Curriculum vitae

Name: Dr. eng. *Madalina Mihaela Drugan*
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Research summary

I am a computer science engineer with good and vast knowledge of algorithms in the area of ***Machine learning*** and ***Optimization***, very good mathematical, statistical and programming skills.
In the period 2001-2015, I have focused on designing and analyzing various search algorithms for real-coded and discrete mathematical models of real-world problems in different groups, faculties and universities. For my PhD research, 2001-2006, I designed and analyzed computational approaches for ***Evolutionary Computation***, ***Bayesian Learning*** and ***Markov chain Monte Carlo***. The resulting PhD thesis has a theoretical flavor with soundness and convergence proofs. Between 2006-2008, I worked in ***Bioinformatics*** were I designed and implemented a greedy heuristic (the proof of concept) for the ***DeNovo algorithms*** (without database search) for peptide and protein identification. The project had a strong interdisciplinary character for which I acquired knowledge of mass spectrometry data analysis for bioinformatics. Between 2009-2011, I developed algorithms for ***Multi-Objective Optimization*** and ***Meta-heuristics***. I have analyzed the landscape of multi-objective combinatorial optimization problems and studied the interaction between the landscape and a combination of Pareto local search and evolutionary techniques. From 2012 onwards, I develop multi-objective algorithms for ***Multi-Armed Bandits*** and ***Reinforcement Learning*** with efficient exploration/ exploitation mechanisms.
I have also participated to meetings with industry and academia that concern development of algorithms and techniques for energy saving.

Academic degrees

27th	**PhD in Computer Science**, Utrecht University.
Nov	⚲ The title of the thesis "**Conditional log-likelihood MDL and Evolutionary MCMC**".
2006	⚲ Promotor: prof. dr. ir. Linda van der Gaag
	⚲ An abstract is published in *Abstracts of recent PhDs*, The Knowledge Engineering Review (2009), 24 : 185-190 Cambridge University Press
07/2000	**Post-graduate studies***, Computer Science and Automatization Department, Technical University of Cluj-Napoca, Romania*
	⚲ Main subject: *Information science, grade 10.0/10.0*
	⚲ Thesis*: SharedPlans for Multi-Agents Systems.*
06/1999	**Diploma Engineer in Computer Science**, *Computer Science and Automatization Department, Technical University of Cluj-Napoca*
	⚲ Grade 9.43 from 10.0, top 5% from her class
	⚲ Thesis: *Classical Iterated Prisoner's Dilemma with Tierra.* Published in an IEEE

conference in 2000.

Academic training

07/2001-01/2006	**Ph.D. candidate** in the Decision support systems group, Computer Science Department, Utrecht University, The Netherlands
08/2000-06/2001	**Assistant Researcher (TWAIO)** in the Software Technology postmaster program from Eindhoven University of Technology, The Netherlands.

Research experience

01/2013 – now	**Senior Researcher fellow** at Vrije Universiteit Brussel, Belgium.
02/2012-12/2012	**Visiting Senior Researcher** at Vrije Universiteit Brussel, Belgium, on the project "*Adaptive multi-objective meta-heuristics for energy saving problems*"
02/2009-10/2011	**Research fellow** at Computer Science Department, Utrecht University, The Netherlands
09/2006-12/2008	**Research fellow** at Netherlands Proteomics Center, Bio-molecular Mass spectrometry Department, Utrecht University, The Netherlands

Patents

2009	METHOD FOR DETERMINING THE AMINO ACID SEQUENCE OF PEPTIDES. Heck, A.J.R., Mohammed, S., Breukelen, B., van, Tanouatas, N., and Drugan, M.M., World Intellectual Property Organization, WO/2009/090188.

Granted Research funds

2013	I participated in writing a successful grant application for a 4 year PhD position from Vlaanderen Research Foundation (FWO) on the project "Online multi-criteria reinforcement learning"
2011	I am the principal investigator of a successful grant application for a 1 year visiting postdoctoral position in the Computational Modeling Lab at the Vrije Universiteit Brussel from Vlaanderen Research Foundation (FWO) on the project "Adaptive multi-objective meta-heuristics for energy saving problems"
2008	I participate in writing a successful grant application for a 2 years postdoctoral position from the National Bioinformatics Center and the Netherlands Proteomics Center with the research topic "*Machine learning methods for bioinformatics in proteomics*"

