

Curriculum vitae of Prof. RNDr. Dalibor Štys CSc.

Personal data:

Born: September 1st 1962, Praha

Nationality: Czech Republic

Language knowledge:

English – written and spoken

German, Russian, Swedish – working knowledge

Married, wife Renata Štysová Rychtáriková, sons Dalibor, Kryštof-Mikuláš (from first marriage) and Miroslav (second marriage)

Present address: Zámek 136, 373 33 Nové Hrady

Education and degrees:

Charles University Prague, Faculty of Science, physical chemistry, graduation June 1987

RNDr. in Biophysical Chemistry, Charles University Prague, Faculty of Science, physical chemistry, October 1987

CSc. (Ph.D. equivalent) Institute of Organic Chemistry and Biochemistry, Czechoslovak Academy of Science, Prague, November 1992

doc. (Assoc. Prof.) in Science Engineering, Faculty of Mechatronics and Interdisciplinary Engineering Studies, Technical University Liberec, December 2006

Professor in Applied Physics, Czech Technical University Prague, November 2012

Professional career:

April 1989 – November 1992 Ph. D. study Institute of Organic Chemistry and Biochemistry, Czechoslovak Academy of Science, Prague, supervisors subsequently Ing. Petr Štrop CSc. Ing. Viktor Krchňák CSc., RNDr. Miloš Buděšínský CSc., finished by work Structure and function of the protein P6 and immunoactive fragments of glycoprotein gp41“

November 1992 – November 1994 postdoctoral stipend (prof. John F. Allen) and November 1994 – November 1995 research engineer, Plant Cell Biology, Lund University

December 1995 – October 1996 assistant professor, Faculty of Biological Science, University of South Bohemia and research assistant, Institute of Microbiology, Academy of Science of the Czech Republic, Třeboň

October 1996 – December 2001 head of the laboratory of Biomembranes, Faculty of Biological Science, University of South Bohemia.

January 2002 – December 2011 director of the Institute of Physical Biology, University of South Bohemia, Nové Hrady

January 2012 – October 2012 head of the Laboratory of Applied Systems Biology, FFPW, University of South Bohemia

November 2012 – July 2013 director, department of Research and Development, Ministry of Education, Youth and Sports of the Czech Republic,

July 2013 – January 2014 minister, Ministry of Education Youth and Sports of the Czech Republic

February 2014 – now head of laboratory of experimental complex systems, Institute of Complex Systems, Faculty of Fishery and Water Protection, University of South Bohemia,

Main professional interests:

Complex systems biology

Information analysis of experiment

Self – organisation

Technology transfer

Pedagogical practice 2007 - 2017:

Physical biology – main coordinator 2004 - 2017, 1 of 3 lecturers

Elements of boating – 2012 - 2017

Chemistry II – since 2017

Ph.D. project supervisor:

Zbyněk Halbhuber 2000-2006

Jan Urban 2005 – 2010

Milena Kovářová 2005 – 2012

Tomáš Náhlík 2009 – 2016

Alixander Pautsina 2010 – 2016

Anna Zhyrova 2012 –

Darja Malakhova 2013 –

Vladimir Bozhynov 2016 –

Anna Platonova 2017 -

Publication in international journals 2007-2017:

1. Standard reporting requirements for biological samples in metabolomics experiments: environmental context (2007), Morrison N., Bearden D., Bundy J. G., Colette T., Currie F., Davey M. P., Haigh N.S., Hancock D., Jones O.A.H., Sansone S.A., Stys D., Teng Q., Field D., Viant M. R., *Metabolomics* 3, 203-210.
2. Bilinear system as modelling framework for analysis of microalgal growth (2007) Papacek S, Celikovský S., Stys D. and Ruiz-Leon J., *Kybernetika* 43, 1-20.
3. Screening for acetylcholinesterase inhibitory activity in cyanobacteria of the genus *Nostoc* (2009) Zelik P, Lukesova A, Voloshko L, Stys D and Kopecky J. *Journal of Enzyme Inhibition and Medicinal Chemistry*, 24, 531- 536
4. A two-stage solar photobioreactor for cultivation of microalgae based on solar concentrators, (2009) Masojidek J, Sergejevova M, Rottnerova K, Jirka, V., Korecko, J., and Stys D. *Journal of Applied Phycology*, 21, 55-63.
5. Expertomica Metabolite Profiling: Getting more information from LC-MS using the stochastic systems theory approach, (2009) Jan Urban, Jan Vaněk, Jiří Soukup and Dalibor Štys, *Bioinformatics* 25, 2764-2767
6. Ab Initio Calculation of the Electronic Band Structure, Density of States and Optical Properties of alpha-2-Methyl-1-nitroisothiourea (2009), *J. Phys. Chem. B*, 113, 12648-12654
7. Expertomica Cells: analysis of cell monolayer development, (2010) Levitner T, Timr S, Stys D., *Bioinformatics*, 26, 278-279
8. Linear and Nonlinear Optical Susceptibilities of 3-Phenylamino-4-phenyl-1,2,4-triazole-5-thione (2010) Reshak AH, Stys D, Auluck S, et al., *J. Phys. Chem B.*, 114, 1815-1821
9. Density functional calculations of the electronic structure of 3-phenylamino-4-phenyl-1,2,4-triazole-5-thione (2010) Reshak AH, Stys D, Auluck S, et al. *Phys. Chem. Chem Phys*, 12, 2975-2980
10. Experimental design for parameter estimation of two time-scale model of photosynthesis and photoinhibition in microalgae (2010) Papacek S, Celikovský S, Rehak B, Stys D., et al. *Math. Comp. Simul.*, 80, 6, SI, 1302-1309

