

a. 10 most important publications

1. Naşcu, I., Diangelakis, N. A., Muñoz, S. G. and Pistikopoulos, E. N. (2023) 'Advanced model predictive control strategies for evaporation processes in the pharmaceutical industries', *Computers & Chemical Engineering*, 173, 108212.
2. Naşcu, Ioana, Daniel Sebastia-Saez, Tao Chen, Ioan Nascu, and Wenli Du. 2022. Global Sensitivity Analysis for a Perfusion Bioreactor based on CFD Modelling, *Computers & Chemical Engineering*, Volume 163, July 2022, <https://doi.org/10.1016/j.compchemeng.2022.107829>
3. Naşcu, I., Oberdieck, R., & Pistikopoulos, E. N. (2017). Explicit hybrid model predictive control strategies for intravenous anaesthesia. Special issue of *Computers and Chemical Engineering*, vol. 106, pp. 814-825. doi:10.1016/j.compchemeng.2017.01.033
4. Naşcu, I., & Pistikopoulos, E. N. (2017). Modeling, estimation and control of the anaesthesia process. Special issue in *Computers and Chemical Engineering in honor of Prof. Rafiq Gani*, vol. 107, pp. 318-332. doi:10.1016/j.compchemeng.2017.02.016
5. Nascu, I.; Pistikopoulos, E. N. A Multiparametric Model-Based Optimization & Control Approach to Anaesthesia. *The Canadian Journal of Chemical Engineering* 2016, vol. 94 (11), pp. 2125-2137.
6. Nascu, I., A. Krieger, C. M. Ionescu and E. N. Pistikopoulos (2015). "Advanced Model-Based Control Studies for the Induction and Maintenance of Intravenous Anaesthesia." *IEEE Transactions on Biomedical Engineering*, vol. 62(3):pp. 832-841
7. Pistikopoulos, E. N., N. A. Diangelakis, R. Oberdieck, M. M. Papathanasiou, I. Nascu and M. Sun (2015). "PAROC-An integrated framework and software platform for the optimisation and advanced model-based control of process systems." *Chemical Engineering Science.*, vol. 136, pp. 115-138
8. Oberdieck, R.; Diangelakis, N. A.; Papathanasiou, M. M.; Nascu, I.; Pistikopoulos, E. N. "POP - Parametric Optimization Toolbox". *Industrial & Engineering Chemistry Research* 2016, vol. 55 (33), pp. 8979-8991.
9. Oberdieck, R., N. A. Diangelakis, I. Nascu, M. M. Papathanasiou, M. Sun, S. Avraamidou and E. N. Pistikopoulos (2016). "On multi-parametric programming and its applications in process systems engineering." *Chemical Engineering Research and Design* vol. 116: pp. 61-82.
10. Harja, G., I. Nascu, C. Muresan and I. Nascu (2016). "Improvements in Dissolved Oxygen Control of an Activated Sludge Wastewater Treatment Process." *Circuits, Systems and Signal Processing* vol. 35(6): pp. 2259-2281

b. PhD Thesis

Imperial College London, London, UK

Department of Chemical Engineering Centre of Process System Engineering

PhD in Chemical Engineering

PhD Thesis Title: "Advanced Multiparametric Optimization and Control Studies for Anaesthesia"

PhD Thesis Advisor: Prof. Stratos Pistikopoulos

d. Books and book chapters:

