

Publication List (updated: June 1, 2007)

Journal Papers (published or in press)

1. Mhaskar, P. and S. Aumi, "Transition From Batch to Continuous Operation in Bio-Reactors: A Model Predictive Control Approach and Application", *Can. J. Chem. Eng.*, in press.
2. Mhaskar, P., C. McFall, A. Gani, P. D. Christofides and J. F. Davis, "Isolation and Handling of Actuator Faults in Nonlinear Systems," *Automatica*, regular paper in press.
3. Gani, A., P. Mhaskar and P. D. Christofides, "Handling Sensor Malfunctions in Control of Particulate Processes," *Chem. Eng. Sci.*, in press.
4. Christofides, P. D., N. H. El-Farra, M. H. Li and P. Mhaskar, "Model-Based Control of Particulate Processes," *Chem. Eng. Sci.*, in press.
5. Mhaskar, P., N. H. El-Farra and P. D. Christofides, "Robust Predictive Control of Hybrid Systems: Satisfying Uncertain Schedules Subject to State and Control Constraints," *Int. J. Adapt. Contr. & Sign. Process.*, **21**, 19 pages, 2007.
6. Mhaskar, P., A. Gani, C. McFall, P. D. Christofides and James F. Davis "Fault-Tolerant Control of Nonlinear Process Systems Subject to Sensor Faults," *AIChE J.*, **53**, 654-668, 2007.
7. P. Mhaskar, "Robust Model Predictive Control Design For Fault-Tolerant Control of Process Systems," *Ind. Eng. & Che. Res.*, **45**, 8565-8574, 2006.
8. Gani, A., P. Mhaskar, P. and P. D. Christofides, "Fault-Tolerant Control of a Polyethylene Reactor," *J. Proc. Contr.*, **17**, 439-451, 2007.
9. Dubljevic, S., N. H. El-Farra, P. Mhaskar and P. D. Christofides, "Predictive Control of Parabolic PDEs with State and Control Constraints," *Inter. J. Rob. & Non. Contr.*, **16**, 749-772, 2006.
10. Mhaskar, P., N. H. El-Farra and P. D. Christofides, "Stabilization of Nonlinear Systems with State and Control Constraints Using Lyapunov-Based Predictive Control," *Sys. & Contr. Lett.*, **55**, 650-659, 2006.
11. Mhaskar, P., A. Gani, N. H. El-Farra, C. McFall, P. D. Christofides and J. F. Davis, "Integrated Fault Detection and Fault-Tolerant Control of Process Systems," *AIChE J.*, **52**, 2129-2148, 2006
12. Mhaskar, P., N. H. El-Farra and P. D. Christofides, "Predictive Control of Switched Nonlinear Systems with Scheduled Mode Transitions," *IEEE Trans. Automat. Contr.*, **50**, 1670-1680, 2005.
13. El-Farra, N. H., P. Mhaskar and P. D. Christofides, "Output Feedback Control of Switched Nonlinear Systems Using Multiple Lyapunov Functions," *Sys. & Contr. Lett.*, **54**, 1163-1182, 2005.
14. Mhaskar, P., A. Gani and P. D. Christofides, "Fault-Tolerant Control of Nonlinear Processes: Performance-Based Reconfiguration and Robustness," *Int. J. Rob. & Non. Contr.*, **16**, 91-111, 2006.

