

Scientific Activity

➤ Published papers

1. **M. Barbu**, S. Caraman, E. Ceanga, *A Modified ASM3 Model for a Trickling Filter*, International Journal of Romanian Biotechnological Letters, Vol. 13, No. 5, September – October 2008, pp. 39-48 (articol indexat ISI)
2. **M. Barbu**, S. Caraman, E. Ceanga, *Optimal Control Strategy of a Biotechnological Process Using a Fuzzy Zonal Model*, International Journal of Romanian Biotechnological Letters, Vol. 13, No. 5, September – October 2008, pp. 29-38 (articol indexat ISI)
3. Caraman, S., Sbarciog, M., **Barbu, M.**, *Predictive control of a wastewater treatment process*, International Journal of Computers, Communications and Control (<http://journal.univagora.ro/>), Vol. 2, No.2, pp. 132-142 (articol indexat ISI)
4. S. Caraman, **M. Barbu**, *Modelarea si conducerea proceselor biotehnologice. Lucrari practice. Volumul 2: Conducerea proceselor biotehnologice*, Editura CERMI Iasi, 2007, 150 pp
5. Caraman, S., **Barbu, M.**, *Modelarea si conducerea proceselor biotehnologice. Lucrari practice. Volumul 1: Modelarea si estimarea stării si parametrilor proceselor biotehnologice*, Editura Fundatiei Universitatii Dunarea de Jos din Galati, ISBN 973-627-240-0, 2005
6. **Barbu, M.**, Caraman, S., *Robust Multivariable Control Of A Wastewater Treatment Process Based On The RGA Analysis Of Input/Output Influences*, Petrol-Gaze University of Ploiesti Scientific Bulletin, Vol. LVIII, Nr. 1, ISSN 1224-8495, Pp. 79-84, 2006
7. Caraman, S., **Barbu, M.**, Ceanga, E., *Robust multimodel control using QFT techniques of a wastewater treatment process*, Control Engineering and Applied Informatics , Vol. 7, No. 2, ISSN 1454-8658, Pp. 10-17, 2005
8. **Barbu, M.**, Caraman, S. Ceangă, E., *Stochastic Estimation Techniques for Biotechnological Processes*, Control Engineering and Applied Informatics, Vol. 6, No. 4, ISSN 1454-8658, Pp. 43-51, 2004
9. **Barbu, M.**, Caraman, S., Ceanga, E., *State and Parameter Estimators for the Biosynthesis Processes*, Politehnica University of Timisoara Scientific Bulletin, Automatic Control and Computers Series, Vol. 49 (63), Nr. 1, ISSN 1224-600X, pp. 139-144, 2004
10. Caraman, S., **Barbu, M.**, *Fuzzy and Neural Modelling of Biotechnological Processes*, University of Craiova Scientific Bulletin, Electrical Engineering Series, Nr. 27, Vol. I , Pp.1-8, ISSN 1223-530X, 2004
11. Caraman, S., **Barbu, M.**, *Mean Age Control Strategies Techniques of the Continuous and Discontinuous Biosynthesis Processes. Comparative Study*, Control Engineering and Applied Informatics , Vol.5, No.2, ISSN 1454-8658, Pp. 31-40, 2003
12. Caraman, S., **Barbu, M.**, *Fuzzy Models for Alphaamylase Biosynthesis Process with Bacillus subtilis*, Petrol-Gaze University of Ploiesti Scientific Bulletin, Vol. LV, Nr. 2, ISSN 1221-9371, Pp. 43-47, 2003
13. S. Caraman, **M. Barbu**, *The Identification and Robust Control of a Biological Wastewater Treatment Process*, International Conference on

Automation, Quality and Testing, Robotics, AQTR 2008, Cluj Napoca, Romania (IEEE)