Academic achievements

2015	I am co-author of the paper "Thompson Sampling in the Adaptive Linear Scalarized Multi Objective Multi Armed Bandit" that was awarded the **Best student paper award** at ICAART 2015
2014	I am co-author of the paper "Knowledge Gradient for Multi-objective Multi-armed Bandit Algorithms" that was ***nominated as best student paper*** at ICAART 2014
2013	I am co-author of the paper "Solving Satisfiability in Fuzzy Logics by Mixing CMA-ES" that was awarded the ***Best paper award*** at GECCO 2013 for the tracks IGEC/ESEP/BIO

2013   I am co-author of the paper "Local Search and Restart Strategies for Satisfiability Solving in Fuzzy Logics" that was **nominated as best paper** at SSCI 2013

2013   I am co-author of the paper "Scalarized Multi-Objective Reinforcement Learning: Novel Design Techniques" that is **nominated as best paper** at SSCI 2013

2009   I am co-author of the paper "Targeted SCX-based fractionation of Lys-N generated peptides in combination with electron transfer induced dissociation facilitates the de novo analysis of peptides and their post-translational modifications" selected for the **January Cover** for Molecular and Cellular Proteomics.

2008   I am co-author of the paper "Straightforward ladder sequencing of peptides by a combination of Lys-N proteolytic cleavage and electron transfer dissociation" selected as the **Method of the year** Reader's choice from Nature methods.

2000   Best Software architecture design project, with a team of 3 others in a local competition (6 teams) at the Software Technology program, Technical University Eindhoven

Organization of international events

2015   IEEE Symposium on Adaptive Dynamic Programming and Reinforcement Learning (ADPRL'15)

2015   Special session "Combining evolutionary algorithms and reinforcement learning" at IEEE Congress on Evolutionary Computation (CEC), Sendai, Japan

2015   Special session "Learning and optimization in multi-criteria, dynamic and uncertain environments", at International Joint Conference on Neural Networks (IJCNN), Killarney, Ireland

2015   Special session "Emerging techniques and applications in Multi-objective Reinforcement Learning" at European Symposium of Artificial Neural Networks, Computational Intelligence and Machine Learning (ESANN), Brugge, Belgium

2014   Special session "Learning and optimization in multi-criteria dynamic and uncertain environments" at IEEE World Congress on Computational Intelligence (WCCI), Beijing, China

2014   Workshop "Potential Synergies between Reinforcement learning and Evolutionary Computation" at the 13th International Conference on Parallel Problem Solving from Nature (PPSN), Ljubljana, Slovenia

2014   Special session "Reinforcement Learning and Optimization in Stochastic Multi-objective Environments" at IEEE Symposium on Adaptive Dynamic Programming and Reinforcement Learning (ADPRL), Orlando, USA

Invited tutorial presentations with scientific selection committees

2015   GECCO 2015 on "Synergies between Evolutionary Algorithms and Reinforcement Learning", Madrid, Spain

2015   ESANN 2015 on "Multi-objective Reinforcement Learning" at European Symposium of Artificial Neural Networks, Computational Intelligence and Machine Learning (ESANN), Brugge, Belgium

2014   EVOLVE 2014 on "Evolutionary reinforcement learning or reinforcement evolutionary algorithms?", Beijing, China

2013   SIMCO 2013 on "Multi-Objective Multi-Armed Bandits Algorithms, an alternative optimizer for stochastic environments", Lorentz Center, The Netherlands

Commissions of trust

2015	PhD jury for Rustam Issabekov, Federation University, Australia
2013 – 2015	Technical program committee for several international conferences like SYNASC'13, SYNNASC'14, LION'14, IEEE IJCNN'14, ICSI'14, IEEE CEC'15, IEEE IJCNN'15
2010 – 2014	Reviewer of around ten papers per year for international conferences GECCO'10, ECAI'12, IEEE IJCNN'12, IJCAI'13, IEEE IJCNN'13, IEEE SSCI'13, ICML'14, GECCO'14
2008 – 2014	Reviewer for international journals like IEEE TNN, IJAR, ISI, IEEE TEC, EJOR, Bioinformatics, INS, JILSA

Collaborations and research expeditions

2013-2014	Visits of few days from researchers from France (E.-G. Talbi), The Netherlands (D. Roijers), and Australia (A. Aleti) that initiated the collaboration in writing papers and proposals.
2012-2014	The researcher has initiated several research expeditions in Belgium (Damien Ernst, Liege), France (SEQUEL, Lille) and Austria (Peter Auer)
2014	Collaboration with Systems & Control SME, Spain, on writing a project proposal and presenting a joint project activity at a conference fair
2014	Collaboration with University of Luxembourg in writing joint project proposal
2012-2013	Participant in a collaborative joint IWT – SBO project with KU Leuven and industry including visits in industry and joint meetings