11. The cell monolayer trajectory from the system state point of view (2011) Štys D., Vanek J., Nahlik T., Urban J and Cisar P., *Mol. BioSyst.*, 7, 2824-2833
12. Analysis of biological time-lapse microscopic experiment from the point of view of the information theory (2011) Štys, D., Urban, J., Vanek, J., Cisar, P., *Micron*, 42, 360-365
13. Structural properties and bonding nature of 3-methyl-4-phenyl-5-(2-pyridyl)-1,2,4-triazole single crystal (2011) Reshak A.H., Štys D., Auluck, S.; et al. *Mat. Chem. Phys.* 130, 1-2, 458-465
14. Growth impact of hydrodynamic dispersion in a Couette-Taylor bioreactor (2011) Papacek S., Stumbauer V., Štys D., *Math. Comp. Model.* 54, 1791-1795
15. Cytotoxicity and Secondary Metabolites Production in Terrestrial Nostoc Strains, Originating From Different Climatic/Geographic Regions and Habitats: Is Their Cytotoxicity Environmentally Dependent? (2011) Hrouzek, P., Tomek, P., Lukesova, A., et al. *Env. Toxicol.* 26, 345-358
16. Carotenoid-enriched microalgal biomass as feed supplement for freshwater ornamentals: albinic form of wels catfish (*Silurus glanis*) (2011) Zatkova, I.; Sergejevova, M.; Urban, J.; et al. *Aquacult. Nutr.* 17, 278-286
17. Dispersion of linear and non-linear optical susceptibilities for amino acid 2-aminopropanoic $\text{CH}_3\text{CH}(\text{NH}_2)\text{COOH}$ single crystals: experimental and theoretical investigations (2011) Reshak, A. H., Auluck, S. Štys, D et al. *J. Mat. Chem.*, (21) 17219-17228
18. Dispersion of linear and nonlinear optical susceptibilities and the hyperpolarizability of 3-methyl-4-phenyl-5-(2-pyridyl)-1,2,4-triazole, (2011) Reshak, A. H., Štys, D.; Auluck, S.; et al. *Phys Chem Phys*, 13, 2945-2952
19. Expertomica Fishgui: comparison of fish skin colour, J. Urban, D. Štys, M. Sergejevová, J. Masojídek, *Journal of Applied Ichthyology* (2012), 1–9
20. Current State of HPLC-MS Data Processing and Analysis in Proteomics and Metabolomics, J. Urban, J. Vaněk, D. Štys, *Current Proteomics* (2012), 9 (2), 80–93
21. The lattice Boltzmann method in bioreactor design and simulation. Stumbauer, V., Petera, K., Štys, D., *Mathematical and Computer Modelling* (2013) 57 (7–8): 1913–1918.
22. Zhyrova, A., Štys, D., Císař, P., Information entropy approach as a method of analysing Belousov-Zhabotinsky reaction wave formation. *Chemicke Listy* (2013), 107 (Suppl. 3): S341-S342.
23. Malakhova, D., Štys, D., Rychtáriková, R., Adjustment of dynamic high resolution images of living cells by combination of an optical microscopy in transmitting light, atomic force microscopy and image information analysis. *Chemicke Listy* (2013) 107 (Suppl. 3): S402-S404.
24. Urban, J., Hrouzek, P., Štys, D., Martens, H., Estimation of Ion Competition via Correlated Responsivity Offset in Linear Ion Trap Mass Spectrometry Analysis: Theory and Practical Use in the Analysis of Cyanobacterial Hepatotoxin Microcystin-LR in Extracts of Food Additives. *BioMed Research International* 2013, Article No. 414631.
25. Urban, J., Vanek, J., Štys, D., Unsupervised Adaptive Filter for Baseline Thresholding and Elimination in Liquid Chromatography-Mass Spectrometry via Approximation of the Standard Deviation of Baseline Distribution in Retention Time Domain, *Acta Chromatographica*, (2013), 25: 257-273
26. Urban, J., Afseth, N.K., Štys, D., Fundamental definitions and confusions in mass spectrometry about mass assignment, centroiding and resolution. *Trends in Analytical Chemistry* (2014) 53: 126-136.

