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1. International scientific articles

Year 2016

43. Wu, S., Panikar, S. S., **Singh; R.**, Zhang, J., Donepudi, A., Glasser, B., Ramachandran, R. (2016). Systematic framework to monitor mulling processes using Near Infrared spectroscopy. *Advanced Powder Technology*. doi:10.1016/j.appt.2016.03.022.
42. **Singh, R.**, Muzzio, F., Ierapetritou, M., Ramachandran, R. (2016). Systematic framework for design and implementation of plant-wide multilayer, sensing and control architecture into continuous pharmaceutical manufacturing plant. *Computer Aided Chemical Engineering*. Accepted.
41. Román-Ospino, A. D., **Singh, R.**, Ierapetritou, M., Ramachandran, R. Méndez, R., Ortega, C., Muzzio, F. J., Romañach, R. J., (2016). Near Infrared Spectroscopic Calibration Models For Real Time Monitoring Of Powder Density. *International Journal of Pharmaceutics*. Under review.

Year 2015

40. **Singh, R.**, Román-Ospino, A. D., Romañach, R. J., Ierapetritou, M., Ramachandran, R. (2015). Real time monitoring of powder blend bulk density for coupled feed-forward/feed-back control of a continuous direct compaction tablet manufacturing process. *International Journal of Pharmaceutics*, 495, 612-625.
39. **Singh, R.**, Muzzio, F., Ierapetritou, M., Ramachandran, R. (2015). A combined feed-forward/feed-back control system for a QbD based continuous tablet manufacturing process. *PROCESSES Journal*, 3, 339-356.
38. **Singh, R.**, Sen, M., Ierapetritou, M., Ramachandran, R. (2015). Integrated moving horizon based dynamic real time optimization and hybrid MPC-PID control of a direct compaction continuous tablet manufacturing process. *Journal of Pharmaceutical Innovation*, 10 (3), 233-253.
37. Simon, L. L., .. **Singh, R.**, et al. (2015). Assessment of Recent Process Analytical Technology (PAT) Trends: A Multi-author Review. *Organic Process Research & Development*, 19, 3-62.
36. **Singh, R.**, Zhang, J., Ierapetritou, M., Ramachandran, R. (2015). Designing a novel continuous manufacturing plant with superior monitoring and control. *European Pharmaceutical Review*, 20(6), 37-41.
35. Sen, M., **Singh, R.**, Ramachandran, R. (2015). Model Manufacturing. *The Medicine Maker*, February, 05, 42-45.
34. Escotet-Espinoza, M. S., **Singh, R.**, Sen, M., O'Connor, T., Lee, S., Chatterjee, S., Ramachandran, R., Ierapetritou, M., Muzzio, F. (2015). Flowsheet Models Modernize Pharmaceutical Manufacturing Design and Risk Assessment, *Pharmaceutical Technology* 39 (4), 34-42.
33. **Singh, R.**, Muzzio, F., Ierapetritou, M., Ramachandran, R. (2015). Plant-wide control of a continuous tablet manufacturing for Quality-by-Design based pharmaceutical manufacturing. *Computer Aided Chemical Engineering*, 37, 2183 - 2188.
32. Karry, K. M., **Singh, R.**, Muzzio, F. J. (2015). Fit-for-Purpose Miniature NIR Spectroscopy for Solid Dosage Continuous Manufacturing. *American Pharmaceutical Review*, 18(4), 64 - 67.
31. **Singh, R.**, Ierapetritou, M., Ramachandran, R. (2015). The scopes of PAT in real-time advanced control of tablet quality. *European Pharmaceutical Review* 20(2), 76-80.

Year 2014

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

29. **Singh, R.**, Sahay, A., Fernando Muzzio, Ierapetritou, M., Ramachandran, R. (2014). Systematic framework for onsite design and implementation of the control system in continuous tablet manufacturing process. *Computers & Chemical Engineering Journal*, 66, 186-200.
28. **Singh, R.**, Barrasso, D., Chaudhury, A., Maitraye Sen, Ierapetritou, M., Ramachandran, R. (2014). Closed-Loop Feedback Control of a Continuous Pharmaceutical Tablet Manufacturing Process via Wet Granulation. *Journal of Pharmaceutical Innovation*, 9, 16-37.
27. Sen, M., Barrasso, D., **Singh, R.**, Ramachandran, R. (2014). A Multi-Scale Hybrid CFD-DEM-PBM Description of a Fluid-Bed Granulation Process. *Processes Journal*, 2(1), 89-111.
26. Sen, M., **Singh, R.**, Ramachandran, R. (2014). Simulation based design of an efficient control system for the continuous purification and processing of active pharmaceutical ingredients. *Journal of Pharmaceutical Innovation*, 9, 65-81.
25. Sen, M., **Singh, R.**, Ramachandran, R. (2014). A hybrid MPC-PID control system design for the continuous purification and processing of active pharmaceutical ingredients. *PROCESSES Journal*, 2, 392-418; doi:10.3390/pr2020392.
24. Sen, M., Chaudhury, A., **Singh, R.**, Ramachandran, R. (2014). Two-dimensional population balance model development and validation of pharmaceutical crystallization processes. *American Journal of Modern Chemical Engineering*, 1, 13-29.