1. I. Naşcu, I. Naşcu, *Sisteme de Conducere a Proceselor Continue I*, ISBN 978-606-737-787-3, UTPRESS, 2025
2. Pistikopoulos, E. N., I. Nascu and E. Velliou (2018). *Modelling Optimization and Control of Biomedical Systems*, John Wiley & Sons Ltd.
3. E. Velliou, I. Nascu, Stamatina Zavitsanou, Eleni Pefani, Alexandra Krieger, Michael C. Georgiadis, and Efstratios N. Pistikopoulos, *Framework and Tools: A Framework for Modelling, Optimization and Control of Biomedical Systems*, 2017, pp. 1-11, DOI:10.1002/9781118965580.ch1, John Wiley & Sons Ltd.
4. Naşcu, I., Oberdieck, R., Lambert, R., Rivotti, P. and Pistikopoulos, E.N., *Computational Tools and Methods*. In *Modelling Optimization and Control of Biomedical Systems* (eds E.N. Pistikopoulos, I. Naşcu and E.G. Velliou). <https://doi.org/10.1002/9781118965580.ch2>, John Wiley & Sons Ltd.
5. A. Krieger, I. Naşcu, N. Panoskaltisis, A. Mantalaris, M. C. Georgiadis, and E. N. Pistikopoulos, *Volatile Anaesthesia*, in *Modelling Optimization and Control of Biomedical Systems*, 2017, pp. 67-102, DOI:10.1002/9781118965580.ch3, John Wiley & Sons Ltd.
6. Naşcu, I., Krieger, A., Lambert, R. and Pistikopoulos, E.N., *Intravenous Anaesthesia*. In *Modelling Optimization and Control of Biomedical Systems* (eds E.N. Pistikopoulos, I. Naşcu and E.G. Velliou). <https://doi.org/10.1002/9781118965580.ch2>, John Wiley & Sons Ltd.
7. Papathanasiou, M. M., M. Onel, I. Nascu and E. N. Pistikopoulos, *Computational tools in the assistance of personalized healthcare*. *Quantitative Systems Pharmacology*. ISBN 978-0444639646. DOI 10.1016/b978-0-444-63964-6.00006-4, Elsevier
8. Ioan Nascu, Ioana Nascu, Ruben Crisan, Silviu Folea, *Automation equipment and systems (in Romanian)* U.T. PRESS, Cluj Napoca, 2015. ISBN 978-606-737-099-7
9. Ruben Cris, an, Ioana Nas, cu, *Continuous process control systems (in Roumanian)* , U.T. PRESS, Cluj Napoca, 2013, ISBN 978-973-662-794-1
10. Papathanasiou, M. M., M. Onel, I. Nascu and E. N. Pistikopoulos (in press). *Computational tools in the assistance of personalized healthcare*. *Quantitative Systems Pharmacology*. Elsevier, book chapter

e. Full Journal Publications:

1. Nascu, Ioana, N. A. Diangelakis, Yan-Shu Huang and Zoltan K. Nagy. 2025. 'Advanced Optimisation and Control Strategies for a Rotary Tablet Press in Pharmaceutical Industry', *Computers and Chemical Engineering*, draft
2. Naşcu, I., Diangelakis, N. A., Muñoz, S. G. and Pistikopoulos, E. N. (2023) 'Advanced model predictive control strategies for evaporation processes in the pharmaceutical industries', *Computers & Chemical Engineering*, 173, 108212.

3. Naşcu, Ioana, Daniel Sebastia-Saez, Tao Chen, Ioan Nascu, and Wenli Du. 2022. Global Sensitivity Analysis for a Perfusion Bioreactor based on CFD Modelling, *Computers & Chemical Engineering*, Volume 163, July 2022, <https://doi.org/10.1016/j.compchemeng.2022.107829>
4. Ghita, Mihaela, Isabela Birs, Dana Copot, Ioana Nascu, and Clara-Mihaela Ionescu. 2022. 'Impedance Spectroscopy Sensing Material Properties for Self-Tuning Ratio Control in Pharmaceutical Industry', *Applied Sciences*, 12: 509.
5. Jinquan Zheng , Wenli Du , Ioana Nascu , Yuanming Zhu , Weimin Zhong. "An interval type-2 fuzzy controller based on data driven parameters extraction for cement calciner process", *Institute of Electrical and Electronics Engineers (IEEE)*, 2020, doi: 10.1109/ACCESS.2020.2983476
6. Jingjing Guo, Wenli Du, Ioana Nascu, "Adaptive modeling of fixed bed reactor with multi-cycle and multi-mode characteristics based on transfer learning and just-in-time learning", *Industrial & Engineering Chemistry Research*, in press
7. Naşcu, I., Oberdieck, R., & Pistikopoulos, E. N. (2017). Explicit hybrid model predictive control strategies for intravenous anaesthesia. Special issue of *Computers and Chemical Engineering*, vol. 106, pp. 814-825. doi:10.1016/j.compchemeng.2017.01.033
8. Naşcu, I., & Pistikopoulos, E. N. (2017). Modeling, estimation and control of the anaesthesia process. Special issue in *Computers and Chemical Engineering in honor of Prof. Rafiq Gani*, vol. 107, pp. 318-332. doi:10.1016/j.compchemeng.2017.02.016
9. Nascu, I.; Pistikopoulos, E. N. A Multiparametric Model-Based Optimization & Control Approach to Anaesthesia. *The Canadian Journal of Chemical Engineering* 2016, vol. 94 (11), pp. 2125-2137.
10. Nascu, I., A. Krieger, C. M. Ionescu and E. N. Pistikopoulos (2015). "Advanced Model-Based Control Studies for the Induction and Maintenance of Intravenous Anaesthesia." *IEEE Transactions on Biomedical Engineering*, vol. 62(3):pp. 832-841
11. Pistikopoulos, E. N., N. A. Diangelakis, R. Oberdieck, M. M. Papathanasiou, I. Nascu and M. Sun (2015). "PAROC-An integrated framework and software platform for the optimisation and advanced model-based control of process systems." *Chemical Engineering Science.*, vol. 136, pp. 115-138
12. Oberdieck, R.; Diangelakis, N. A.; Papathanasiou, M. M.; Nascu, I.; Pistikopoulos, E. N. "POP - Parametric Optimization Toolbox". *Industrial & Engineering Chemistry Research* 2016, vol. 55 (33), pp. 8979-8991.
13. Oberdieck, R., N. A. Diangelakis, I. Nascu, M. M. Papathanasiou, M. Sun, S. Avraamidou and E. N. Pistikopoulos (2016). "On multi-parametric programming and its applications in process systems engineering." *Chemical Engineering Research and Design* vol. 116: pp. 61-82.
14. Harja, G., I. Nascu, C. Muresan and I. Nascu (2016). "Improvements in Dissolved Oxygen Control of an Activated Sludge Wastewater Treatment Process." *Circuits, Systems and Signal Processing* vol. 35(6): pp. 2259-2281