14. **M. Barbu**, S. Caraman, *Design of a Sliding-Mode Observer for a Biotechnological Process*, CAB'2007, Cancun Mexico, pp. 215 – 220
15. **M. Barbu**, S. Caraman, *QFT Multivariabil Control of a Biotechnological Wastewater Treatment Process Using ASM1 Model*, CAB'2007, Cancun Mexico, pp. 291 – 296
16. Caraman, S., Sbarciog, M., **Barbu, M.**, *Predictive Control of a Wastewater Treatment Process*, 1st IFAC Workshop on Applications of Large Scale Industrial Systems (ALSIS' 06), Helsinki, August 30 - 31, 2006
17. **Barbu, M.**, Caraman, S., Ceanga, E., *QFT robust control of a wastewater treatment process*, 16th IFAC World Congress, Prague, Czech Republic, Preprints CD-ROM, July 4-8, 2005 - Proceedings Elsevier, ISBN: 008045108X
18. Belea R., Caraman, S., **Barbu, M.**, *The Identification of a Biosynthesis Process Using Genetic Algorithms*, IFAC Workshop Automatic Systems for Building the Infrastructure in Developing Countries – DECOM 2004, Bulgaria, Preprints, Pp.207-212, 2004
19. Caraman, S., **Barbu, M.**, Munteanu C., *Expert System Based on Fuzzy Rules for Alpha-amylase Production with Bacillus subtilis*, Proceedings of the 9th IFAC Symposium Computer Applications in Biotechnology – CAB 9, France, Elsevier, ISBN 0-08-044251-X, Pp. 487-492, 2004
20. Caraman, S., **Barbu, M.**, Dumitrascu, G., *Wastewater Treatment Process Identification Based on the Calculus of State Variables Sensibilities with respect to the Process Coefficients*, IEEE-TTTC International Conference on Automation, Quality and Testing, Robotics, AQTR 2006, Cluj-Napoca, Proceedings IEEE Tome 2, Pp. 199-204, ISBN 1-4244-0360-X, 2006
21. **Barbu, M.**, Caraman, S., Ceanga, E., „*Bioprocess Control Using a Recurrent Neural Network Model*”, 20th IEEE International Symposium on Intelligent Control (ISIC 2005), Proceedings. IEEE, ISBN 0-7803-8937-9, Pp. 479 - 484, Limassol, Cyprus, June 27-29, 2005. Lucrarea a fost inclusă în ISI BIOSIS Preview
22. **Barbu, M.**, Caraman, S., Ceanga, E., *The Optimal Control of the Alpha-amylase Biosynthesis Process with Bacillus subtilis Microorganism Using a Fuzzy Zonal Model*, 12th IEEE Mediterranean Conference on Control and Automation, Proceedings CD-ROM, June 6-9, Turkey 2004
23. **Barbu, M.**, Barbu, G., Ceanga, E., *The Multi-model Control of the Wastewater Treatment Process with Activated Sludge*, 12th IEEE Mediterranean Conference on Control and Automation - MED'04, Kusadasi, Proceedings CD-ROM, June 6-9, Turkey 2004
24. **Barbu, M.**, Ceanga, E., Caraman, S., *Self-tuning of PI Controllers Using Fuzzy Techniques*, 11th IEEE Mediterranean Conference on Control and Automation - MED2003, Proceedings CD-ROM, Greece, June 18-20, 2003
25. Caraman, S., Frangu, L., Ceanga, E., **Barbu, M.**, *Neuro-fuzzy Control of Microorganisms Mean Age in Biotechnological Processes*, 10th IEEE Mediterranean Conference on Control and Automation - MED2002, Invited Session, Portugal, Proceedings CD-ROM, 2002
26. **Barbu, M.**, Caraman, S., Ceanga, E., *Control Strategies of a Multivariable Wastewater Treatment Process. Comparative Study*, Workshop on Modeling and Control of Complex Systems, Proceedings

CD-ROM, Ayia Napa, Cyprus, June 30 – July 1, 2005

27. **M. Barbu**, S. Caraman, *Decentralized Multimodel Control of a Wastewater Treatment Process with Activated Sludge*, Proceedings CSCS 16, 22 – 25 May, 2007, Vol. 1, pp. 49 – 55 ISBN 978-973-718-741-3, ISBN 978-973-718-742-0

28. S. Caraman, **M. Barbu**, E. Arinton, *The Linearizing Control of a Wastewater Treatment Process with the Removal of Two Substrates*, SINTES 13, Craiova, Romania

29. S. Caraman, **M. Barbu**, *The Design of a Biological Wastewater Treatment Plant Controlled by the Process Computer*, 8th International Conference on Technical Informatics, CONTI'2008, First Workshop on Computational Intelligence in Measurement, Control and Instrumentation, First Workshop on New Directions in Real-Time Networked Control Systems, Timisoara, Romania, 5-6 Iunie 2008

30. **Barbu, M.**, Caraman, S., *Sliding-Mode Observer for a Wastewater Treatment Process*, Proceedings of the 7th International Conference On Technical Informatics, CONTI 2006, ISBN 973-625-319-8, Vol. 1, Pp. 67-70, Timisoara, 8-9 Iunie, 2006

31. Caraman, S., Belea, R., **Barbu, M.**, *The Identification of a Wastewater Process Based on Genetic Algorithms*, IEEE International Workshop on Soft Computing Applications, Szeged-Hungary & Arad-Romania, Proceedings, Pp. 79-84, ISBN 9632190017, 27 - 30 August, 2005

32. **Barbu, M.**, Caraman, S., Ceanga, E., *Multivariable Control of a MIMO Wastewater Treatment Process*, International Conference: Innovation in The Field of Water Supply, Sanitation and Water Quality Management, Proceedings ISBN 973-0-03972-0, Pp. 421-429, Bucuresti, June 15-17, 2005