Year 2013

23. **Singh, R.**, Ierapetritou, M., Ramachandran, R. (2013). System-wide hybrid model predictive control of a continuous pharmaceutical tablet manufacturing process via direct compaction. *European Journal of Pharmaceutics and Biopharmaceutics*, 85(3), Part B, 1164-1182.
22. **Singh, R.**, Godfrey, A., Gregertsen, B., Muller, F., Gernaey, K. V., Gani, R., Woodley, J. M. (2013). Systematic substrate adoption methodology (SAM) for future flexible, generic pharmaceutical production processes. *Computers & Chemical Engineering Journal*, 58, 344 - 368.
21. Sen, M., Dubey, A., **Singh, R.**, Ramachandran, R. (2013). Mathematical Development and Comparison of a Hybrid PBM-DEM description of a Continuous Powder Mixing Process. *Journal of Powder Technology*, <http://dx.doi.org/10.1155/2013/843784>.
20. Sen, M., Chaudhury, A., **Singh, R.**, John, J., Ramachandran, R. (2013). Multi-scale flowsheet simulation of an integrated continuous purification–downstream pharmaceutical manufacturing process. *International Journal of Pharmaceutics*, 445 (1-2), 29-38.
19. Sen, M., Rogers, A., **Singh, R.**, Chaudhury, A., John, J., Ierapetritou, M., Ramachandran, R. (2013). Flowsheet optimization of an integrated continuous purification-processing pharmaceutical manufacturing operation. *Chemical Engineering Science*, 102, 56 – 66.
18. **Singh, R.**, Ierapetritou, M., Ramachandran, R (2013). Hybrid advanced control of a flexible multipurpose continuous pharmaceutical tablet manufacturing process via direct compaction. *Computer Aided Chemical Engineering*, 32, 757-762.
17. Muzzio, F., **Singh, R.**, Chaudhury, A., Rogers, A., Ramachandran, R. Ierapetritou, M. (2013). Model-predictive design, control and optimization of pharmaceutical process. *Pharmaceutical Technology magazine*, 37(6), 40-41, 77.
16. **Singh, R.**, Sahay, A., Oka, S., Liu, X., Ramachandran, R., Ierapetritou, M., Muzzio, F. (2013). Online monitoring, advanced control and operation of robust continuous pharmaceutical tablet manufacturing process. *BioPharma magazine Asia*, 2(5), 18-25.

Year 2012

15. **Singh, R.**, Ierapetritou, M., Ramachandran, R. (2012). An engineering study on the enhanced control and operation of continuous manufacturing of pharmaceutical tablets via roller compaction. *International Journal of Pharmaceutics*, 438 (1-2), 307-326.

14. Sen, M., **Singh, R.**, Vanarase, A., John, J., Ramachandran, R. (2012). Multi-dimensional population balance modeling and experimental validation of continuous powder mixing processes. *Chemical Engineering Science*, 18, 349-360.
13. **Singh, R.**, Raquel Rozada-Sanchez, R., Dean, W., Perkins, J., Muller, F., Godfrey, A., Gernaey, K. V., Gani, R., Woodley, J. M. (2012). A generic process template for continuous pharmaceutical production. *Computer Aided Chemical Engineering*, 31, 715-719.
12. **Singh, R.**, Boukouvala, F., Jayjock, E., Ramachandran, R. Ierapetritou, M., Muzzio, F. (2012). Flexible Multipurpose Continuous Processing: integration of process flow modeling for continuous processing of pharmaceutical solid dosage forms. *PharmPro Magazine, Pharmaceutical Processing*, 27(6), 22-25.
11. **Singh, R.**, Boukouvala, F., Jayjock, E., Ramachandran, R. Ierapetritou, M., Muzzio, F. (2012). Flexible Multipurpose Continuous Processing of Pharmaceutical Tablet Manufacturing Process. *GMP news, European Compliance Academic (ECE)*, http://www.gmp-compliance.org/ecanl_503_0_news_3268_7248_n.html.

Years 2011-2008

10. **Singh, R.**, Gernaey, K. V., Gani, R. (2010). ICAS-PAT: A Software for Design, Analysis & Validation of PAT Systems. *Computers & Chemical Engineering Journal*, 34(7), 1108-1136.
09. **Singh, R.**, Gernaey, K. V., Gani, R. (2010). An ontological knowledge based system for selection of process monitoring and analysis tools. *Computers & Chemical Engineering Journal*, 34(7), 1137-1154.
08. **Singh, R.**, Gernaey, K. V., Gani, R. (2009). Model-based computer-aided framework for design of process monitoring and analysis systems. *Computers & Chemical Engineering Journal*, 33(1), 22-42.
07. Samad, N. A. F. A., **Singh, R.**, Sin, G., Gernaey, K. V., Gani, R. (2011). A generic multi-dimensional model-based system for batch cooling crystallization processes. *Computers & Chemical Engineering Journal*, 35(5), 828-843.
06. Samad, N. A. F. A., **Singh, R.**, Sin, G., Gernaey, K. V., Gani, R. (2011). Systematic Procedure for Generating Operational Policies to Achieve Target Crystal Size Distribution (CSD) in Batch Cooling Crystallization. *IEEE*, 1-6. Print ISBN: 978-1-4577-0003-3. DOI: 10.1109/ICMSAO.2011.5775588.
05. Samad, N. A. F. A., **Singh, R.**, Sin, G., Gernaey, K. V., Gani, R. (2011). Integration of Generic Multi-dimensional Model and Operational Policies for Batch Cooling Crystallization. *Computer Aided Chemical Engineering*, 29, 86-90.
04. Samad, N. A. F. A., **Singh, R.**, Sin, G., Gernaey, K. V., Gani, R. (2010). Control of process operation and monitoring of product qualities through generic model-based in batch cooling crystallization. *Computer Aided Chemical Engineering*, 28, 613-618.
03. **Singh, R.**, Rozada-Sanchez, R., Wrate, T., Muller, F., Gernaey, K. V., Gani, R., Woodley, J. M. (2010). A retrofit strategy to achieve “Fast, Flexible, Future (F³)” pharmaceutical production processes. *Computer Aided Chemical Engineering*, 29, 291-295.
02. **Singh, R.**, Gernaey, K. V., Gani, R. (2009). A software tool for design of process monitoring and analysis systems. *Computer Aided Chemical Engineering*, 26, 321-326.
01. **Singh, R.**, Gernaey, K. V., Gani, R. (2008). Off-line design of PAT systems for on-line applications. *Computer Aided Chemical Engineering*, 25, 423-428.