15. Ionescu, C. M., I. Nascu and R. De Keyser (2013). "Lessons learned from closed loops in engineering: towards a multivariable approach regulating depth of anaesthesia." *Journal of Clinical Monitoring and Computing*: vol. 28(6), pp. 537-546

f. Conference Publications:

1. Ioana Naşcu, Gabriel Harja, Mihai Stanese, Ioan Naşcu, 'Multiparametric Model Predictive Control Strategies for a Rotary Tablet Press in Pharmaceutical Industry', 33rd European Symposium on Computer Aided Process Engineering; 2024, *Computer Aided Chemical Engineering*.
2. Ioana Naşcu, Gabriel Harja, Mihai Stanese, Ioan Naşcu, 'Alternating aeration control and optimisation in activated sludge processes', 2024 IEEE International Conference on Automation, Quality and Testing, Robotics (AQTR), 16-18 May, Cluj-Napoca, Romania
3. Ioana Naşcu, Gabriel Harja, Ioan Naşcu, 'Predictive Control of Intermittent Aeration in Activated Sludge Processes', *WSEAS Transactions on Systems and Control*, 2024, Vol.19, page 494
4. Ioana Naşcu, Wenli Du, Ioan Naşcu, 'Aeration Optimization and Control for Wastewater Treatment Processes', 33rd European Symposium on Computer Aided Process Engineering (ESCAPE33), Athens, Greece, 18-21 June 2023, *Computer Aided Chemical Engineering*, Vol 52, pp 1637-1642, ISSN 1570-7946, DOI 10.1016/B978-0-443-15274-0.50260
5. Nascu, Ioana, N. A. Diangelakis, Yan-Shu Huang and Zoltan K. Nagy. 2023. 'Multiparametric Model Predictive Control Strategies for a Rotary Tablet Press in Pharmaceutical Industry', 33rd European Symposium on Computer Aided Process Engineering; *Computer Aided Chemical Engineering*.
6. Naşcu, I., Du, W. and Ioan, N. (2022) 'An Auto-tuning method for aeration control in activated sludge wastewater treatment processes', in *IEEE 2022 International Conference on Electrical, Computer, Communications and Mechatronics Engineering (ICECCME 2022)*, Male, 16-18 nov.2022,
7. Nascu, Ioana, N. A. Diangelakis, and E. Pistikopoulos. 2022. 'Multiparametric Model Predictive Control Strategies for Evaporation Processes in Pharmaceutical Industries', 32nd European Symposium on Computer Aided Process Engineering; Elsevier, 2016; *Computer Aided Chemical Engineering*.
8. Nascu, Ioana, Ioan Nascu, and W. Du. 2022. 'Optimization and Control of a Perfusion Bioreactor System in Tissue Engineering', *Proceedings of 2022 IEEE-TTTC*

International Conference on Automation, Quality and Testing, Robotics, AQTR, in press.

