Rohit Ramachandran, PhD

Department of Chemical & Biochemical Engineering
Rutgers, The State University of New Jersey
98 Brett Road, Piscataway, NJ 08854, USA
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EDUCATION

10/2005 – 12/2008 **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

08/2003 – 08/2005 **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

08/1999 – 05/2003 **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

06/2024 – Present **Program Director**
Process Systems, Reaction Engineering and Molecular Thermodynamics
National Science Foundation (NSF), Alexandria, VA, USA

07/2022 - Present **Professor I (with Tenure)**
Department of Chemical and Biochemical Engineering
Rutgers, The State University of New Jersey, USA

07/2017 – 06/2022 **Associate Professor (with Tenure) & Chancellor's Scholar**
Department of Chemical and Biochemical Engineering
Rutgers, The State University of New Jersey, USA

07/2016-06/2017 **Associate Professor (with Tenure)**
Department of Chemical and Biochemical Engineering
Rutgers, The State University of New Jersey, USA

01/2010 – 06/2016 **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

10/2008 – 12/2009 **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

11/2006 – 02/2007 **Visiting Researcher**
(3 months) Department of Chemical Engineering, University of Queensland, Australia

RESEARCH INTERESTS

Particle Technology, Process systems engineering; process control; Process Simulation; Process Optimization; 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

2021 Recipient of Processes Journal Best paper award.
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

2024 **Rutgers Research Council**
Toward next-gen "intelligent" pharmaceutical manufacturing for efficient patient healthcare.
PI: R. Ramachandran
Amount: $25,000

2024 **Rutgers Cyberinfrastructure and AI for Science and Society**
An AI-Enabled digital twin for bio-pharmaceutical manufacturing
PI: R. Ramachandran
Amount: $25,000

2022 **Rutgers core facility utilization**
High-resolution imaging studies of high shear wet granulation processes
PI: R. Ramachandran
Amount: $5,000

2022 **Boehringer Ingelheim**
Mechanistic model development and analysis of bi-component wet granulation processes
PI: R. Ramachandran
Amount: $80,000

2021 **Rutgers core facility utilization**
Understanding the effect of key granule properties on granule microstructure
PI: R. Ramachandran
Amount: $4,999

2020 **DOE / CESMII**
Energy efficient smart manufacturing of pharmaceutical products
PI: R. Ramachandran
Co-PIs: B. Glasser, R. Singh, M. Ierapetritou (Uni. of Delaware)
Amount: $1,001,400

2019 **NIPTE / FDA**
Comprehensive training program in continuous solid dose manufacturing
PI: F. Muzzio
Senior Personnel: R. Ramachandran
Amount: $486,000

2018 **NSF INTERN**
Real-D: Smart Decision-Making using Data and Advanced Modeling Approaches.
PI: R. Ramachandran
Co-PIs: M. Ierapetritou (UD), S. Jha (ECE)
Amount: $55,000

2018 **NSF Eager**

Real-D: Smart Decision-Making using Data and Advanced Modeling Approaches.
PI: R. Ramachandran
Co-PIs: M. Ierapetritou (UD), 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
Rutgers PI: R. Ramachandran,
Co-PI: M. Ierapetritou, S. Jha
Amount: $1,500,000 (Rutgers share: $450,000)

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

REFEREED JOURNAL PUBLICATIONS

136 A. Dan, R. **Ramachandran**. Autoencoder-based inverse design and surrogate-based optimization of an integrated wet granulation manufacturing process. *International Journal of Pharmaceutics X*, 8, 100287, 2024.

135 A. Dan, U. Patil, E. Olofsson, J. Hattel and **R. Ramachandran**. Semi-mechanistic prediction and optimization of residence time metrics of a starve-fed extruder via a hybrid machine-learning convection-diffusion model. *Industrial & Engineering Research*, 63(16), 7271-7280, 2024.

134 L. Kotamarthy, S.K. Karkala, A. Dan, A.D. Roman-Ospino and R.Ramachandran. Investigating the effect of mixing dynamics on twin-screw granule quality attributes via the development of a physics-based process map. *Pharmaceutics*, 16(4), 456-483, 2024.

