

**a. Cele mai relevante lucrari (max 10)**

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.
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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
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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. Teza de doctorat**

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. Cărți și capitole în cărți**

1. Pistikopoulos, E. N., I. Nascu and E. Velliou (2018). Modelling Optimization and Control of Biomedical Systems, John Wiley & Sons Ltd.
2. 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.
3. Nașcu, 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. Nașcu and E.G. Velliou). <https://doi.org/10.1002/9781118965580.ch2>, John Wiley & Sons Ltd.
4. A. Krieger, I. Nașcu, N. Panoskaltzis, 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.
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6. 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
7. 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
8. Ruben Cris, an, Ioana Nas, cu, Continuous process control systems (in Roumanian) , U.T. PRESS, Cluj Napoca, 2013, ISBN 978-973-662-794-1
9. 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. Articole/studii in extenso, publicate în reviste din fluxul științific internațional principal**

1. Nascu, Ioana, N. A. Diangelakis, Yan-Shu Huang and Zoltan K. Nagy. 2032. 'Advanced Optimisation and Control Strategies for a Rotary Tablet Press in Pharmaceutical Industry', Computers and Chemical Engineering, draft
2. Nașcu, 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. Nașcu, 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. Jinqun 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
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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.
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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. Publicații in extenso, apărute în lucrări ale principalelor conferințe internaționale de specialitate**

1. 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.
2. Nașcu, 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,
3. 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.
4. 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.
5. Nascu, Ioana, Tao Chen, and Wenli Du. 2021. 'Global Sensitivity Analysis for a perfusion bioreactor system in tissue engineering', IFAC-PapersOnLine, 54: 550-55
6. 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
7. 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
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- 11.** 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
- 12.** 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
- 13.** 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.
- 14.** 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.
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- 16.** 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.
- 17.** 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
- 18.** 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
- 19.** 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.
- 20.** 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.
- 21.** 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.

- 22.** 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.
- 23.** 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.
- 24.** 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.
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- 26.** 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,
- 27.** 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
- 28.** Nascu, Ioana : "Drug Dosing Control during Anaesthesia in Patients Undergoing Surgery", Automation and Computer Science Students Conference ACSC 2009 May 22-23, 2009 Cluj- Napoca
- 29.** 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
- 30.** 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.
- 31.** 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

**32.** 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

**33.** 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.

**34.** 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.

**35.** 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.

**36.** 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.

**37.** 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

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**39.** 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).

40. 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. Alte lucrări și contribuții științifice**

1. Nașcu, 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. Nașcu, 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. Nașcu, 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. Nașcu, 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. Nașcu, 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,