9. Nascu, Ioana, Tao Chen, and Wenli Du. 2021. 'Global Sensitivity Analysis for a perfusion bioreactor system in tissue engineering', IFAC-PapersOnLine, 54: 550-55

10. Nascu, I., T. Chen, W. Du, and I. Nascu. 2021. "Global Sensitivity Analysis for the input parameters of a Perfusion Bioreactor System in Tissue Engineering." In 2021 25th International Conference on System Theory, Control and Computing (ICSTCC), 172-77

11. Nascu, I., D. Sebastia-Saez, T. Chen, and W. Du. 2021. "A combined computational-fluid-dynamics model and control strategies for perfusion bioreactor systems in tissue engineering." In IFAC-PapersOnLine, 324-29

12. Ioana Naşcu, Ioan Naşcu, Wen-Li Du, Sai Gu, Predictive Control for Continuous Stirred Tank Reactors, 2019 International Conference on Informatics, Control and Robotics (ICICR 2019) ISBN:978-1-60595-633-6, DEStech Trans on Engineering and Technology Research, ISSN: 2475-885X, DOI 10.12783/dtetr/icicr2019/30554

13. Ioana Naşcu, Ioan Naşcu, MBPC Control for Continuous Stirred Tank Reactors, Advances in Technology Innovation(AITI), 2018, ISSN 2415-0436

14. Ioana Naşcu, Ioan Naşcu, Multilevel predictive control system for an activated sludge wastewater treatment process, 5th Int.Conf. on Mathematics and Computers in Sciences and Industry- MCSI2018,Corfu Island, Greece, August 25-27, 2018

15. Naşcu Ioana; Pistikopoulos E.; Naşcu Ioan, Hybrid Multiparametric Model Predictive Control with Application to the Neuromuscular Blockade, 2018 IEEE International Conference on Automation, Quality and Testing, Robotics (AQTR), May 24-26, Cluj-N, Romania, DOI: 10.1109/AQTR.2018.8402747

16. Ioana Naşcu, Ioan Naşcu, Improving Activated Sludge Wastewater Treatment Process Efficiency Using Predictive Control, Advances in Technology Innovation(AITI), Vol.3 No.2 2018, ISSN 2415-0436

17. Nascu, I. and E. N. Pistikopoulos (2017). Multiparametric model predictive control strategies of the hypnotic component in intravenous anesthesia. 2016 IEEE International Conference on Systems, Man, and Cybernetics, SMC 2016 - Conference Proceedings.

18. Nascu, I.; Oberdieck, R.; Pistikopoulos, E. N. "A framework for Simultaneous State Estimation and Robust Hybrid Model Predictive Control in Intravenous Anaesthesia". 26th European Symposium on Computer Aided Process Engineering; Elsevier, 2016;, Computer Aided Chemical Engineering vol. 38 pp 1057-1062.

19. Nascu, I. and E. Pistikopoulos, "Multiparametric Model Predictive Control and State Estimation of the Hypnotic Component in Anesthesia" , Proceedings of 2016 IEEE-TTTC International Conference on Automation, Quality and Testing, Robotics, AQTR 2016, Cluj-Napoca, DOI: 10.1109/AQTR.2016.7501357