15. Mhaskar, P., N. H. El-Farra and P. D. Christofides, "A Method for PID Controller Tuning Using Nonlinear Control Techniques," *AIChE. J.*, **51**, 3292-3299, 2005
16. Djurjic, S., P. Mhaskar, N. H. El-Farra and P. D. Christofides, "Predictive Control of Transport-Reaction Processes," *Comp. & Chem. Eng.*, **29**, 2335-2345, 2005.
17. Shi, D., N. H. El-Farra, M. Li, P. Mhaskar and P. D. Christofides, "Predictive Control of Particle Size Distribution in Particulate Processes," *Chem. Eng. Sci.*, **61**, 268-281, 2006.
18. Shi, D., P. Mhaskar, N. H. El-Farra and P. D. Christofides, "Predictive Control of Crystal Size Distribution in Protein Crystallization," *Nanotechnology*, **16**, S562-S574, 2005.
19. Mhaskar, P., N. H. El-Farra and P. D. Christofides, "Robust Hybrid Predictive Control of Nonlinear Systems," *Automatica*, **41**, 209-217, 2005.
20. El-Farra, N. H., P. Mhaskar and P. D. Christofides, "Hybrid Predictive Control of Nonlinear Systems: Method and Applications to Chemical Processes," *Int. J. Rob. & Non. Contr.*, **14**, 199-225, 2004.
21. Mhaskar, P., N. H. El-Farra and P. D. Christofides, "Hybrid Predictive Control of Process Systems," *AIChE J.*, **50**, 1242-1259, 2004.
22. El-Farra, N. H., P. Mhaskar and P. D. Christofides, "Uniting Bounded Control and MPC for Stabilization of Constrained Linear Systems," *Automatica*, **40**, 101-110, 2004.
23. Mhaskar, P., M. A. Hjortso and M. A. Henson, "Cell Population Modeling and Parameter Estimation for Continuous Cultures of *Saccharomyces Cerevisiae*," *Biotechnology Progress*, **18**, 1010-1026, 2002.
24. Venkataraman, C., A. Mehra and P. Mhaskar, "Mechanisms of sulphate aerosol production in clouds: effect of cloud characteristics and season in the Indian region," *Tellus*, **53b**, 260-272, 2001.

Refereed Chapters in Books

1. Mhaskar, P., N. H. El-Farra and P. D. Christofides, "Techniques for Uniting Lyapunov-based and Model Predictive Control," Assessment and Future Directions of Nonlinear Model Predictive Control-05, Lecture Notes in Control and Information Sciences Series, R. Findeisen, L. Biegler and F. Allgwer (Eds.), 14 pages, in press, Springer-Verlag, Berlin, 2006.

Refereed Conference Proceedings Papers

1. Mhaskar, P. and A. Kennedy, "Robust Model Predictive Control of Nonlinear Processes with State, Input and Rate Constraints," *Proceedings of the American Control Conference*, accepted, New York City, New York, 2007.
2. Mhaskar, P., N. H. El-Farra and P. D. Christofides, "Predictive Control of Hybrid Systems: Satisfying Uncertain Schedules Subject to State and Control Constraints," *Proceedings of the American Control Conference*, accepted, New York City, New York, 2007.
3. Gani, A., P. Mhaskar, C. McFall and P. D. Christofides, "Control of a Polyethylene Reactor: Handling Sensor Faults," *Proceedings of the American Control Conference*, accepted, New York City, New York, 2007.