27. Zhyrova, A., Stys, ., Construction of the phenomenological model of Belousov-Zhabotinsky reaction state trajectory, *International Journal of Computer Mathematics*, (2014) 91:4-13.
28. Nahlik, T., Stys, D. Microscope point spread function, focus and calculation of optimal microscope set-up, *International Journal of Computer Mathematics*, (2014) 91:221-232.
29. Pautsina A., Kuklina I., Stys D., Cisar P. and Kozak P. Noninvasive crayfish cardiac activity monitoring system, *Limnology and Oceanography – methods* (2014) 12: 670-679
30. Pautsina, A., Císař, P., Štys, D., Terjesen, F.B., Espmark, Å.M.O., 2015. Infrared reflection system for indoor 3D tracking of fish. *Aquacultural Engineering* 69: 7–17.
31. Císař, P., Soloviov, D., Bárta, A., Urban, J., Štys, D., 2016. BioWes-from design of experiment, through protocol to repository, control, standardization and back-tracking. *BioMedical Engineering OnLine* 15(Suppl 1): 74.
32. Rychtáriková, R., Korbel, J., Macháček, P., Císař, P., Urban, J. and Štys, D., 2016. Point Information Gain and Multidimensional Data Analysis. *Entropy* 18(10), 372.
33. Rychtáriková R., Náhlík T., Shi K., Malakhova D., Macháček P., Smaha R., Urban J., Štys D.: Super-Resolved 3-D Imaging of Live Cells' Organelles from Bright-Field Photon Transmission Micrographs, *Ultramicroscopy* (2017), in press doi: 10.1016/j.ultramic.2017.03.018

Other publications 2015-2017:

1. Stys D., Urban J., Rychtarikova R., Zhyrova A. and Cisar P., Measurement in biological systems from the self-organisation point of view, *IWBBIO 2015, Part II, LNCS 9044*, pp. 431–443, F. Ortuño and I. Rojas (Eds.), Springer International Publishing Switzerland 2015
2. Urban J. and Stys D., Noise and Baseline Filtration in Mass Spectrometry, *IWBBIO 2015, Part II, LNCS 9044*, pp. 418–425, F. Ortuño and I. Rojas (Eds.), Springer International Publishing Switzerland 2015
3. Barta A., Cisar P., Soloviov D., Soucek P., Stys D., Papacek S., Pautsina A., Rychtarikova R. and Urban J. BioWes – From Design of Experiment, through Protocol to Repository, Control, Standardization and Back-Tracking, *IWBBIO 2015, Part II, LNCS 9044*, pp. 426–430, F. Ortuño and I. Rojas (Eds.), Springer International Publishing Switzerland 2015
4. Stys D., Stys D. Jr., Pecenkova J., Stys K. M, Chkalova M., Kouba P., Pautsina A., Durniev D., Nahlik T. and Cisar P., 5iD Viewer - Observation of Fish School Behaviour in Labyrinths and Use of Semantic and Syntactic Entropy for School Structure Definition, (2015) *World Academy of Science, Engineering and Technology International Journal of Computer, Electrical, Automation, Control and Information Engineering* Vol:9, No:1
5. Štys, D., Náhlík, T., Zhyrova, A., Rychtáriková, R., Papáček, Š., Císař, P., 2016. Model of the Belousov-Zhabotinsky reaction. *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)* 9611, pp. 171-175.
6. Rychtáriková, R., Náhlík, T., Smaha, R., Urban, J., Štys, D., Jr., Císař, P., Štys, D., 2015. Multifractality in imaging: application of information entropy for observation of inner dynamics inside of an unlabeled living cell in bright-field microscopy. In: Sanayei et al. (eds.), *ISCS14*. Springer, Switzerland, pp. 261–267.

7. Rychtarikova R., Maleckova D., Urban J., Barta A., Novotna M., Zhyrova A., Nahlik T., and Stys D. (2015) Study of human visual perception with the usage of information entropy analysis of patterns, PURPLSOC The workshop 2014, Baumgartner and Sickinger (eds.), 2015 ISBN-13: 978-3737554589
8. Zhyrova A., Rychtarikova R., Nahlik T. and Stys D. (2015), The path of aging: Self-organisation in the Nature and the 15 properties, PURPLSOC The workshop 2014, Baumgartner and Sickinger (eds.), 2015 ISBN-13: 978-3737554589
9. Štys D., Náhlík T., Macháček P., Rychtářiková R., Saberioon M.: Least Information Loss (LIL) conversion of digital images and lessons learned for scientific image inspection. IWBBIO 2016, LNBI 9656, Ortuno and Rojas (eds.), Springer, Switzerland, 2016, pp. 527-536.