Summary of teaching activities

2001	Teaching assistant for Evolutionary Computation, Utrecht University, The Netherlands
2000	Assisting teaching for Computer Graphics, Numerical devices, and Formal Methods at Technical University of Cluj-Napoca, Romania
1998	Pedagogical studies at Pedagogic Seminar, at the Technical University of Cluj-Napoca

Co-supervision of PhD students

Tim Brys	I co-supervise him with Ann Nowe. I co-authored 3 peer reviewed international conference papers, from which one paper is awarded the best paper award at GECCO 2013 and one paper is nominated for the best paper at SSCI 2013
Kristof van Moffaert	I co-supervise him with Ann Nowe. I co-authored 3 peer reviewed international conference papers, 2 peer reviewed international conference abstracts, and a submitted journal paper. One conference paper was nominated for the best paper award at SSCI 2013.

| Saba Q. Yahyaa | I co-supervise her with Bernard Manderick. I co-authored 5 peer reviewed international conference papers. One conference paper was nominated for the best paper award at ICAART 2014., and we won best student paper award at ICAART 2015. |

Mentoring master students

| Robercht Conjaerts | The title of the Master thesis is "Designing multi-objective reinforcement learning algorithms". Expected graduation date June 2015 |
| Maikel Withangen | I co-supervised him with Marco Wiering from University of Groningen, The Netherlands. The title of the master thesis is "Model-Based Multi-Objective Reinforcement Learning". Graduation date August 2014 |

Programming skills

1. Low level languages: Java, C/C++, Pascal, Assembler, Lisp, Prolog
2. Statistical/mathematical languages: Matlab, R, Octave, Splus, Mathematica
3. Operating systems: Linux (Suse, RedHat), Windows, Mac
4. Visual tools: Netbeans, VisualC, Delphi
5. Graphical tools: Ipe, Xfig, Pic, GnuPlot
6. Reverse engineering tools: RationalRose
7. Databases: SQL, MySql, Oracle, PostScriptSQL

International peer-reviewed journals

1)   ***Drugan, M.M***. Generating QAP instances with known optimum solution and additively decomposable cost function. (2013) Journal of Combinatorial Optimization, Springer . (Impact factor ISI 1.04)
2)   Chang, C., Verhaegen, P. - A., Duflou, J. R.. ***Drugan, M. M.,*** Nowé, A., (2013). Finding Days-of-week Representation for Intelligent Machine Usage Profiling. In Journal of Industrial and Intelligent Information.
3)   ***Drugan, M.M.,*** and Thierens, D. *Stochastic Pareto local search algorithms: Pareto neighborhood exploration and perturbation strategies,* (2012) Journal of Heuristics, 18(5): 727-766, Springer. (Impact factor ISI 1.36)
4)   ***Drugan, M.M.,*** and Thierens, D. *Recombination operators and selection strategies for evolutionary Markov Chain Monte Carlo Algorithms,* (2010), Evolutionary Intelligence, 3, pp. 79-101, Springer. Open access paper
5)   ***Drugan, M.M.,*** and Wiering, M.A. *Feature selection for Bayesian Network Classifiers using the MDL-FS score,* (2010), International Journal of Approximative Reasoning, 51(6): 695-717, Elsevier. (Impact factor ISI 1.98)
6)   ***Drugan, M.M.***, and Thierens, D., *Geometrical Recombination Operators for Real-Coded Evolutionary MCMCs.* (2010). Evolutionary Computation, 18(2):157-198, MIT Press. (Impact factor ISI 3.73)
7)   Breukelen, B., van, Georgiou, A., ***Drugan, M.M.,*** Taouatas, N., Mohammed, S., and Heck, A.J.R. (2010). *LysNDeNovo: An algorithm enabling de novo sequencing of Lys-N generated peptides fragmented by electron transfer dissociation,* Proteomics, 10(6): 1196 – 1201.
8)   Breukelen, B., van, Toorn, H.W.P., van den, ***Drugan, M.M.,*** and Heck, A.J.R. (2009). *StatQuant: a post-quantification analysis toolbox for improving quantitative mass spectrometry.* Bioinformatics, 25(11):1472-1473. (Impact factor ISI 2008 *4.32*)
9)   Taoutas, N., Altelaar, M., ***Drugan, M.M.,*** Helbig, A. O., Mohammed, S., and Heck, A.J.R.. (2009). *Targeted SCX-based fractionation of Lys-N generated peptides in combination with electron transfer induced dissociation facilitates the de novo analysis of peptides and their post-translational modifications.* Molecular and Cellular Proteomics., 8(1), pp. 190-200, (Impact factor ISI 2008 8.8)
10)   Taouatas, N., ***Drugan, M.M.,*** Heck, A.J.R., and Mohammed, S.. (2008). *Straightforward ladder sequencing of peptides by a combination of Lys-N proteolytic cleavage and electron transfer dissociation,* **Nature Methods**, 5, pp. 405-407. (Impact factor ISI 2008 *13.65*)