133 E.T.H Olofsson, A. Dan, M.R. Larsen, N.H. Jokil, R. Ramachandran and J.H. Hattel. Numerical modelling of fill-level and residence time in starve-fed extrusion: A dimensionality reduction study from a 3-D CFD model to a 2-D convection-diffusion model. *The International Journal of Advanced Manufacturing Technology*, 1-15, 2024.

132 C. Sampat and R. Ramachandran. Optimizing energy efficiency of a twin-screw granulation process in real-time using a Long Short-Term Memory (LSTM) framework. *ACS Eng Au*, Accepted, 2024.

131 A.Dan, S. Paul, H. Vaswani, A. Grzabka-Zasadzinska, A. Thakkelapally, J. Li, K. Sen, Y.C. Tseng and **R. Ramachandran**. Quantitative analysis of the effects of multi-component formulation parameters on granule and tablet properties via a combined population balance and statistical predictive model. *Powder Technology*, 435, 119391, 2023.

130 A.Dan and **R. Ramachandran**. Energy efficient smart manufacturing of pharmaceutical solid oral dosage forms. *Journal of Medical Sciences*, 1-5, 93(3), 2023.

129 A.Dan, H. Vaswani, A. Simonova, **R. Ramachandran**. Multi-dimensional population balance model development using a breakage model probability kernel for the prediction of multiple granule attributes. *Pharmaceutical Development & Technology*, 1-12, 2023.

128 L. Kotamarthy, A. Dan, S. Karkala, S. Parvani, A.D. Roman-Ospino, **R. Ramachandran**. Twin screw granulation: Mechanistic understanding of the effect of material properties on key granule quality attributes through the analysis of mixing dynamics and granulation rate mechanisms. *Advanced Powder Technology*, 34 (9), 1014137, 2023.

127 A.Dan, H. Vaswani, A. Simonova, A. Grzabka-Zasadzinska, J. Li, K. Sen, S. Paul, Y.C. Tseng, **R. Ramachandran**. End-point determination of heterogeneous formulations using inline torque measurements for a high-shear wet granulation process. *International Journal of Pharmaceutics*, 6, 100188-100198, 2023.

126 Y. Chen, C. Sampat, Y.S. Huang, S. Ganesh, R. Singh, **R. Ramachandran**, G.V. Reklaitis, M. Ierapetritou. An integrated data management framework for continuous drug product manufacturing processes: A case study on two pilot plants, *International Journal of Pharmaceutics*, 642, 123086-123101, 2023.

125 Y. Chen, L. Kotamarthy, A. Dan, C. Sampat, P. Bhalode, R. Singh, B.J. Glasser, **R. Ramachandran**, M. Ierapetritou. Optimization of key energy and performance metrics for drug product manufacturing, *International*

Journal of Pharmaceutics, 631, 122487-122504, 2023.

124 A. Dan, L. Kotamarthy, **R. Ramachandran**. Understanding the effect of process parameters and material properties on the breakage mechanisms and regimes of a milling process. *Chemical Engineering Research and Design*, 188, 607-619, 2022.

123 L. Kotamarthy, C. Sampat, **R. Ramachandran**. Development of a granule growth regime map for twin screw wet granulation process via data imputation techniques. *Pharmaceutics*, 14, 2211-2236, 2022.

122 S. Karkala, **R. Ramachandran**. Investigating the effects of material properties on the mixing dynamics of cohesive particles in a twin-screw mixer using a discrete element method approach. *Powder Technology*, 409, 117762-117677, 2022.

121 A.Zidan, L. Kotamarthy, **R. Ramachandran**, M. Ashraf, T.O. O'Connor. Optimization of screw design for continuous wet granulation: A case study for metroprolol succinate ER tablets. *International Journal of Pharmaceutics*, 623, 121964, 2022.