4. Ohran, B., P. Mhaskar, D. Muñoz de la Peña, P. D. Christofides and J. F. Davis, "Enhancing Fault Isolation Through Nonlinear Controller Design," *Proceedings of 8th IFAC Symposium on Dynamics and Control of Process Systems*, submitted, Cancun, Mexico, 2007.
5. Mhaskar, P., A. Gani, C. McFall, P. D. Christofides and J. F. Davis, "Fault-Tolerant Control of Nonlinear Systems Subject to Sensor Data Losses," *Proceedings of 45th IEEE Conference on Decision and Control*, 8 pages, to appear, San Diego, California, 2006.
6. Dubljevic, S., P. Mhaskar, N. H. El-Farra, and P. D. Christofides, "Predictive Control of Infinite Dimensional Systems," *Proceedings of 45th IEEE Conference on Decision and Control*, 8 pages, to appear, San Diego, California, 2006.
7. Gani, A., P. Mhaskar, P. and P. D. Christofides, "Fault-Tolerant Control of a Polyethylene Reactor," *Proceedings of the American Control Conference*, 6026-6032, Minneapolis, Minnesota, 2006.
8. Mhaskar, P., C. McFall, A. Gani, P. D. Christofides and J. F. Davis, "Fault-tolerant Control of Nonlinear Systems: Fault Detection and Isolation and Controller Reconfiguration," *Proceedings of the American Control Conference*, 5115-5122, Minneapolis, Minnesota, 2006 (**Best Presentation in Session Award**).
9. Mhaskar, P., A. Gani and P. D. Christofides, "Fault-Tolerant Process Control: Performance-Based Reconfiguration and Robustness," *Proceedings of the American Control Conference*, 6020-6025, Minneapolis, Minnesota, 2006.
10. Mhaskar, P., N. H. El-Farra and P. D. Christofides, "Fault-Tolerant Control of Nonlinear Process Systems: Recent Developments and Future Directions," *Proceedings of Chemical Process Control-7*, 6 pages, Lake Louise, Alberta, Canada, 2006.
11. Mhaskar, P., N. H. El-Farra, S. Dubljevic, and P. D. Christofides, "Predictive Control of Distributed Process Systems," *Proceedings of Chemical Process Control-7*, 6 pages, Lake Louise, Alberta, Canada, 2006.
12. Mhaskar, P., N. H. El-Farra and P. D. Christofides, "Techniques for Uniting Lyapunov-based and Predictive Control," *Proceedings of International Workshop on Assessment and Future Directions of Nonlinear Model Predictive Control*, 12 pages, Freudenstadt-Lauterbad, Germany, 2005.
13. Mhaskar, P., A. Gani, N. H. El-Farra, P. D. Christofides and J. F. Davis, "Integrated Fault Detection and Fault-Tolerant Control of Process Systems," *Proceedings of 16th International Federation of Automatic Control World Congress*, 6 pages, Prague, Czech Republic, 2005.
14. Mhaskar, P., N. H. El-Farra and P. D. Christofides, "Robust Stabilization of Nonlinear Systems Using Hybrid Predictive Control," *Proceedings of 16th International Federation of Automatic Control World Congress*, 6 pages, Prague, Czech Republic, 2005.
15. Shi, D., P. Mhaskar, N. H. El-Farra and P. D. Christofides, "Predictive Control of Crystal Size Distribution in Protein Crystallization," *Proceedings of the American Control Conference*, 943-948, Portland, Oregon, 2005.
16. Mhaskar, P., N. H. El-Farra and P. D. Christofides, "Stabilization of Nonlinear Systems with State and Control Constraints Using Lyapunov-Based Predictive Control," *Proceedings of*

the American Control Conference, 828-833, Portland, Oregon, 2005 (**Best Presentation in Session Award**).