Proceedings of International peer-reviewed conferences

11)   **Drugan, M.M.** (2015). *Linear scalarization based Pareto front identification in stochastic environments.* In Proc of 8th International Conference on Evolutionary Multi-Criterion Optimization (EMO'15)
12)   **Drugan, M. M.,** & Manderick, B.. (2015). *Exploration versus exploitation trade-off in infinite horizon Pareto Multi-armed bandits algorithms.* In Proc of the seventh Conference of Agents and Artificial Intelligence (ICAART'15) (20% acceptance as full papers)
13)   Yahyaa, S. Q., ***Drugan, M. M.***, & Bernard, M.. (2015). *Thompson Sampling in the Adaptive Linear Scalarized Multi Objective Multi Armed Bandit.* In Proc of the seventh Conference of Agents and

Artificial Intelligence (ICAART'15) (**Best student paper award)**

14)   **Drugan, M. M.**, Nowe, A., & Manderick, B.. (2014). *Pareto Upper Confidence bounds algorithms: an empirical study.* In Proc of IEEE Symposium on Adaptive Dynamic Programming and Reinforcement Learning, *ADPRL'*14

15)   Wiering, M., Withagen, M., & **Drugan, M. M.**. (2014). Model-based Multi-objective reinforcement learning. In IEEE Symposium Series on Computational Intelligence (SSCI)

16)   Yahyaa, S. Q., **Drugan, M. M.**, & Bernard, M.. (2014). Annealing-Pareto Multi-Objective Multi-Armed Bandit Algorithm. In IEEE Symposium Series on Computational Intelligence (SSCI)

17)   **Drugan, M. M.**, Isasi, P., & Manderick, B.. (2014). *Schema bandits for binary encoded combinatorial optimisation problems.* In Proc of the tenth International Conference on Simulated Evolution And Learning, *SEAL'*14.

18)   **Drugan, M. M.** (2014). Multi-objective Quadratic Assignment Problem instances generator with a known optimum solution. In *Parallel problem solving from Nature (PPSN)*, 2014.

19)   **Drugan, M. M.,** & Talbi, E. - G.. (2014). Adaptive Multi-operator MetaHeuristics for quadratic assignment problems. In Evolve . presented at the 07/2014, Bejing: Springer.

20)   Yahyaa, S. Q., **Drugan, M. M.**, & Bernard, M.. (2014). Multivariate Normal Distribution Based Multi-Armed Bandits Pareto Algorithm. In Doctoral Symposium in European Conference on Machine Learning (ECML'14)

21)   Van Moffaert, K., **Drugan, M. M.,** & Nowé, A.. (2014). Learning Sets of Pareto Optimal Policies. In Thirteenth International Conference on Autonomous Agents and Multiagent Systems - Adaptive Learning Agents Workshop (ALA).

22)   **Drugan, M. M.,** & Nowe, A.. (2014). Scalarization based Pareto optimal set of arms identification algorithms. In International Joint Conference on Neural Networks (IJCNN). presented at the 07/2014, Bejing, China: IEEE.

23)   Yahyaa, S. Q., **Drugan, M. M.,** & Manderick, B.. (2014). Linear Scalarized Knowledge Gradient in the Multi-Objective Multi-Armed Bandits Problem. In European Symposium on Artificial Neural Networks, Computational Intelligence and Machine Learning (ESANN 2014).

24)   Yahyaa, S. Q., **Drugan, M. M.,** & Manderick, B.. (2014). Knowledge Gradient for Multi-objective Multi-armed Bandit Algorithms. In ICAART 2014 : International Conference on Agents and Artificial Intelligence.. presented at the 03/2014. (**nominated as best paper award**)

25)   **Drugan, M. M.,** & Nowe, A.. (2014). Epsilon-approximate Pareto optimal set of arms identification in multi-objective multi-armed bandits. In *BENELEARN 2014 - 23th annual Belgian-Dutch conference on Artificial Intelligence*.