120 C. Sampat, L. Kotamarthy, P. Bhalode, Y. Chen, A. Dan, S. Parvani, Z. Dholakia, R. Singh, B.J. Glasser, M. Ierapetritou, **R. Ramachandran**. Enabling energy-efficient manufacturing of pharmaceutical solid oral dosage forms via integrated techno-economic analysis and advanced process modeling. *Journal of Advanced Manufacturing and Processing*, 1-20, 2022.

119 C. Sampat and **R. Ramachandran**. Risk assessment for a twin-screw granulation process using a supervised physics constrained auto-encoder and support vector machine framework. *Pharmaceutical Research*, 39, 2095-2107, 2022.

118 C. Sampat and **R. Ramachandran**. Physics-constrained autoencoder neural network for the prediction of key granule properties in a twin-screw granulation process. *Proceedings of the 14th International Symposium on Process Systems Engineering*, 1688-1692, 2022.

117 L. Kotamarthy, X. Feng, A. Alayoubi, P.K. Bolla, **R. Ramachandran**, M. Ashraf, T. O'Connor, A. Zidan. Switching from batch to continuous granulation: A case study of metroprolol succinate ER tablets. *International Journal of Pharmaceutics*, 617, 121598, 2022.

116 S.V. Muddu and **R. Ramachandran**. A population balance methodology incorporating semi-mechanistic residence metrics for twin screw granulation. *Processes*, 10(2), 1-21, 2022.

115 Y. Baranwal, A.D. Roman-Ospino, J. Li, S.M. Razavi, F.J. Muzzio, **R. Ramachandran.** Prediction of entire tablet formulations from pure powder components spectra via a two-step non-linear optimization technology. *International Journal of Pharmaceutics*, 615, 121474, 2022.

114 I. Muthancheri and **R. Ramachandran.** A hybrid model to predict formulation dependent granule growth in a bi-component wet granulation process. *Pharmaceutics*, 13(2), 1-20, 2021.

113 S. Gupta, Y. Baranwal, A.D Roman-Ospino, D. Hausner, **R. Ramachandran**, F.J. Muzzio. Performance Assessment of Linear Iterative Optimization (IOT) Algorithm for Raman Chemical Mapping of Pharmaceutical Tablets. Journal of Pharmaceutical and Biomedical Analysis, 205, 114305, 2021.

112 L. Kotamarthy and **R. Ramachandran**. Mechanistic understanding of the effects of process and design parameters on the mixing dynamics in continuous twin screw granulation. *Powder Technology*, 390, 73-85, 2021.

111 I. Muthancheri, S. Oka, **R. Ramachandran.** Analysis and prediction of nucleation mechanisms in a bi-component powder bed with wettability differentials. Powder Technology, 390, 209-218, 2021

110 C. Sampat, **R. Ramachandran**. Identification of Granule Growth Regimes in High Shear Wet Granulation Processes Using a Physics-Constrained Neural Network. Processes, 9(5), 737, 2021.

109 I. Muthancheri, A. Chaturbedi, A. Betard, **R. Ramachandran.** A compartment-based population balance model for the prediction of steady and induction granule growth behavior in high shear wet granulation. Advanced Powder Technology, 32(6), 2085-2096, 2021.

108 V. Chopda, A. Gyrogypal, O. Yang, R. Singh, **R. Ramachandran**, H. Zhang, G. Tsilomelekis, S. Chundawat, M. Ierapetritou. Recent Advances in Integrated Process Analytical Techniques, Modeling, and Control Strategies to Enable Continuous Biomanufacturing of Monoclonal Antibodies. Journal of Chemical Technology and Biotechnology, 97, 2317-2335, 2022.

107 A. Roman-Ospino, Y. Baranwal, J. Li, J. Vargas, B. Igne, S. Bate, D. Brouckaert, F. Chauchard, D. Hausner, **R. Ramachandran**, R. Singh, F. Muzzio. Sampling optimization for blend monitoring of a low dose formulation in a tablet press feed frame using spatially resolved near-infrared spectroscopy**.** International Journal of Pharmaceutics, 602, 120594-120605, 2021.