17. El-Farra, N. H., P. Mhaskar and P. D. Christofides, "Output Feedback Control of Switched Nonlinear Systems Using Multiple Lyapunov Functions," *Proceedings of the American Control Conference*, 3792-3799, Portland, Oregon, 2005.
18. Dubljevic, S., P. Mhaskar, N. H. El-Farra and P. D. Christofides, "Predictive Control of Diffusion-Reaction Processes," *Proceedings of the American Control Conference*, 4551-4556, Portland, Oregon, 2005.
19. Mhaskar, P., N. H. El-Farra and P. D. Christofides, "Predictive Control of Switched Nonlinear Processes with Scheduled Mode Transitions," *Proceedings of 7th IFAC Symposium on Dynamics and Control of Process Systems*, 6 pages, Boston, Massachusetts, 2004.
20. Mhaskar, P., N. H. El-Farra and P. D. Christofides, "Stabilization of Switched Nonlinear Systems Using Predictive Control," *Proceedings of the American Control Conference*, 560-565, Boston, Massachusetts, 2004.
21. Mhaskar, P., N. H. El-Farra and P. D. Christofides, "A Method for PID Controller Tuning Using Nonlinear Control Techniques," *Proceedings of the American Control Conference*, 2925-2930, Boston, Massachusetts, 2004.
22. Dubljevic, S., P. Mhaskar, N. H. El-Farra and P. D. Christofides, "Predictive Control of Parabolic PDEs with State and Control Constraints," *Proceedings of the American Control Conference*, 254-260, Boston, Massachusetts, 2004.
23. Mhaskar, P., N. H. El-Farra and P. D. Christofides, "A Hybrid Predictive Control Approach to Output Feedback Stabilization of Constrained Linear Systems," *Proceedings of the American Control Conference*, 578-583, Boston, Massachusetts, 2004 (**Best Presentation in Session Award**)
24. Mhaskar, P., N. H. El-Farra and P. D. Christofides, "Hybrid Control: Implementing Output Feedback MPC with Guaranteed Stability Region," *Proceedings of 5th International Symposium on Advanced Control of Chemical Processes*, 998-1003, Hong Kong, P. R. China, 2004.
25. El-Farra, N. H., P. Mhaskar and P. D. Christofides, "Hybrid Control of Uncertain Process Systems," *Proceedings of 8th International Symposium on Process Systems Engineering*, 814-819, Kunming, P. R. China, 2004.
26. Shi, D., N. H. El-Farra, M. Li, P. Mhaskar and P. D. Christofides, "Predictive Control of Particle Size Distribution in Particulate Processes," *Proceedings of 2nd International Conference on Population Balance Modeling*, 17 pages, Valencia, Spain, 2004.
27. El-Farra, N. H., P. Mhaskar and P. D. Christofides, "Hybrid Control: A Paradigm for Implementing Predictive Control to Nonlinear Systems with Guaranteed Stability Regions," *Proceedings of American Control Conference*, 4899-4907, Denver, Colorado, 2003.
28. El-Farra, N. H., P. Mhaskar and P. D. Christofides, "Uniting Bounded Control and MPC for Stabilization of Constrained Linear Systems," *Proceedings of American Control Conference*, 4493-4450, Anchorage, Alaska, 2002.

Contributed Conference Presentations with Published Abstracts

1. Mhaskar, P. "Robust Model Predictive Control of Nonlinear Processes with State, Input and Rate Constraints" AICHE Annual Meeting, paper 654e, San Francisco, CA, 2006.
2. Mhaskar, P. "Fault-Tolerant Control of Process Systems Using Robust Model Predictive Control" AICHE Annual Meeting, paper 539c, San Francisco, CA, 2006.
3. Christofides, P. D., J. F. Davis, P. Mhaskar, C. McFall, A. Gani, and B. Ohran, "Uniting Data - and Model-Based Fault-Detection Filters for Fault-Tolerant Control of Process Systems" AICHE Annual Meeting, paper 125e, San Francisco, CA, 2006.
4. Christofides, P. D., A. Gani, J. F. Davis, C. McFall and P. Mhaskar, "Fault-Tolerant Process Control: Handling Asynchronous Sensor Behavior" AICHE Annual Meeting, paper 494e, San Francisco, CA, 2006.
5. Christofides, P. D., A. Gani, J. F. Davis, C. McFall and P. Mhaskar, "Fault-Tolerant Output Feedback Control of Multivariable Nonlinear Processes" AICHE Annual Meeting, paper 494e, San Francisco, CA, 2006.
6. Christofides, P. D., A. Gani, C. McFall, P. Mhaskar and David Muoz de la Pena, "Output Feedback Control of Nonlinear Systems Subject to Constraints and Asynchronous Measurements" AICHE Annual Meeting, paper 146f, San Francisco, CA, 2006.
7. Mhaskar, P., N. H. El-Farra and P. D. Christofides, "Hybrid Predictive Control: Discrete Actuation and Sensing," AICHE Annual Meeting, paper 553f, Cincinnati, Ohio, 2005.
8. Mhaskar, P., N. H. El-Farra and P. D. Christofides, "Lyapunov-based Predictive Control of Hybrid Systems," AICHE Annual Meeting, paper 553e, Cincinnati, Ohio, 2005.
9. Mhaskar, P., A. Gani and P. D. Christofides, "Fault-tolerant control of nonlinear process systems: Performance-based Reconfiguration and Robustness," AICHE Annual Meeting, paper 242g, Cincinnati, Ohio, 2005.
10. Gani, A., P. Mhaskar and P. D. Christofides, "Predictive Control of Particulate Processes with Actuator/Sensor Faults," AICHE Annual Meeting, paper 498a, Cincinnati, Ohio, 2005.
11. Gani, A., P. Mhaskar and P. D. Christofides, "Fault-tolerant Control of a Polyethylene Reactor," AICHE Annual Meeting, paper 402b, Cincinnati, Ohio, 2005.
12. McFall, C., A. Gani, P. Mhaskar, P. D. Christofides and J. F. Davis, "Fault-tolerant Process Control: Nonlinear FDI and Reconfiguration," AICHE Annual Meeting, paper 553g, Cincinnati, Ohio, 2005.
13. McFall, C., A. Gani, P. Mhaskar, P. D. Christofides and J. F. Davis, "Fault-tolerant Control of Nonlinear Process Systems: Handling Sensor Malfunctions," AICHE Annual Meeting, paper 374f, Cincinnati, Ohio, 2005.
14. Mhaskar, P., N. H. El-Farra and P. D. Christofides, "Hybrid Predictive Control for Robust Stabilization of Nonlinear Processes," AICHE Annual Meeting, paper 413c, Austin, Texas, 2004.
15. Dubljevic, S., P. Mhaskar, N. H. El-Farra and P. D. Christofides, "Predictive Control of Distributed Process Systems," AICHE Annual Meeting, paper 397b, Austin, Texas, 2004 (**Chosen for Computing and Systems Technology Division Plenary Session**).