26)   Yahyaa, S. Q., **Drugan, M. M.,** & Bernard, M.. (2014). Exploration vs Exploitation in the Multi-Objective Multi-Armed Bandit Problem. In International Joint Conference on Neural Networks (IJCNN). presented at the 07/2014, Beijng: IEEE

27)   Chang, C., **Drugan, M. M.,** Verhaegen, P. - A., Nowé, A., & Duflou, J. R.. (2013). Finding Days-of-week Representation for Intelligent Machine Usage Profiling. In International Conference on Future Information Technology (ICFIT 2013). Melaka, Malaysia: IEEE.

28)   **Drugan, M. M.,** and Nowe, A.. (2013) Designing multi-objective multi-armed bandits algorithms: a study, Proc of International Joint Conference on Neural Networks (IJCNN'13)

29)   Byrs T., **Drugan M. M.** and Nowe A. (2013). *Meta-Evolutionary Algorithms and recombination operators for satisfiability solving in fuzzy logics.* IEEE Congress on Evolutionary Computation (CEC-13), pp 1060-1067, IEEE

30)   Brys T., **Drugan M. M.**, Bosman P. A. N., De Cock M. and Nowé, A. (2013). Local Search and Restart Strategies for Satisfiability Solving in Fuzzy Logics. *IEEE Symposium Series on Computational Intelligence (SSCI-13).* Singapore: IEEE.

31)   Puglierin F., **Drugan M. M.** and Wiering M. (2013). *Bandit-Inspired Memetic Algorithms for solving Quadratic Assignment Problems.* IEEE Congress on Evolutionary Computation (CEC-13), pp 2078-2085, IEEE

32)   **Drugan M. M.** (2013). *Cartesian product of scalarization functions for many-objective QAP*

instances with correlated flow matrices: cartesian product of scalarization functions. Genetic and Evolutionary Computation Conference (GECCO-13), pp 527-534, ACM

33)   Brys T., **Drugan M. M.**, Bosman P. A. N., De Cock M. and Nowé A. (2013). *Solving satisfiability in fuzzy logics by mixing CMA-ES.* Genetic and Evolutionary Computation Conference (GECCO-13), pp 1125-1132, ACM **Best paper award**

34)   **Drugan M. M.** (2013). *Sets of interacting scalarization functions in local search for multi-objective combinatorial optimization problems. IEEE Symposium Series on Computational Intelligence (SSCI-13)*. Singapore: IEEE.

35)   Van Moffaert K., **Drugan, M. M.** and Nowé, A. (2013). Scalarized Multi-Objective Reinforcement Learning: Novel Design Techniques. In *IEEE Symposium Series on Computational Intelligence (SSCI-13)*. Singapore. IEEE. (**nominated for best paper award**)

36)   **Drugan M. M.** (2013). *Instance generator for the quadratic assignment problem with additively decomposable cost function*. IEEE Congress on Evolutionary Computation (CEC-13), pp 2086-2093, IEEE

37)   Van Moffaert K., **Drugan M. M.** and Nowe A. (2013). *Hypervolume-Based Multi-Objective Reinforcement Learning*. Evolutionary Multi-objective Optimization, (EMO-13), pp. 352-366, Springer

38)   **Drugan, M.M.,** and Thierens, D. (2011)**.** *Generalized Adaptive Pursuit Algorithm for Genetic Pareto Local Search algorithms, GECCO 2011*

39)   **Drugan, M.M.,** and Thierens, D. (2010). *Path-guided mutation for stochastic Pareto local search algorithms*, PPSN XI, pp 485-495, Springer.

40)   **Drugan, M.M.,** and Thierens, D. (2005). *Recombinative EMCMC algorithms.* Proceedings of the Conference on Evolutionary Computation (CEC), 2005, pp. 2024-2031. (Impact factor ISI 2008 0.98).

41)   **Drugan, M.M.,** and Thierens, D. (2004). *Evolutionary Markov chain Monte Carlo*., Artificial Evolution EA'03, LNCS 2936, Springer, pp. 63-76. (Impact factor ISI 2008 0.70).

42)   **Drugan, M.M.,** and Gaag, L.C. van der. (2004). *A New MDL-based function for feature selection for Bayesian network classifiers*. Proceedings of European Conference on Artificial Intelligence (ECAI'04), pp. 999-1000. (Acceptance rate 24%)

Proceedings of national peer-reviewed conferences and technical reports

43) **Drugan, M. M.,** & Nowe, A.. (2014). Scalarization based Pareto optimal set of arms identification algorithms. In *JFPDA 2014 - 9th French Meeting on Planning, Decision Making and Learning*.