106 S. Muddu, L. Kotamarthy, **R. Ramachandran**. A semi-mechanistic prediction of residence time metrics in twin screw granulation. Pharmaceutics, 13(3), 393-412, 2021.

105 K. M. Moroney, L. Kotamarthy, I. Muthancheri, **R. Ramachandran,** M. Vynnycky. A moving boundary model of dissolution from binary drug-excipient granules incorporating granule microstructure. International Journal of Pharmaceutics, 599, 120219-120233, 2021.

104 N. Metta, **R. Ramachandran**, M. Ierapetritou. A novel adaptive sampling based methodology for feasible region identification of compute intensive models using artificial neural network. AIChE Journal, 67(2), e17095, 2020.

103 A. Chaturbedi, S. Patil, **R. Ramachandran**, N.C. Shapley. Adsorption of positively and negatively charged heavy metal ions from wastewater by heteroaggregates of biopolymer particles. Colloids and Surfaces A: Physiochemical and Engineering Aspects, 602, 124789, 2020.

102 Y. Chen, O. Yang, C. Sampat, P. Bhalode, R. Ramachandran, M. Ierapetritou. Digital twins in pharmaceutical and biopharmaceutical manufacturing: A Literature Review. Processes, 8(9), 1088, 2020.

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*, 140, 106935, 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, 15, 424-444, 2020.

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, 552, 1-2, 56-66, 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.

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3 F. Stepanek, P. Rajniak, R. Chern, C. Mancinelli and **R. Ramachandran**. Modeling of multi-component granule formation in a wet granulation process. *Fifth World Congress on Particle Technology*, Lake Buena Vista, Florida, USA. 2006.

2 **R. Ramachandran**, S. Lakshminarayanan and G.P. Rangaiah. Investigating Chaos in an Industrial Fluid Catalytic Cracking Unit. *American Control Conference*, Portland, Oregon, USA

1 **R. Ramachandran**, S. Lakshminarayanan and G.P. Rangaiah. Detection of Nonlinearities and their Impact on Control Loop Performance. *National Conference on Control and Dynamical Systems*, Mumbai, India.

CONFERENCE PRESENTATIONS

96 A.Das, T.De, A. Dan, **R. Ramachandran**. Adaptive PBM-DEM framework for wet granulation: A mechanistic, multi-component and bi-directional approach. Oral presentation at *AIChE annual meeting*, San Diego, CA, USA, 2024.

95 A.Dan, U. Patil, E.H. Olofsson, J.H. Hattel, R. Ramachandran. Semi-mechanistic prediction of

residence time and mixing dynamics using a machine learning-based convection-diffusion model. The 9th European Congress on Computational Methods in Applied Sciences and Engineering (ECOMASS) Congress, Lisbon, Portugal, 2024.

94 A.Dan, T. De, A. Das, R. Ramachandran. A hybrid PBM-DEM coupling model for bi-component granulation processes. Population Balance Modeling Webinar, Virtual, 2023.

93 A.Dan, E. Olofsson, U. Patil, **R. Ramachandran**. Semi-Mechanistic Prediction of Residence Time Metrics and Mixing Dynamics in Single-Screw Extrusion Via a 2-D Convection-Diffusion Model Combined with Machine Learning. Oral presentation at *AIChE annual meeting*, Orlando, FL, USA, 2023.

92 A.Dan, **R. Ramachandran**. Development of a multi-dimensional PBM using a breakage mode probability kernel for prediction of granule quality attributes. Oral presentation at *AIChE annual meeting*, Phoenix, AZ, USA, 2022.

91 Z. Dholakia, I. Muthancheri, L. Venkat, **R. Ramachandran**. Mechanistic understanding of bi-component segregation in high shear wet granulation. Oral presentation at *AIChE annual meeting*, Boston, MA, USA, 2021.

90 I. Muthancheri, **R. Ramachandran**. A population balance model description of nucleation and aggregation in bi-component high shear wet granulation. Oral presentation at *AIChE annual meeting*, Boston, MA, USA, 2021.

89 L. Venkat, **R. Ramachandran**. Mechanistic understanding of mixing in twin-screw granulation. Oral presentation at *AIChE annual meeting*, Boston, MA, USA, 2021.