16. Mhaskar, P., N. H. El-Farra, P. D. Christofides and J. F. Davis, "Integrating Fault Detection and Fault-Tolerant Control for Process Systems," AIChE Annual Meeting, paper 404b, Austin, Texas, 2004.
17. Mhaskar, P., D. Shi, N. H. El-Farra, and P. D. Christofides, "Predictive Control Algorithms for Particle Size Distribution Control in Particulate Processes," 8th Southern California Nonlinear Control Workshop, University of California, Santa Barbara, May 2004.
18. Shi, D., P. Mhaskar, M. Li, N. H. El-Farra and P. D. Christofides, "Predictive Control of Particle Size Distribution in Particulate Processes: Application to Protein Crystallization," AIChE Annual Meeting, paper 430e, Austin, Texas, 2004.
19. Mhaskar, P., N. H. El-Farra and P. D. Christofides, "Predictive Control of Switched Nonlinear Systems," 7th Southern California Nonlinear Control Workshop, University of Southern California, Los Angeles, October 2003.
20. Mhaskar, P., N. El-Farra and P. D. Christofides, "Predictive Control of Hybrid Process Systems," AIChE Annual Meeting, paper 439ad, San Francisco, California, 2003.
21. Mhaskar, P., N. H. El-Farra and P. D. Christofides, "Predictive Control of Nonlinear Systems with Guaranteed Stability Regions," 6th Southern California Nonlinear Control Workshop, University of Southern California, San Diego, May 2003.
22. El-Farra, N. H., P. Mhaskar and P. D. Christofides, "Uniting Bounded Control and MPC for Stabilization of Constrained Linear Systems: Output Feedback," AIChE Annual Meeting, paper 252e, Indianapolis, Indiana, 2002.
23. Mhaskar, P., N. H. El-Farra and P. D. Christofides, "Output Feedback Implementation of MPC Using Hybrid Control," 5th Southern California Nonlinear Control Workshop, California Institute of Technology, Pasadena, November 2002.
24. El-Farra, N. H., P. Mhaskar and P. D. Christofides, "Uniting Bounded Control and MPC for Stabilization of Constrained Linear Systems," 4th Southern California Nonlinear Control Workshop, University of California, Santa Barbara, May 2002.
25. Mhaskar, P., N. H. El-Farra and P. D. Christofides, "Uniting Bounded Control and MPC for Stabilization of Constrained Linear Systems," 2002 UCLA Systems and Control Symposium, Los Angeles, CA, May 2002.