journal
Asia-Pacific Journal of Chemical Engineering
Powder Technology
European Journal of Pharmaceutics and Biopharmaceutics
Advanced Powder Technology
Chemical Engineering Research & Design
Processes
International Journal of Pharmaceutics & BioPhamaceutics.

Professional Associations

American Institute of Chemical Engineers (AIChE) – Member
International Society of Pharmaceutical Engineering (ISPE) (2011, 2014, 2015)– Faculty Advisor
American Association of Pharmaceutical Scientists (AAPS) – Member

Departmental committees

Chemical Engineering Faculty Search Committee (2010, 2011, 2013, 2017) – Member, (2014) – Chair.
Mechanical Engineering Faculty Search Committee (2010) – Member
Graduate Admissions Committee (2010) – Member, (2011-2013) – Chair
PhD Qualifying exam committee (2010, 2011, 2012, 2013, 2015) – Member

Departmental collaborations

Established local area training (LAT) agreement with software company (PSE) to facilitate the installation/use of their software in dept. microlab by students

University committees

Disciplinary Committee, 2011
School of Engineering (SoE) high performance computing committee, 2011.

Masters Thesis committees

Rutgers University
- Amalia Nikopolou
- Vidyalaxmi Muthukumar

- Wei Meng
- Atish Kulkarni
- Shiwen Sun
- Hao Chen
- Ahmed Jaffar
-

Doctoral Thesis committees

Rutgers University – Chair
- Yijie Gao
- Nikisha Shah
- Fani Boukouvala
- Daniel Braido
- Kristin Steely
- Niranjan Kottala
- Juan Osorio
- Mehdi Ghodbone (BME)
- Amanda Rogers
- William Engisch
- Lin Zhaojia
- Nihar Sahay
- Amanda Rogers
- Sebastian Escotet
- Zilong Wang
- Ou Yang
- Atharv Boshekar
- Hao Chen
- Wei Meng
- Veerakiet Boonkonawong
- Plaman Girigov

Nanyang Technological University, Singapore - External Reviewer
- Aniruddha Majumdar

Monash University, Australia - External Reviewer
- Hong Lee Lim

Student Accomplishments

Alexander Niziolek – Winner of NJ ISPE poster contest and was selected to present at the annual ISPE conference in Dallas TX, 2011

Anwesha Chaudhury
- Awarded Austrian Marshall Plan scholarship for research exchange at TU Graz, Austria.
- Winner of NJPhast scholarship
- Awarded Baden-Wuerttemberg scholarship to pursue research at University of Konstanz
- SOE Outstanding graduate student award, 2015.

Dana Barrasso – Winner of NJPhast scholarship

Ashutosh Tamrakar – CBE Outstanding graduate student award, 2019.

Marco Armenante - Winner of NJ ISPE poster contest and was selected to present at the annual ISPE conference in Washington D.C, 2013

Siddhi Hate – Awarded Marshall Plan Scholarship for research exchange at TU Graz, Austria.

Manogna Adepu – Awarded Marshall Plan Scholarship for research exchange at TU Graz, Austria.

Maitraye Sen – Winner of NJ ISPE poster contest and was selected to present at the annual ISPE conference in Dallas TX, 2011
- Winner of NIPTE poster session, 2015.

TEACHING ACTIVITIES

Fall 2010 – 2013 Advanced Chemical Engineering Thermodynamics – CBE 507

Spring 2011 & 2012	Advanced Engineering Pharmaceutical Kinetics, Thermodynamics and Transport Processes – CBE 549
Spring 2013 – Present	Process Simulation and Control – CBE 422
Fall 2014, 2015, 2016	Design 1 – CBE 427
Spring 2017	Advanced Pharmaceutical Unit Operations
Spring 2019	Graduate professional skills course