2. Book Chapters

1. **Singh, R.**, Figueroa, CV, Sahay, A., Karry, KM, Fernando Muzzio, F., Ierapetritou, M., Ramachandran, R. (2014). Chapter 7: **Advanced Control of continuous pharmaceutical tablet manufacturing processes**. Book title: Process Simulation and Data Modeling in Solid Oral Drug Development and Manufacture. Publisher: Humana Press, ISBN: 978-1-4939-2995-5, 191 – 223.
2. **A Book chapter in “Product and Process Modelling: A case study approach”:**
 - **Singh, R. (2011). Fermentation process modeling**. Chapter 12.2 of book “Product and Process Modelling: A case study approach” edited by I Cameron & R. Gani. Publisher: Elsevier, pp 380-396.
 - **Singh, R. (2011). Milling process model**. Chapter 12.4 of book “Product and Process Modelling: A case study approach” edited by I Cameron & R. Gani. Publisher: Elsevier, pp 407-413.
 - **Singh, R. (2011). Granulation process model**. Chapter 12.5 of book “Product and Process Modelling: A case study approach” edited by I Cameron & R. Gani. Publisher: Elsevier, pp 413-422.
 - **Singh, R. (2011). Pharmaceutical tablet pressing process model**. Chapter 12.6 of book “Product and Process Modelling: A case study approach” edited by I Cameron & R. Gani. Publisher: Elsevier, pp 422-430.
 - **Singh, R. (2011). Milk pasteurization process modeling**. Chapter 12.3 of book “Product and Process Modelling: A case study approach” edited by I Cameron & R. Gani. Publisher: Elsevier, pp 396-406.
3. Ierapetritou, M., Escotet-Espinoza, M. S., **Singh, R. (2016). Process Simulation and control for continuous pharmaceutical manufacturing of solid drug products**. A chapter of book “Continuous manufacturing of pharmaceuticals” edited by Peter Kleinebudde, Johannes Khinast and Jukka Rantanen. Publisher: Wiley-VCH. Accepted.
4. Oka, S, Escotet-Espinoza, M. S., **Singh, R.**, Scicolone, J., Hausner, D., Ierapetritou, M., Muzzio, F. (2016). **Design of an integrated continuous manufacturing system**. A chapter of book “Continuous manufacturing of pharmaceuticals” edited by Peter Kleinebudde, Johannes Khinast and Jukka Rantanen. Publisher: Wiley-VCH. Accepted.

3. International conferences

A. Plenary lectures/invited keynote lectures in international conferences

7. **Singh, R. (2015)**. Flowsheet Modeling and Analysis of Continuous Tablet Manufacturing Processes. American Association of Pharmaceutical Scientists (AAPS), Bristol-Myers Squibb, Plainsboro, NJ, **USA**, 1st June.
6. **Singh, R.**, Muzzio, F., Ierapetritou, M., Ramachandran, R (2014). A novel continuous pharmaceutical manufacturing process integrated with inline PAT tools and advanced feedback control system. **ISPE annual meeting**, Las Vegas, Nevada **USA**, 12-15 October.
5. Muzzio, F., Ierapetritou, M., Ramachandran, R., Roger, A., and **Singh, R. (2014)**. Achieving Excellence in Continuous Manufacturing. **IFPAC-Cortona14, Italy**, 28 September –1 October.
4. Gani, R., Gernaey, K. V., **Singh, R. (2008)**. A model-based framework for design and analysis of PAT systems. Plenary lecture at EUROFACT, Frankfurt, Germany, 22 – 25 April.
3. Gernaey, K. V., **Singh, R.**, Gani, R. (2009). A systematic computer aided framework for design and analysis of PAT systems. Plenary lecture at 8th World Congress of Chemical Engineering, Montreal, Quebec, **Canada**, 23 – 27 August.
2. **Singh, R.**, Gernaey, K. V., Woodley, J. M., Gani, R. (2010). Mechanistic modeling for systematic design and analysis of PAT systems. Invited presentation at **IFPAC 2010**, Baltimore, MD, **USA**, 31 January- 4 February.
1. **Singh, R. (2010)**. Model-based computer-aided framework for design of process monitoring and analysis systems (PAT systems). Invited presentation, on the ceremony of EFCE Excellence Award for the Outstanding PhD Thesis in CAPE area, from European Federation of Chemical Engineering, **ESCAPE 20**, Ischia, Naples, **Italy**, 6 – 9 June.