88 C. Sampat, **R. Ramachandran**. Optimizing energy efficiency of a twin-screw granulation process using a physics constrained hybrid model. Oral presentation at *AIChE annual meeting*, Boston, MA, USA, 2021.

87 S. Muddu, **R. Ramachandran**. Validation of combined PBM-RTD technique to simulate continuous granulation. Oral presentation at *AIChE annual meeting*, Orlando, FL, USA, 2019.

86 R. Singh, **R. Ramachandran,** M. Ierapetritou, F.J. Muzzio. Industry 4.0: Advanced bi-layer control system for continuous manufacturing of pharmaceuticals. Oral presentation at *AIChE annual meeting*, Orlando, FL, USA, 2019.

85 N. Metta, M. Ierapetritou, **R. Ramachandran.** An efficient data-based methodology to identify the design space of continuous pharmaceutical manufacturing processes. Oral presentation at *AIChE annual meeting*, Orlando, FL, USA, 2019.

84 C. Sampat, **R. Ramachandran**. Advanced statistical modeling and analysis of multi-scale pharmaceutical manufacturing data. Poster presentation at Machine learning in science and engineering, Conference held by the Institute of Data Engineering and Science, Georgia Technology. Atlanta, GA, USA, 2019.

83 I. Muthancheri, **R. Ramachandran.** Mechanistic understanding of hydrophicity on bi-component high shear wet granulation growth. Oral presentation at *AIChE annual meeting*, Pittsburg, PA, USA, 2018.

82 N. Metta, M. Ierapetritou, **R. Ramachandran.** Sensitivity analysis and identification of feasible region of a wet granulation process. Oral presentation at *AIChE annual meeting*, Pittsburg, PA, USA, 2018.

81 R. Singh, F. Muzzio, M. Ierapetritou, **R. Ramachandran.** Advanced model predictive control of powder level in continuous pharmaceutical manufacturing pilot plant. Oral presentation at *AIChE annual meeting*, Minneapolis, MN, USA, 2017.

80 A. Roman-Ospino, S. Oka, S. Moghtadernejad, S. Escotet, R. Singh**, R. Ramachandran**, M. Ierapetritou, F. Muzzio. Reduced order-discrete element method modeling of comilling for efficient integration into continuous process. Oral presentation at *AIChE annual meeting*, Minneapolis, MN, USA, 2017.

79 R. Singh, F. Muzzio, M. Ierapetritou, **R. Ramachandran.** Integrated control and data management system for continuous pharmaceutical manufacturing process. Oral presentation at *AIChE annual meeting*, Minneapolis, MN, USA, 2017.

78 N. Metta, M. Ierapetritou, **R. Ramachandran**. Reduced order-discrete element method modeling of comilling for efficient integration into continuous process. Oral presentation at *AIChE annual meeting*, Minneapolis, MN, USA, 2017.

77 N. Metta, M. Ierapetritou, **R. Ramachandran**. A combined experimental and computational approach using discrete element method for the development of a mechanistically motivated breakage kernel. Oral presentation at *AIChE annual meeting*, San Francisco, CA, USA, 2016.

76 R. Singh, F. Muzzio, **R. Ramachandran,** M. Ierapetritou. Advanced flexible control system implementation into direct compaction continuous pharmaceutical manufacturing pilot-plant. Oral

presentation at *AIChE annual meeting*, San Francisco, CA, USA, 2016.

75 A. Chaturbedi, N. Shapley, **R. Ramachandran**. Development of population balance model and semi-mechanistic layering kernel for two-stage hetereoaggregation of oppositely charged micro- and nano-particles. Oral presentation at *AIChE annual meeting*, San Francisco, CA, USA, 2016.

74 A. Chaturbedi, F. Bettencourt, S. Mushnoori, S. Karakala, S. Jha, M. Ierapetritou, **R. Ramachandran**. Cyberinfrastructure Enabled Parallelization of Population Balance Models for Efficient Simulation of Granulation Processes. Oral presentation at *AIChE annual meeting*, San Francisco, CA, USA, 2016.

