PARTICULATE SYSTEMS GROUP
Department of Chemical & Biochemical Engineering

Dr. Rohit Ramachandran
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Research Areas:
• Population balance modeling for batch granulation
• Development of mechanistic models for granulation
• Compartent based modeling
• Optimization and control of granulation processes

Multi-scale Modeling of Particulate Processes
Integrated Modeling and Control of Batch/Continuous Downstream Pharmaceutical Processes
Modeling and Control Performance Enhancement of Industrial Process Control-Loops
Experimental Studies of Granulation Processes
Development of efficient numerical techniques for solution of population balance models

Dr. Aditya Donepudi
MS Student
Research Areas:
• Developing online monitoring techniques (e.g. NIR) within a continuous granulation process
• Control and optimization of granulation process using feedback data

Dr. Anik Chaturbedi
PhD Student*
(* Co-advised with F. Muzzio)
Research Areas:
• Population balance modeling for continuous granulation
• Discrete element modeling for continuous mixing
• Flowsheet modeling, control and optimization
• Hybrid modeling of particulate processes using one way and two way coupling

Dr. Suyang Wu
MS Student
Research Areas:
• Determination of active species in multi-scale systems
• Experimental studies on continuous milling

Research Areas:
• Developing Artificial Neural Network based Reduced Order models for wet granulation processes
• Population balance modeling of agglomeration behavior in agitated dryers

Dr. Adithya Chaudhury
PhD Student
Research Areas:
• Population balance modeling for batch granulation
• Development of mechanistic models for granulation
• Compartent based modeling
• Optimization and control of granulation processes

Dr. Anwesha Chaudhury
PhD Student
Research Areas:
• Population balance modeling for continuous granulation
• Discrete element modeling for continuous mixing
• Flowsheet modeling, control and optimization
• Hybrid modeling of particulate processes using one way and two way coupling

Dr. Jun Zhang
Post-Doctoral Associate*
(* Co-advised with M. Ierapetritou)
Research Areas:
• Identification and integration of feasible sensing techniques to monitor the manufacturing of poorly soluble drug film (in-line and off-line)

Dr. Maitraye Sen
PhD Student
Research Areas:
• Population balance modeling for continuous granulation
• Parameter estimation
• Coupled Population balance modeling and Discrete element modeling for continuous granulation

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Research Areas:
• Population balance modeling for batch granulation
• Development of mechanistic models for granulation
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Dr. Sarang Oka
PhD Student*
(* Co-advised with F. Muzzio)
Research Areas:
• Modeling of particulate processes (water purification through adsorption of metal ions by nano and micro-particles).
• Experimental validation of aforementioned models.

Dr. Siddhi Haate
MS Student
Research Areas:
• Experimential studies on batch granulation process
• Quantitative analysis of high-shear wet granulation
• Regime map analysis of steady vs. induction growth dynamics

Dr. Ashu Tamrakar
PhD Student
Research Areas:
• Developing online monitoring techniques (e.g. NIR) within a continuous granulation process
• Control and optimization of granulation process using feedback data

Dr. Anik Chaturbedi
PhD Student*
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Research Areas:
• Population balance modeling for continuous granulation
• Param eter estim ation
• Coupled Population balance modeling and Discrete element modeling for continuous granulation

Savitha Pamidam
Post-Doctoral Associate
Research Areas:
• Developing online monitoring techniques (e.g. NIR) within a continuous granulation process
• Control and optimization of granulation process using feedback data

Dr. Ravendra Singh
Post-Doctoral Associate*
(* Co-advised with M. Ierapetritou)
Research Areas:
• Design of control system, to integrate control hardware and software and to implement the regulatory as well as advanced model predictive control system into continuous pharmaceutical manufacturing process two way coupling

Dr. Suyang Wu
MS Student
Research Areas:
• Experimantal studies on continuous milling
• Perform studies on high-shear wet granulation to study compaction characteristics and analyze content uniformity

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Dr. Manogna Adepu
MS Student
Research Areas:
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