B. International conference presentations

Year 2016

72. **Singh, R.**, Muzzio, F. J, Ramachandran, R. Ierapetritou, M. (2016). Advanced flexible control system implementation into direct compaction continuous pharmaceutical manufacturing pilot-plant. Oral presentation at AIChE annual meeting, San Francisco, CA, USA, 13 – 18 November. Submitted.
71. **Singh, R.**, Cao, H., Mushnoori, S., Higgins, B., Kolipara, C., Fermier, A., Hausner, D., Jha, S., Ierapetritou, M., Ramachandran, R. (2016). Data management and integration for continuous pharmaceutical manufacturing. Oral presentation at AIChE annual meeting, San Francisco, CA, USA, 13 – 18 November. Submitted.
70. **Singh, R.**, Pereira, G. C., Soni, N., Román-Ospino, A. D., Ierapetritou, M., Ramachandran, R. (2016). Feedforward control of continuous pharmaceutical manufacturing process. Oral presentation at AIChE annual meeting, San Francisco, CA, USA, 13 – 18 November. Submitted.
69. Wang, Z., Escotet-Espinoza, M. S., **Singh, R.**, Muzzio, F. J., Ierapetritou, M. G. (2016). Feasibility Analysis of Flowsheet Models in Continuous Pharmaceutical Manufacturing Processes Considering the Effects of Noise. Oral presentation at AIChE annual meeting, San Francisco, CA, USA, 13 – 18 November. Submitted.
68. Wang, Z., Escotet-Espinoza, M. S., **Singh, R.**, Muzzio, F. J., Ierapetritou, M. G. (2016). Surrogate-Based Optimization Methodology for Pharmaceutical Tablet Manufacturing Processes. Oral presentation at AIChE annual meeting, San Francisco, CA, USA, 13 – 18 November. Submitted.
67. **Singh, R.**, Muzzio, F., Ierapetritou, M., Ramachandran, R. (2016). Combined feedforward/feedback control and automation of direct compaction continuous pharmaceutical tablet manufacturing plant. Oral presentation at IFPAC 2016, Arlington, VA (Washington DC), USA, 24 - 27 January.
66. Maeda, J., **Singh, R.**, Ierapetritou, M. (2016). Real-time monitoring and control of API concentration in a tablet press for continuous manufacturing of tablets. Oral presentation at IFPAC 2016, Arlington, VA (Washington DC), USA, 24 - 27 January.
65. Román-Ospino, A. D., **Singh, R.**, Ierapetritou, M., Ramachandran, R., Ortega, C., Méndez, R., Rodolfo J. Romañach, R. J. (2016). Development of Calibration Models for Real Time Prediction of Powder Density by Near Infrared Spectroscopy. Oral presentation at IFPAC 2016, Arlington, VA (Washington DC), USA, 24 - 27 January.
64. Engel, B., **Singh, R.** (2016). Automated Batch Reporting for Continous Manufacturing: data management, batch reporting, analytics and traceability. Oral presentation at IFPAC 2016, Arlington, VA (Washington DC), USA, 24 - 27 January.
63. **Singh, R.**, Muzzio, F., Ierapetritou, M., Ramachandran, R. (2016). Systematic framework for design and implementation of plant-wide multilayer, sensing and control architecture into continuous pharmaceutical manufacturing plant. Poster presentation at ESCAPE 26, Portorož **Slovenia**, 12 June - 15 June.

Year 2015

62. **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, 8 – 19 November.
61. **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, 8 – 19 November.
60. **Singh, R.**, Cherian, C. S., Ramachandran, R. (2015). Sensor modeling. Poster presentation at AIChE annual meeting, Salt Lake City, UT, USA, 8 – 19 November.
59. **Singh, R.**, (2015). Applied Pharmaceutical Process System Engineering. Poster presentation at AIChE annual meeting, Salt Lake City, UT, USA, 8 – 19 November.