73 Singh, R., Escotet-Espinoza, M. S., Vadodaria, S., Zhang, J., Muzzio, F. J, **Ramachandran, R**., Ierapetritou, M. **(2015)**. Dynamic Modeling and Advanced Control of Tablet Press. Oral presentation at *AIChE annual meeting*, Salt Lake City, UT, USA.

72 Singh, R., Muzzio, F. J, Ierapetritou, M., **Ramachandran, R**. **(2015)**. Implementation of Advanced Multilayer Plant-Wide Control Architecture into a Direct Compaction Continuous Pharmaceutical Manufacturing Process. Oral presentation at *AIChE annual meeting*, Salt Lake City, UT, USA.

71 Zhang, J., Pereira, F., Singh, R., Bermingham, S., **Ramachandran**, R., Muzzio, F. J., Ierapetritou, M. **(2015)**. A Systematic Approach of Using Material Properties Data for Pharmaceutical Process Simulation. Oral presentation at *AIChE annual meeting*, Salt Lake City, UT, USA.

70 M. Sen, S. Karkala, S. Panikar, O. Lyngberg, M.C. Johnson, E. Schafer, A. Marchut, **R. Ramachandran**. Analyzing the mixing dynamics of an industrial batch bin blender. Annual ISPE meeting, Philadelphia, PA, USA 2015.

69 A. Tamrakar, A. Gunadi, P. M. Piccione, **R. Ramachandran**. Modeling of granulation behavior in an agitated filter dryer. Rutgers-BMS day, Bristol-Myers Squibb, New Brunswick, NJ, USA 2015.

68 S. Panikar, P. Pawar, S. Talwar, J. Drennen, R. Friedman, H. Wu, F. Muzzio, **R. Ramachandran**. Using experimental and modeling approaches to understand a blending process. Rutgers-BMS day, Bristol-Myers Squibb, New Brunswick, NJ, USA 2015.

67 M. Sen, S. Karkala, S. Panikar, O. Lyngberg, M.C. Johnson, E. Schafer, A. Marchut, **R. Ramachandran**. Analyzing the mixing dynamics of an industrial batch bin blender. Rutgers-BMS day, Bristol-Myers Squibb, New Brunswick, NJ, USA 2015.

66 F. Bettencourt, A. Chaturbedi, **R. Ramachandran**. Parallelization of multi-dimensional population balance models. *Annual NJ ISPE meeting*, New Brunswick, NJ, USA 2015.

65 S. Panikar, P. Pawar, S. Talwar, J. Drennen, R. Friedman, H. Wu, F. Muzzio, **R. Ramachandran**. Using experimental and modeling approaches to understand a blending process. NIPTE research conference: Pharmaceutical critical path manufacturing-2015, Rockville, MD, USA 2015.

64 M. Sen, S. Karkala, S. Panikar, O. Lyngberg, M.C. Johnson, E. Schafer, A. Marchut, **R. Ramachandran**. Analyzing the mixing dynamics of an industrial batch bin blender. NIPTE research conference: Pharmaceutical critical path manufacturing-2015, Rockville, MD, USA 2015.

63 M. Sen, S. Karkala, S. Panikar, O. Lyngberg, M.C. Johnson, E. Schafer, A. Marchut, **R. Ramachandran**. Analyzing the mixing dynamics of an industrial batch bin blender. Annual NJ ISPE meeting, New Brunswick, NJ, USA 2015.

62 A. Tamrakar, A. Gunadi, P. M. Piccione, **R. Ramachandran**. Modeling of granulation behavior in an agitated filter dryer. *7th International Granulation workshop*, Sheffield, UK, 2015.

61 A. Tamrakar, A. Gunadi, P. M. Piccione, **R. Ramachandran**. Modeling of granulation behavior in an agitated filter dryer. NIPTE research conference: Pharmaceutical critical path manufacturing-2015, Rockville, MD, USA 2015.