44) Yahyaa, S. Q., **Drugan, M. M.,** & Bernard, M.. (2014). Knowledge Gradient for Multi-objective Multi-armed Bandit Algorithms. In The French Meeting on Planning, Decision Making and Learning (JFPDA).

45) **Drugan, M.M.,** Thierens, D., and Gaag, L.C. van der. (2002). *MDL-based feature selection for Bayesian network classifiers*. Proceedings of the Belgian Dutch Conference on Artificial Intelligence (BNAIC), pp. 99-106. Leuven, Belgium.

46) Cenan, C., and **Drugan, M.M.,** (2000), *An Implementation of Iterated Prisoner's Dilemma with Tierra*. Proceedings of SINTES 10., 2000, Craiova, Romania

47) Jong, E., de, Wiering, M., and **Drugan, M.M.,** (2003), *Post-Processing for MCMC.* Technical report UU-CS-2003-021

Abstracts in international symposiums and conferences

48) Catteeuw, D., **Drugan, M. M.,** and Manderick, B.. (2014) "'Guided' Restarts Hill-Climbing", Workshop at PPSN on "Reinforcement Learning into Evolutionary Computation"

49) Isasi, P., **Drugan, M. M.,** and Manderick, B.. (2014) "Schemata Monte Carlo Network Optimization",

Workshop at PPSN on "Reinforcement Learning into Evolutionary Computation"

50) Yahyaa, S. Q., ***Drugan, M. M.,*** and Manderick, B.. (2014) "Annealing-Pareto Multi-Objective Multi-Armed Bandit Algorithm" , Workshop at PPSN on "Reinforcement Learning into Evolutionary Computation"

51) ***Drugan, M. M.,*** Isasi, P. and Manderick, B.. (2014) "Schemata bandits", Workshop at PPSN on "Reinforcement Learning into Evolutionary Computation"

52) ***Drugan, M. M.,*** Isasi, P. and Manderick, B.. (2014) "Schemata bandits", International Conference on Metaheuristics and Nature Inspired Computing, META'14

53) ***Drugan M. M.*** (2013). Multi-objective multi-armed bandits algorithms: an alternative optimizer for stochastic environments. Symposium on Set- and Indicator-Based Multi-Criteria Optimization (SIMCO'13), Leiden, The Netherlands

54) Nowe A., Van Moffaert K. and ***Drugan, M. M.*** (2013). Multi-Objective Reinforcement Learning. European Workshop on Reinforcement Learning (EWRL-13). Germany

55) Van Moffaert, K., ***Drugan, M. M.***, and Nowé, A.. (2013). Multi-Objective Reinforcement Learning using Sets of Pareto Dominating Policies. In *22nd International Conference on Multiple Criteria Decision Making*. Spain

56) ***Drugan M. M.*** and Nowé A. (2013). *Designing multi-objective multi-armed bandits algorithms: a study. 25th Benelux Conference on Artificial Intelligence*. Delft, The Netherlands.

57) Altelaar, A.F.M., ***Drugan, M.M.,*** Taouatas, N., Mischerikow, N., Mohammed, S., and Heck, A.J.R. (2009). *''Genome free' proteomics; de novo sequence analysis of the Ostrich muscle proteome by a combination of LysN protein digestion and electron transfer dissociation'.* Symposium Dutch/Belgium Mass Spectrometry.

58) Altelaar, A.F.M., ***Drugan, M.M.,*** Taouatas, N., Mischerikow, N., Breukelen, B., van, Mohammed, S., and Heck, A.J.R. (2009). '*Genome free' proteomics; de novo sequence analysis by a combination of LysN protein digestion and electron transfer dissociation.* ASMS'2009 and NWO/CW meeting Analytical Chemistry.

59) Taouatas, N., Altelaar, A.F.M., ***Drugan, M.M.,*** Helbig, A.O., Heck, A.J.R., and Mohammed, S., (2009), *Lys-N; a novel protease ideal, in combination with SCX and ETD, for proteomics.* ASMS'2009 and NWO/CW meeting Analytical Chemistry.

60) Taouatas, N*., **Drugan, M.M**.*, Heck, A.J.R., and Mohammed, S. (2008). *Evaluating proteolytic peptide characteristics using ETD for de novo sequencing.* HUPO'2008.