58. Shah, A., Ramachandran, R. **Singh, R. (2015)**. Moving Horizon Based Real Time Optimization and Advanced Hybrid Model Predictive Control of Continuous Pharmaceutical Manufacturing Process. Oral presentation at AIChE annual meeting, Salt Lake City, UT, USA, 8 – 19 November.
57. Engel, B., Brodbeck, P., **Singh, R. (2015)**. Applying Batch Data Principles to Continuous Manufacturing for the Purposes of Data Management, Batch Reporting, Analytics and Traceability. Oral presentation at AIChE annual meeting, Salt Lake City, UT, USA, 8 – 19 November.
56. Escotet-Espinoza, M. S., Jayjock, E., **Singh, R.**, Vanarase, A., Muzzio, F. J., Ierapetritou, M. **(2015)**. Characterization and Modeling of Feeders: A Critical Component in Continuous Pharmaceutical Manufacturing. Oral presentation at AIChE annual meeting, Salt Lake City, UT, USA, 8 – 19 November.
55. 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, 8 – 19 November.
54. Wang, Z., Escotet-Espinoza, M. S., **Singh, R.**, Muzzio, F. J., Ierapetritou, M. **(2015)**. Flowsheet Modeling for Oral Solid Drug Product Manufacturing. Oral presentation at AIChE annual meeting, Salt Lake City, UT, USA, 8 – 19 November.
53. **Singh, R.**, Ierapetritou, M., Ramachandran, R. **(2015)**. A Novel Continuous Pharmaceutical Tablet Manufacturing Process Integrated with Inline PAT Tools and an Automated Control System. Oral presentation at IFPAC-QbD Summit, Carolina, Puerto Rico, USA, 9 – 10 June.
52. **Singh, R.**, Muzzio, F., Ierapetritou, M., Ramachandran, R. **(2015)**. Plant-wide control of a continuous tablet manufacturing for Quality-by-Design based pharmaceutical manufacturing. Oral presentation at PSE 2015/ESCAPE 25, Copenhagen, **Denmark**, 31 May - 4 June.
51. **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 (Washington DC), USA, 25 - 28 January.
50. 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 (Washington DC), **USA**, 25 - 28 January.
49. Ierapetritou, M., Escotet, S., Singh, R., Zhang, J. **(2015)**. Taking Continuous Processing from Good to Great: The Application of Advanced Process Controls and Real-Time Analytics. Oral presentation at 50th AAPS Arden Conference, Baltimore, **USA**, 16 – 18 March.

Year 2014

48. **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**, 16 - 21 November. <https://aiche.confex.com/aiche/2014/webprogram/Paper369535.html>
47. **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. <https://aiche.confex.com/aiche/2014/webprogram/Paper369877.html>
46. **Singh, R. (2014)**. Design, Optimization, Monitoring and Control of Continuous Pharmaceutical Manufacturing Plant for QbD and PAT Based Next Generation of Efficient Manufacturing. Poster presentation at AIChE annual meeting (6dp), Atlanta, GA, USA, 16 - 21 November, 2014. <https://aiche.confex.com/aiche/2014/webprogram/Paper373573.html>
45. 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**, 2- 8 August.
44. **Singh, R.**, Sahay, A., Karry, K. M., Sen, M., Romanach, R. J., Muzzio, F. J., Ierapetritou, M., Ramachandran, R. **(2014)**. Advanced hybrid MPC-PID based closed-loop control of continuous pharmaceutical tablet

manufacturing pilot-plant. Oral presentation at IFPAC 2014, Arlington, VA (Washington DC), USA, 21 - 24 January.

43. **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, 21 - 24 January.

Year 2013

42. **Singh, R.**, Sahay, A., Brodbeck, P., Ierapetritou, M., Ramachandran, R. (2013). Implementation of advanced hybrid MPC-PID control system into a continuous pharmaceutical tablet manufacturing pilot-plant. Oral presentation at AIChE annual meeting (404e), San Francisco, CA, USA, 3 - 8 November. <https://aiche.confex.com/aiche/2013/webprogram/Paper321724.html>
41. **Singh, R.**, Sahay, A., Ierapetritou, M., Ramachandran, R. (2013). Design of an efficient control system for flexible continuous tablet manufacturing process. Poster presentation at AIChE annual meeting (586o), San Francisco, CA, USA, 3 - 8 November. <http://www3.aiche.org/proceedings/Abstract.aspx?PaperID=337206>
40. **Singh, R.**, Boukouvala, F., Jayjock, E., Ierapetritou, M., Muzzio, F., Ramachandran, R. (2013). Optimal operation and advanced control of a flexible multipurpose continuous pharmaceutical tablet manufacturing process. Oral presentation at IFPAC, Baltimore, MD, USA. 22 - 25 Jan.
39. 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, 22 - 25 January.
38. **Singh, R.**, Ierapetritou, M., Ramachandran, R. (2013). Hybrid advanced control of a flexible multipurpose continuous pharmaceutical tablet manufacturing process via direct compaction. Oral presentation at ESCAPE 23, Finland, 9 – 12 June.
37. Ramachandran, R., **Singh, R.**, Sahay, A., Ierapetritou, M., Muzzio F. (2013). Modeling and Control of a Continuous Direct Compaction Pharmaceutical Process. Oral presentation at Tenth Annual IFPAC/QbD/PAT Summit, Carolina, Puerto Rico, 18 – 19 June.
36. **Singh, R.**, Ierapetritou, M., Ramachandran, R. (2013). Hybrid advanced control of a flexible multipurpose continuous pharmaceutical tablet manufacturing process via direct compaction. Poster presentation at Advanced Process Modelling Forum (APM), New York, USA, 5 – 6 June.
35. Ramachandran, R., Sen, M., Barrasso, D., Chaudhury, A., **Singh, R.**, Oka, S. (2013). Population balance modeling of pharmaceutical processes featuring multi-scale approach of integrated flowsheet models and validation. Oral presentation at 5th International Conference on Population Balance Modeling, Bangalore, India, 11 – 13 September.
34. **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, 30 September– 4 October.
33. **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>.
32. 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>.