20. Nascu, I.; Diangelakis, N. A.; Oberdieck, R.; Papathanasiou, M. M.; Pistikopoulos, E. N. "Explicit MPC in real-world applications: The PAROC framework". American Control Conference (ACC); 2016; pp 913-918.
21. Ioana Naşcu, Ioan Naşcu, G. Vlad, Predictive adaptive control of an activated sludge wastewater treatment process, Advances in Technology Innovation(AITI), vol.1 No.2 2016, pp: 38-40, ISSN 2415-0436
22. Ioana Naşcu, Ioan Naşcu, Modelling and optimization of an activated sludge wastewater treatment process, Computer Aided Chemical Engineering, vol 38, 2016, pp 1159-1164, ISBN: 978-0-444-63428-3, doi:10.1016/B978-0-444-63428-3.50198-3
23. Nascu, I.; Oberdieck, R.; Pistikopoulos, E. N. "A framework for hybrid multi-parametric model-predictive control with application to intravenous anaesthesia". 12th International Symposium on Process Systems Engineering and 25th European Symposium on Computer Aided Process Engineering; Elsevier,2015,Computer Aided Chemical Engineering vol. 37, pp 719-724.
24. Nascu, I.; Oberdieck, R.; Pistikopoulos, E. N. "An explicit Hybrid Model Predictive Control Strategy for Intravenous Anaesthesia". 9th IFAC Symposium on Biological and Medical Systems (BMS); 2015;, IFAC-PapersOnLine vol. 48 pp 58-63.
25. Nascu, I.; Oberdieck, R.; Pistikopoulos, E. N. "Offset-free explicit hybrid model predictive control of intravenous anaesthesia". IEEE International Conference on Systems, Man and Cybernetics (SMC); 2015; pp 2475-2480.
26. Nascu, I., R. Oberdieck and E. N. Pistikopoulos (2015). Simultaneous multi-parametric hybrid model predictive control and estimation with application to the intravenous anaesthesia. Computing and Systems Technology Division 2015 - Core Programming Area at the 2015 AIChE Annual Meeting.
27. Nascu, I.; Lambert, R. S. C.; Krieger, A.; Pistikopoulos, E. N. "Simultaneous multi-parametric model predictive control and state estimation with application to distillation column and intravenous anaesthesia". 24th European Symposium on Computer Aided Process Engineering; Elsevier, 2014;, Computer Aided Chemical Engineering vol. 33, pp 541-546.
28. Nascu, I.; Lambert, R. S. C.; Pistikopoulos, E. N. "A combined estimation and multi-parametric model predictive control approach for intravenous anaesthesia". IEEE International Conference on Systems, Man and Cybernetics; 2014; pp 2458-2463.
29. Nascu, Ioana, Ionescu CM, Nascu I, De Keyser R, "Adaptive EPSAC predictive control of the hypnotic component in anesthesia", Proceedings of 2012 IEEE-TTTC International Conference on Automation, Quality and Testing, Robotics, AQTR 2012, May 24-27, Cluj-N, Romania, pp:103-108, IEEEExplore DOI: 10.1109/AQTR.2012.6237683

- 30.** Nascu, Ioana, Ionescu CM, Nascu I, De Keyser R., “Evaluation of three protocols for automatic DOA regulation using Propofol and Remifentanyl “,Proceedings of 9th IEEE International Conference on Control \& Automation 2011, Santiago, Chile, 19-21 Dec. 2011, pp: 573 – 578, ISBN: 978-1-4577-1475-7,
- 31.** Naşcu, I., R. De Keyser, I. Naşcu and T. Buzdugan (2010). Modeling and simulation of a level control system. 2010 IEEE International Conference on Automation, Quality and Testing, Robotics, AQTR 2010 – Proceedings, , vol.1, pp:181-186, ISBN 978-1-4244-6722-8, IEEEXplore DOI: 10.1109/AQTR.2010.5520894
- 32.** Nascu, Ioana : “Drug Dosing Control during Anaesthesia in Patients Undergoing Surgery”, Automation and Computer Science Students Conference ACSC 2009May 22-23, 2009 Cluj- Napoca
- 33.** Ioan Naşcu, Robin De Keyser, Grigore Vlad, Ioana Nascu, Modelling and Control Aspects of Wastewater Treatment Processes, Ecoterra, nr.18, year V, September 2008, Pag.27, ISSN:154- 7071
- 34.** Papathanasiou, M. M.; Oberdieck, R.; Avraamidou, S.; Nascu, I.; Mantalaris, A.; Pistikopoulos, E. N. Development of advanced control strategies for periodic systems: An application to chromatographic separation processes. American Control Conference (ACC); 2016; pp 4175-4180.
- 35.** Birs I., Nascu Ioana, Darab C., Nascu Ioan, Modelling and calibration of a conventional activated sludge wastewater treatment plant, 2016 IEEE International Conference on Automation, Quality and Testing, Robotics (AQTR) Pp: 1 - 6, DOI: 10.1109/AQTR.2016.7501327
- 36.** S. M. Cristescu, Ioana Naşcu, Ioan Naşcu, Sensitivity Analyses of an Activated Sludge Model for a Wastewater Treatment Plant. 17th International Conference on System Theory, Control and Computing (ICSTCC), 14-19 Oct. 2015, Cheile Gradistei, pp: 595 - 600, DOI: 10.1109/ICSTCC.2015.7321358, IEEE Catalog Number: CFP1536P-ART, ISBN: 978-1-4799-8481-7
- 37.** Papathanasiou, M. M.; Steinebach, F.; Stroehlein, G.; Müller-Späth, T.; Nascu, I.; Oberdieck, R.; Morbidelli, M.; Mantalaris, A.; Pistikopoulos, E. N. A control strategy for periodic systems - application to the twin-column MCSGP. 12th International Symposium on Process Systems Engineering and 25th European Symposium on Computer Aided Process Engineering; Elsevier, 2015;, Computer Aided Chemical Engineering 37 pp 1505-1510.
- 38.** Oberdieck, R., N. A. Diangelakis, M. M. Papathanasiou, I. Nascu, M. Sun, S. Avraamidou and E. N. Pistikopoulos (2015). Pop-the parametric optimization toolbox. Computing and Systems Technology Division 2015 - Core Programming Area at the 2015 AIChE Annual Meeting.