33. Caraman, S. , **Barbu, M.**, Ceanga, E., *Robust multimodel control using QFT techniques of a wastewater treatment process*, 15th International Conference on Control Systems and Computer Science - CSCS2004, Preprints CD-ROM, Bucuresti, Romania, May 25-27, 2005

34. **Barbu, M.**, Caraman, S., Ceanga, E., *QFT Robust Control of Biotechnological Processes*, IEEE-TTTC International Conference on Automation, Quality and Testing, Robotics, AQTR 2004, Cluj-Napoca, Proceedings Tome 1, Pp. 129-134, ISBN 973-713-046-4, 2004

35. **Barbu, M.**, Caraman, S., Mirea, S., *Adaptive Linearizing Control Using a H_{∞} Estimator for Lipase Producing Process*, 8th International Symposium on Automatic Control and Computer Science, SACCS 2004, Romania, Proceedings CD-ROM, 2004

36. **Barbu, M.**, Caraman, S., Ceanga, E., *Biotechnological Processes Identification Using Dynamic Neural Network*, 1st Romanian-Hungarian Joint Symposium on Applied Computational Intelligence, SACI 2004, Timisoara, Proceedings ISBN 963-7154-26-4, Pp. 11-20, 2004

37. Caraman, S., **Barbu, M.**, *Fuzzy Techniques for state Estimation in the Case of the Biotechnological Processes*, The 12-th International Symposium on Modeling, Simulation and System's Identification, SIMSIS 12, Galati, Proc. ISBN 973-627-156-0, Pp. 133-136, 2004

38. Caraman, S., **Barbu, M.**, *Fuzzy and Neural Models for the Accumulation Process of the Proteic Mass from Superior Mushroom Micelium of Polyporus Type*, 11th International Symposium on System Theory, SINTES-11, Vol. 1, pp. 14-17, Craiova, Romania, October 23-24, 2003

39. Caraman, S., **Barbu, M.**, *Modelling and Control Techniques of the*

Continuous and Discontinuous Biosynthesis Processes. Comparative study, 14th International Conference on Control Systems and Computer Science, CSCS-14, Vol. 2, pp. 34-39, Bucharest, Romania, July 2-5, 2003

➤ **Oral presentations**

1. **Barbu, M.**, Caraman, S., Ceanga, E., „*Bioprocess Control Using a Recurrent Neural Network Model*”, 20th IEEE International Symposium on Intelligent Control (ISIC 2005), Proceedings. IEEE, ISBN 0-7803-8937-9, Pp. 479 - 484, Limassol, Cyprus, June 27-29, 2005.
2. **Barbu, M.**, Caraman, S., Ceanga, E., *The Optimal Control of the Alpha-amylase Biosynthesis Process with Bacillus subtilis Microorganism Using a Fuzzy Zonal Model*, 12th IEEE Mediterranean Conference on Control and Automation, Proceedings CD-ROM, June 6-9, Turkey 2004
3. **Barbu, M.**, Barbu, G., Ceanga, E., *The Multi-model Control of the Wastewater Treatment Process with Activated Sludge*, 12th IEEE Mediterranean Conference on Control and Automation - MED'04, Kusadasi, Proceedings CD-ROM, June 6-9, Turkey 2004
4. **Barbu, M.**, Ceanga, E., Caraman, S., *Self-tuning of PI Controllers Using Fuzzy Techniques*, 11th IEEE Mediterranean Conference on Control and Automation - MED2003, Proceedings CD-ROM, Greece, June 18-20, 2003
5. **Barbu, M.**, Caraman, S., Ceanga, E., *Control Strategies of a Multivariable Wastewater Treatment Process. Comparative Study*, Workshop on Modeling and Control of Complex Systems, Proceedings CD-ROM, Ayia Napa, Cyprus, June 30 – July 1, 2005
6. **Barbu, M.**, Caraman, S., Mirea, S., *Adaptive Linearizing Control Using a H_∞ Estimator for Lipase Producing Process*, 8th International Symposium on Automatic Control and Computer Science, SACCS 2004, Romania, Proceedings CD-ROM, 2004

➤ **Posters**

1. **M. Barbu**, S. Caraman, *QFT Multivariable Control of a Biotechnological Wastewater Treatment Process Using ASM1 Model*, CAB'2007, Cancun Mexico, pp. 291 – 296
2. **Barbu, M.**, Caraman, S., Ceanga, E., *QFT robust control of a wastewater treatment process*, 16th IFAC World Congress, Prague, Czech Republic, Preprints CD-ROM, July 4-8, 2005 - Proceedings Elsevier, ISBN: 008045108X
3. **Barbu, M.**, Caraman, S., Ceanga, E., *Multivariable Control of a MIMO Wastewater Treatment Process*, International Conference: Innovation in The Field of Water Supply, Sanitation and Water Quality Management, Proceedings ISBN 973-0-03972-0, Pp. 421-429, Bucuresti, June 15-17, 2005