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31. **Singh, R.**, Ierapetritou, M., Ramachandran, R. (2012). Design and implementation of an efficient control system in a continuous pharmaceutical manufacturing process via roller compaction. Oral presentation at AIChE annual meeting, Pittsburgh, PA, USA, 28th October - 2nd November.
30. **Singh, R.**, Ierapetritou, M., Ramachandran, R. (2012). Plant-wide hybrid model predictive control of a continuous pharmaceutical tablet manufacturing process via direct compaction. Oral presentation at AIChE annual meeting, Pittsburgh, PA, USA, 28th October - 2nd November.
29. Sen, M., Chaudhury, A., John, J., **Singh, R.** (2012). Ramachandran, R. Multi Scale Flow sheet Model for Downstream Processes in Production of Active Pharmaceutical Ingredient. Oral presentation at AIChE annual meeting, Pittsburgh, PA, USA, 28th October - 2nd November
28. **Singh, R.**, Gernaey, K. V., Gani, R., Woodley, J. M. (2012). Adaptive continuous template based novel manufacturing technique for faster manufacturing of new APIs for clinical trials. Oral presentation at AIChE annual meeting, Pittsburgh, PA, USA, 28th October - 2nd November
27. **Singh, R.**, Raquel Rozada-Sanchez, R., Dean, W., Perkins, J., Muller, F., Godfrey, A., Gernaey, K. V., Gani, R., Woodley, J. M. (2012). A generic process template for continuous pharmaceutical production. 11th International Symposium on Process Systems Engineering conference (PSE2012), Singapore, 15-19 July.
26. **Singh, R.**, Chaudhury, A., Ramachandran, R., Ierapetritou, M. (2012). Model-based control of an integrated and continuous downstream pharmaceutical process. Oral presentation at IFPAC 2012, Baltimore, MD, USA, 22-25 January.

Year 2011

25. **Singh, R.**, Rozada-Sanchez, R., Wrate, T., Muller, F., Gernaey, K. V., Gani, R., Woodley, J. M. (2011). Substrates adoption methodology (SAM) to achieve “Fast, Flexible, Future (F³)” pharmaceutical production processes”. Oral presentation at ECCE8 conference, Session: F³ Factory (Designing reaction), P 36, Berlin, Germany, 25-29 September.
24. Haas-Santo, K., Vankayala, B., Dittmeyer, R., **Singh, R.**, Gernaey, K. V., Gani, R., Woodley, J. M., Rozada-Sanchez, R., Muller, F. (2011). Development of a fast and flexible generic process for the reduction of nitro compounds. Oral presentation at ECCE8 conference, Session: F³ Factory (Designing reaction), P 36, Berlin, Germany, 25-29 September.
23. Samad, N. A. F. A., **Singh, R.**, Sin, G., Gernaey, K. V., Gani, R. (2011). Systematic Procedure for Generating Operational Policies to Achieve Target Crystal Size Distribution (CSD) in Batch Cooling Crystallization, Oral presentation at ICMSAO (International Conference on Modeling, Simulation and Applied Optimization), Kuala Lumpur, Malaysia, 19-21 April.
22. Samad, N. A. F. A., **Singh, R.**, Sin, G., Gernaey, K. V., Gani, R. (2011). Systematic Modeling and Crystal Size Distribution Control for Batch Cooling Crystallization Processes”, Oral presentation at EuroPACT 2011, Session: Novel Process Design and Control Strategies, P 21, Paper no. 81, Glasgow, UK, 27 – 29 April.
21. **Singh, R.**, Rozada-Sanchez, R., Wrate, T., Muller, F., Gernaey, K. V., Gani, R., Woodley, J. M. (2011). A retrofit strategy to achieve “Fast, Flexible, Future (F³)” pharmaceutical production processes”, Poster presentation at ESCAPE 21, Session: Synthesis/Design, P 26, Greece, 29 May– 1 June.
20. Samad, N. A. F. A., **Singh, R.**, Sin, G., Gernaey, K. V., Gani, R. (2011). Systematic Modeling of Generic Multi-dimensional Model-based System for Batch Cooling Crystallization Operations. Oral presentation at ESCAPE 21, Session: Multi-scale Modelling III, P 53, Greece, 29 May– 1 June.

Year 2010

19. **Singh, R.**, Gernaey, K. V., Gani, R., Woodley, J. M. (2010). Systematic Framework for Design and Adaption of “Flexible, Fast, and Future (F³) Production Processes. Oral presentation at AIChE annual meeting, Salt Lake city, Utah, USA, 7 - 12 November.
18. **Singh, R.**, Gernaey, K. V., Gani, R., Woodley, J. M. (2010). An ontological knowledge-based system for identification of efficient chemical production routes ”, Oral presentation at AIChE annual meeting (530c),

Session: Cyberinfrastructure and Informatics for Knowledge Management, Salt Lake city, Utah, **USA**, 7 - 12 November.