39. Pistikopoulos, E. N., R. Oberdieck, N. A. Diangelakis, M. M. Papathanasiou and I. Nascu (2015). Paroc-A unified framework towards the optimal design, operational operation and model-based control of process systems. Computing and Systems Technology Division 2015 - Core Programming Area at the 2015 AIChE Annual Meeting.
40. Lambert, R. S. C.; Nascu, I.; Pistikopoulos, E. N. Simultaneous reduced order multi-parametric moving horizon estimation and model based control. IFAC Proceedings Volumes (IFAC-PapersOnline); 2013; Paper PART 1, pp 45-50.
41. Hodrea, R., I. Nascu, I. Nascu, R. De Keyser and H. Vasian (2014). EPSAC versus PID control of neuromuscular blockade. Proceedings of 2014 IEEE International Conference on Automation, Quality and Testing, Robotics, AQTR 2014
42. I. Naşcu, R. De Keyser, Ioana Naşcu, T. Buzdugan, Modeling and Simulation of a Level Control System, Proceedings of 2010 IEEE-TTTC International Conference on Automation, Quality and Testing, Robotics, AQTR 2010, May 28-30, Cluj-N, Romania, Vol.1, pp:181-186, ISBN 978-1-4244-6722-8, IEEEXplore DOI: 10.1109/AQTR.2010.5520894
43. Ionescu, C. M., I. Nascu and R. De Keyser (2012). Towards a multivariable model for controlling the depth of anaesthesia using propofol and Remifentanil. IFAC Proceedings Volumes (IFAC-PapersOnline).
44. Ionescu, C. M., I. Nascu and R. de Keyser (2011). Robustness tests of a model based predictive control strategy for depth of anesthesia regulation in a propofol to bispectral index framework. IFMBE Proceedings.

g. Oral Presentations:

1. Naşcu, I., Sebastia-Saez, D, Chen, T. and Du, W., A Combined Computational-Fluid-Dynamics Model and Advanced Control Strategies for Direct Perfusion Bioreactor Systems, AIChE 2020, Virtual AIChE Annual Meeting, Oral presentation
2. Naşcu, I., N. A. Diangelakis, S. Garcia-Munoz and E.N. Pistikopoulos, Advanced, Material-Aware Model Predictive Control Strategies for Evaporation Processes in the Pharmaceutical Industries, AIChE 2018, Pittsburgh, USA, Oral presentation
3. Naşcu, I., R. Oberdieck, and E.N. Pistikopoulos, A Robust Hybrid Model Predictive Control Framework for Hill curve Model Based Systems, AIChE 2016, San Francisco, USA, Oral presentation
4. Naşcu, I., R. Oberdieck, and E.N. Pistikopoulos, A framework for State Estimation and Robust Hybrid Multi-Parametric Model Predictive Control in Anaesthesia, AIChE 2015, Salt Lake City, USA, Oral presentation

5. Naşcu, I., Romain S. C. Lambert, Efstratios N. Pistikopoulos, A framework for Model Reduction, State Estimation and Multi-Parametric Model Predictive Control in Anaesthesia, AIChE 2014, Atlanta, USA,