60 A. Tamrakar, A. Gunadi, P. M. Piccione, **R. Ramachandran**. Modeling of granulation behavior in an agitated filter dryer. *Annual NJ ISPE meeting*, New Brunswick, NJ, USA 2015.

59 S. Oka, H. Emady, D. Smrcek, O. Kaspar, V. Tokarova, F. Muzzio, F. Stepanek, **R. Ramachandran**. Understanding Content Non-Homogeneity in High Shear Wet Granulation: Effects of Powder Segregation, Preferential Wetting and Solubility. *7th International Granulation workshop*, Sheffield, UK, 2015.

58 Singh, R., Sahay, A., Ierapetritou, M., **Ramachandran, R**., Muzzio, F. J. **(2015)**. Advanced Feed-forward/feed-back Control of Continuous Pharmaceutical Tablet Manufacturing Process. Oral presentation at *IFPAC* 2015, Arlington, VA, USA.

57 Sahay, A., Singh, R., Ospino, A. R., Romanach, R. J., Ierapetritou, M., **Ramachandran, R**., Muzzio, F. J. **(2015)**. An In-Line Method for Continuously Monitoring of Powder Density. Oral presentation at *IFPAC* 2015, Arlington, VA, USA.

56 D. Barrasso and **R. Ramachandran.** Multi-scale modeling of continuous granulation processes. *50th AAPS Arden conference*, Baltimore, MD, 2015.

55 D. Barrasso and **R. Ramachandran.** Multi-scale modeling of wet granulation processes in

gPROMS: PBM-DEM coupling. *Beyond Process Simulation: Computational Fluid Dynamics (CFD) for the Chemical Process and Pharmaceutical Industries*, Cambridge, MA, 2014.

54 D. Barrasso and **R. Ramachandran.** Multi-scale modeling of wet granulation processes in gPROMS: PBM-DEM coupling. *Beyond Process Simulation: Computational Fluid Dynamics (CFD) for the Chemical Process and Pharmaceutical Industries*, Princeton, NJ, 2014.

53 S. S. Panikar, S. Wu, B. J. Glasser, **R. Ramachandran** "Off-line and in-line monitoring of mulling processes using NIR" *17th International Diffuse Reflectance Conference (IDRC)*, Chambersburg, PA, 2014

52 S. S. Panikar, S. Wu, B. J. Glasser, **R. Ramachandran** "Off-line and in-line monitoring of mulling processes" *53rd Eastern Analytical Symposium (EAS),* Somerset, NJ, 2014

51 D. Barrasso, J. Li, K. Debus, R. Algave, T. Eppinger, S. Bermingham and **R. Ramachandran**. Multi-scale modeling of powder processes: bidirectional coupling of population balance models in gPROMS with discrete element models in Star-CCM+. *Advanced Process Modeling Forum*, London, UK, 2014.

50 Singh, R., Sahay, A., Muzzio, F., Ierapetritou, M., **Ramachandran, R**. **(2014)**. Plant-wide advanced hybrid model predictive closed-loop control of continuous pharmaceutical tablet manufacturing pilot-plant for QbD based manufacturing. Oral presentation at *AIChE annual meeting* (739c), Atlanta, GA, USA.

49 Singh, R**.,** Sen, M., Muzzio, F., Ierapetritou, M., **Ramachandran, R**. **(2014)**. Integrated dynamic real time optimization and advanced hybrid MPC-PID control of direct compaction continuous tablet manufacturing process. Oral presentation at *AIChE annual meeting* (668e), Atlanta, GA, USA, 16 - 21 November.

48 Roman-Ospino, A., Singh, R., **Ramachandran, R.,** M., Sahay, A., Oka, S., Liu, X., Muzzio, F., Romanach, R. **(2014)**. Real time prediction of powder density in a continuous manufacturing line. *International Diffuse Reflectance Conference*, Chambersburg, PA, **USA**.

46 Singh, R**.,** Roman, A., Krizia M. Karry, K., Sahay, A., Colón, Y.M., **Ramachandran, R**., Muzzio, F. J., Romañach, R. J. **(2014)**. NIR in Continuous Mixing: Transitioning from Monitoring to Control. Oral presentation at *IFPAC* 2014 Arlington, VA (Washington DC), USA, 2014.