17. Samad, N. A. F. A., **Singh, R.**, Sin, G., Gernaey, K. V., Gani, R. (2010). A generic multidimensional model-based framework for batch cooling crystallization process. Oral presentation at AIChE annual meeting (164d), Session: Particle Formation and Crystallization Processes From Liquids, Slurries, and Emulsions II. Salt Lake city, Utah, **USA**, 7 - 12 November.
16. **Singh, R.**, Samad, N. A. F. A., Sin, G., Gernaey, K. V., Gani, R. (2010). Systematic method and tool for design, analysis &/or validation of PAT systems. Oral presentation at ARACT-10, Manchester, **UK**, 28 - 30 April 2010.
15. Samad, N. A. F. A., **Singh, R.**, Sin, G., Gernaey, K. V., Gani, R. (2010). Control of process operation and monitoring of product qualities through generic model-based in batch cooling crystallization. Oral presentation at ESCAPE 20, Ischia, Naples, **Italy**, 6 – 9 June 2010.
14. Muller, F., Davison, S., Montague, G. A., Martin, E. B., **Singh, R.**, Gernaey, K. V., Gani, R., Woodley, J. M. (2010). F³ process design for fine chemical and Pharmaceutical transformations. Oral presentation at CHISA2010 - ECCE7 conference, Prague, **Czech Republic**, 28August – 1st September, 2010.
13. **Singh, R.**, Gernaey, K. V., Gani, R. (2010). Systematic computer-aided method and tool (ICAS-PAT) for design, analysis &/or validation of process monitoring and analysis systems (PAT systems). Oral presentation at CHISA2010 - ECCE7 conference, Prague, **Czech Republic**, 28August – 1st September, 2010.
12. Samad, N. A. F. A., **Singh, R.**, Sin, G., Gernaey, K. V., Gani, R. (2010). A Generic Model-Based Framework for Batch Cooling Crystallization Processes. Poster presentation at PBM1010 (4th International Conference on Population Balance Modeling), Session P2: Crystallization, Berlin, **Germany**, September 15 – 17, 2010.

Years 2009-2007

11. **Singh, R.**, Gernaey, K. V., Gani, R. (2009). ICAS-PAT: A new software tool for systematic design/validation of process monitoring and analysis systems (PAT systems). ARACT-09, Glasgow, **UK**, 05 - 07 May 2009.
10. **Singh, R.**, Gernaey, K. V., Gani, R. (2009). A software tool for design of process monitoring and analysis systems”, Oral presentation at ESCAPE19, Cracow, **Poland**, 14 – 19 June 2009.
09. **Singh, R.**, Samad, N. A. F. A., Sin, G., Gernaey, K. V., Gani, R. (2009). Application of ICAS-PAT on design of process monitoring and control system for a batch cooling crystallization process through hybrid multiscale model-based analysis. Oral presentation at AIChE annual meeting, Nashville, TN, **USA**, 8 – 13 November 2009.
08. **Singh, R.**, Gernaey, K. V., Gani, R. (2008). Off-line design of PAT systems for on-line applications”, Oral presentation at ESCAPE18, Lyon, **France**, June 2008.
07. Gernaey, K. V., Sin, G., Albo, E., Woodley, J. M., **Singh, R.**, Gani, R. (2008). Application of mechanistic models within a PAT framework. Oral presentation at ISPE, Malmö, Sweden, 1st October 2008.
06. **Singh, R.**, Gernaey, K. V., Gani, R. (2008). A model-based framework for systematic product quality monitoring and control”, Oral presentation at AIChE annual meeting (710e), Philadelphia, PA, **USA**, 16 – 21 November 2008.
05. **Singh, R.**, Gernaey, K. V., Gani, R. (2008). A software tool for design of process monitoring and analysis systems. Poster presentation at AIChE annual meeting, (577b), **Philadelphia**, PA, USA, 16 – 21 November 2008.
04. **Singh, R.**, Gernaey, K. V., Gani, R. (2007). Model-based Computer Aided Framework for Design of Process Monitoring and Analysis Systems. Oral presentation at ARACT-07, Edinburgh, **UK**, 01 - 04 May 2007.
03. **Singh, R.**, Gernaey, K. V., Gani, R. (2007). Design of Process Monitoring and Analysis Systems, using a Model-based Computer Aided Framework. Oral presentation at ECCE6, Copenhagen, **Denmark**, 16 – 21 September 2007.
02. **Singh, R.**, Gernaey, K. V., Gani, R. (2007). “Design of Process Monitoring and Analysis Systems”, Oral presentation at AIChE annual meeting (556a), Salt Lake city, Utah, **USA**, 3 - 9 Nov. 2007.
01. **Singh, R.**, Gernaey, K. V., Gani, R. (2007). Supporting Tools for Design and Validation of PAT system. Poster presentation at AIChE annual meeting (517m), Salt Lake city, Utah, **USA**, 3 – 9 Nov. 2007.

4. Invited industrial/academic/regulatory presentations

1. **Singh, R.**, “Model-based Computer Aided Framework for Design of Process Monitoring and Analysis Systems (PAT systems)”, invited presentation given at **Sartorius Company, Göttingen, Germany**, 6th August, 2010.
2. **Singh, R.**, “Systematic methods and tool for PAT system design”, invited presentation given at **Novo Nordisk A/S, Denmark**, 5th October, 2010.
3. **Singh, R.**, “Systematic Framework for Design, Analysis and Validation of PAT systems”, invited presentation given at MATLS (Multivariate Analysis for the Technical and Life Sciences) meeting, Technical University of Denmark, Denmark, 17th November, 2010.
4. Ierapetritou, M., **Singh, R.** Control theory and implementation to a continuous tablet manufacturing process. **US Food and Drug Administration (FDA), USA**, November 2012.
5. Barrasso, D., Chaudhury, A., **Singh, R.**, Ramachandran, R. Multi-scale Modeling of Particulate Processes. University of Leeds, UK, 25 June 2013.
6. **Singh, R. (2015)**. Application of synTQ for real time automatic advanced control of continuous pharmaceutical tablet manufacturing process. SynTQ user group meeting, **Optimal company, Arlington, VA (Washington DC), USA**, 29 - 30 January.
7. Ramachandran, R., **Singh, R.**, Ierapetritou, M. (2015). Control Systems in Continuous Manufacturing. BMS-Rutgers Symposium, **Bristol-Myers Squibb (BMS) Company, New Jersey, USA**, 23 June 2015.