PERSONNEL SUPERVISED

Postdoctoral Associates

Dr. Jeyarathan Arjunan (November 2010 – April 2011) – co-advised with M. Ierapetritou
Dr. Ravendra Singh (November 2011 – Present) – co-advised with M. Ierapetritou
Dr. Jun Zang (April 2013 – Oct 2014) – co-advised with R. Dave (NJIT)
(Oct 2014 – Present) - co-advised with M. Ierapetritou
Dr. Savitha Panikar (February 2014 – Present)
Dr. Andres Roman (January 2016 – January 2018)

PhD Students

Ms. Anwesha Chaudhury (December 2010 – January 2015)
Ms. Maitraye Sen (December 2010 – May 2015)
Mr. Sarang Oka (December 2011 – April 2016) – co-advised with F. Muzzio
Ms. Dana Barrasso (December 2011 – December 2015)
Mr. Ashutosh Tamrakar (December 2013 – May 2019)
Mr. Anik Chaturbedi (December 2013 – May 2019) – co-advised with N. Shapley
Ms. Nirupaplava Metta (May 2015 – Present) – co-advised with M. Ierapetritou
Mr. Subhodh Karkala (Aug 2016 – Present)
Mr. Shashank Muddu (Jan 2016 – Present)
Mr. Yukteshwar Baranwal (Aug 2016 – Present)
Ms. Indu Muthancheri (Aug 2016 – Present)
Mr. Chaitanya Sampat (Jan 2019 – Present)
Mr. Lalith Kotamarthy (Jan 2019 – Present)

Visiting graduate students
Mr. Andreas Roman (June – August 2014,2015) , Uni of Puerto Rico, Mayaquez
Ms. Viola Tokaraova (Aug – Sep 2012), ICT Prague
Mr. Ondrej Kasparov (Aug - Sep 2012), ICT Prague
Mr. Maximillian Besenhard (July – Nov 2013), TU Graz, Austria
Mr Marek Schongut (Nov – Dec 2013), ICT Prague, Czech Republic
Mr. Thomas Glatz (June – July 2011), TU Graz, Austria

MS thesis Students

Mr. Anuj Varghese Prakash (December 2010 – December 2012)
- current position: Texas A&M, postdoctoral associate

Ms. Joyce John (December 2011 – May 2013)
- current position: unknown

Mr. Wu Suyang (December 2012 – May 2014)
- current position: Bayer AG

Ms. Siddhi Hate (December 2013 – May 2015)
- current position: Purdue University, Industrial Pharmacy, PhD student

Ms. Manogna Adepu (December 2013 – May 2015)
- current position: Arizona State University, Chemical Engineering, PhD student

Ms. Suparna Rao (Dec 2014 – May 2016)
Mr. Subhodh Karkala (Jan 2014 – May 2016)
Mr. Lalith Kotamarthy (Jan 2015 – Dec 2017)
Mr. Huiyi Cao (Jan 2015 – Dec 2017)

Ms. Anjali Kataria (Jan 2015 – Dec 2017)
Mr. Chaitanya Sampat (Jan 2017 – Dec 2018)

Undergraduates

Ms. Ana Carolina da Silva (May 2015 – Aug 2015) – Brazilian exchange student
Ms. Yanira Rodriguez (May 2015 – Aug 2015) – REU student
Mr. Marco Armenante (Jan 2013 – May 2014)
- current position: Uni of Delaware, Chemical Engineering, PhD student
Ms. Samjit Walia (May 2012 – Aug 2012) – Cooper Union (REU program)
- current position: Exxon Mobil
Mr. Frank Zong (June – August 2010) – Boston University
- current position: Business analyst, Tritek solutions
Mr. Alexander Niziolek (August 2010 – Present)
- current position:PhD student, Chemical Engineering, Princeton University
Mr. Avi Kapadia (August 2010 – Present)
- current position: Corning
Ms. Deepal Shah (Aug 2010 – May 2011)
- current position: US Army

High-school students

Ms. Manali Mahajan (June – Aug 2013): current position – Cornell, UG
Mr. Vamsi Sanagavarapu (June – Aug 2014):
Mr. Jey Swarup (June – Aug 2016)