45 D. Barrasso, **R. Ramachandran.** Multi-scale modelling and validation of pharmaceutical processes. *IFPAC*, Arlington, VA, USA, 2014

44 R. Singh, A. Sahay, K. Karry, M. Sen, R. Romanach, F. Muzzio, M. Ierapetritou, **R. Ramachandran.** Advanced hybrid MPC-PID based closed-loop control of continuous pharmaceutical tablet manufacturing processes. *IFPAC*, Arlington, VA, USA, 2014

43 O. Kaspar, V.Tokarova, S. Oka, **R. Ramachandran.** F. Stepanek. Determination of Structure, Porosity and API distribution in Granules by Computed Micro-Tomography. *AIChE Annual Meeting*, San Francisco, CA, 2013.

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/TALKS

61 **R. Ramachandran.** Model-based solutions to advance pharmaceutical small molecule solid dose manufacturing, Altair Global Events, Virtual seminar, 2024.

60 **R. Ramachandran.** Model-based solutions to advance pharmaceutical small molecule solid dose manufacturing, Georgia Tech University, Atlanta GA, 2024.

59 **R. Ramachandran.** SM platforms – A material sparing approach to enable advanced manufacturing with improved techno-economic efficiency, IQ seminar series on Continuous Manufacturing, Virtual Seminar. 2024.

58 **R. Ramachandran.** Smart manufacturing of downstream pharmaceutical drug product manufacturing processes, Hong Kong University of Science & Technology (HKUST), Hong Kong. 2024.

57 **R. Ramachandran.** Smart manufacturing of downstream pharmaceutical drug products, AAPS Northeast Regional Discussion Group (NRDG), Groton, CT, USA, 2024.

56 **R. Ramachandran.** Process systems engineering based design and analysis of particulate and multi-phase processes, KFUPM, Dhahran, Saudi Arabia, 2024.

55 **R. Ramachandran.** Process Systems based approaches to Pharmaceutical Granulation and downstream manufacturing, University of Kansas, 2023.

54 **R. Ramachandran.** Digital twin, CPS and cyber manufacturing in the pharmaceutical industry. Industry 4.0 Technology workshop on Digital twin, CPS and Cyber manufacturing, Texas A&M University, Virtual Seminar, 2023.

53 **R. Ramachandran.** Energy efficient smart manufacturing of pharmaceutical solid oral dosage forms. ORBIS conference, Pozlan, Poland, 2023.

52 **R. Ramachandran.** Modern modeling tools for small molecule solid dose manufacturing. Catalent webinar series, NJ, USA, 2023.

51 **R. Ramachandran.** Energy-efficient smart manufacturing of pharmaceutical products. Joint conference by IIT Ropar, India and Hamburg University of Technology, Germany, Chandigarh, India, 2023.

50 **R. Ramachandran.** Enabling energy-efficient manufacturing of pharmaceutical products. University of Leeds, Leeds, United Kingdom, 2022.

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.
Pharmaceutical Research
Journal of Advanced Manufacturing and Processing

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
CBE Social media committee – 2019 to Present

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.
SOE Advancements and Promotions Committee, 2022 – Present
University Senate and Budget & Finance Committee, 2023 – Present

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
- Keyaara Robinson
- Ou Yang
- Pooja Bhalode
- 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, 2021	Graduate professional skills course
Spring 2021, 2022	Computational methods

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 – 2021)

Mr. Shashank Muddu (Jan 2016 – 2021)

Mr. Yukteshwar Baranwal (Aug 2016 – 2021)

Ms. Indu Muthancheri (Aug 2016 – 2021)

Mr. Chaitanya Sampat (Jan 2019 – 2021)

Mr. Lalith Kotamarthy (Jan 2019 – 2021)

Ms. Ashley Dan (Fall 2020 – 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. Sania Parvani (Spring 2021 – Present)
Ms. Julia Parzecki (Summer and Fall 2020)
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)