5. Conducted workshops

1. **Singh, R.**, Ramachandran, R. Closed-loop Process Control of Pharmaceutical Manufacturing Processes. **Bristol-Myers Squibb (BMS)**, 20 July 2013.
2. **Singh, R.**, “implementation of PID and advanced model predictive controller to the continuous tablet manufacturing process” at Industrial Advisory Board Meeting of ERC-SOPS, Purdue University, 14th May 2013.
3. **Singh, R.**, “application of ICAS-PAT software for design of PAT systems”, workshop at Annual CAPEC external meeting, 9 – 11 June 2008.
4. **Singh, R.**, “Design of a control system for continuous manufacturing of pharmaceuticals” at Industrial Advisory Board Meeting of ERC-SOPS, Samuel Riggs IV Alumni Center College Park, MD, 21 November 2013.
5. **Singh, R.**, “Integration of Prediction from a Multivariate Sensor into a Process Control System” at Industrial Advisory Board Meeting of ERC-SOPS, Samuel Riggs IV Alumni Center College Park, MD, 21 November 2013.

6. Completed Thesis

1. **Singh, R.**, (2009). Model-based computer-aided framework for design of process monitoring and analysis systems. PhD thesis, Department of Chemical and Biochemical Engineering, Technical University of Denmark.
2. **Singh, R.**, (2005). Temperature trajectory optimization for a thermostated batch crystallization apparatus. Master thesis, IVT, RWTH Aachen University, Germany and Department of Chemical Engineering, Indian Institute of Technology, Roorkee, India.
3. **Singh, R.**, (2003). Defluoridation of water using mixture of adsorbents, Bachelor thesis, Department of Chemical Engineering, BIET Jhansi, India.

Graduate Schools Yearbook, DTU Chemical Engineering

1. **Singh, R.**, (2008). Graduate Schools Yearbook, DTU Chemical Engineering, pp 157-160.
2. **Singh, R.**, (2007). Graduate Schools Yearbook, DTU Chemical Engineering, pp 173-176.
3. **Singh, R.**, (2006). Graduate Schools Yearbook, DTU Chemical Engineering, pp 199-200.

Reports and other scientific contributions (more than 100) (only few selected reports are listed)

- **Singh, R.**, Ierapetritou, M., Ramachandran, R. (2013). D2 project: Control of continuous tablet manufacturing process. IAB meeting, C-SOPS.
- **Singh, R.**, Germaey, K. V., Gani, R., (2008). User manual for “ICAS-PAT”. CAPEC, KT, DTU.
- **Singh, R.**, Gani, R., (2009). User manual for “CAPEC Database Manager”. CAPEC, KT, DTU.
- **Singh, R.**, Gani, R., (2009). User manual for “ProPred Template”. CAPEC, KT, DTU.
- **Singh, R.**, Gani, R., (2009). User manual for “Virtual Product-Process Design Lab (Controlled Release)”. CAPEC, KT, DTU.

Some useful links/information (Project, Press/news releases etc.)

- **European Federation of Chemical Engineering award.**
<http://www.efce.info/Activities/EFCE+Awards/Excellence+Awards/Excellence+Award+in+CAPE/Award+winners-p-111766.print>
- **ERC-SOPS, Rutgers, New Jersey, USA**
<http://csops.rutgers.edu/people/rutgers-university>
- **F³ Factory project.** <http://www.f3factory.com/scripts/pages/en/home.php>
- **Mynewsdesk, Denmark news.** <http://www.mynewsdesk.com/dk/view/pressrelease/aerefuld-pris-til-ravendra-singh-fra-dtu-kemiteknik-421932>
- **Technical University of Denmark news:**
 - http://www.kt.dtu.dk/Om_instituttet/Nyheder.aspx?guid={60314E81-5E25-4EEA-B0B1-8959DC5399D8}
 - http://www.dtu.dk/Nyheder/Nyt_fra_DTU.aspx?guid={1ADDE35A-65C6-4E14-9918-B90F9871891C}
- Singh et al. (2009) is included in “SciVerse ScienceDirect's **Top 25 Hottest Articles**”, January – March 2009. <http://top25.sciencedirect.com/subject/chemical-engineering/5/journal/computers-chemical-engineering/00981354/archive/21/>
- **Newspapers coverage**
The Times of India (12th June, 2010); Northern India Patrika (12th June 2010); Hindustan Times (12th June 2010); Danik Jagran (11th June 2010); Amar Ujala (10th June 2010); Amrit Prabhat (12th June 2010).