

# CURRICULUM VITAE

## Mirianas Chachisvilis

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### Education

- 1997-2000 **PostDoc** (Chemical Physics), **California Institute of Technology**, Pasadena, CA.  
1996 **Ph.D.** (Chemical Dynamics), **Lund University**, Lund, Sweden.  
1988 **M.S.** (Physics), **Vilnius University**, Vilnius, Lithuania.

### Work Experience

- 2014 – present **VeriSkin, Inc., Co-founder, CEO and CTO**  
Invented and developed a novel technology for a rapid and non-invasive diagnostics of skin cancer.
- 2012 – 2018 **Solvexa, LLC, Founder, CEO and CTO**  
Development of new technologies for chiral separations.
- 2004 – 2014 **Chief Scientific Officer** (acting), **Dynamic Connections LLC**  
Proof of principle evaluation of new technologies: (1) New chiral separation technology, quantum chemical and molecular dynamics simulations of molecular dynamics in time-dependent electric fields; (2) Molecular ratchets, <sup>[17]</sup>statistical thermodynamics - thermal energy extraction; (3) Advanced electrophoretic separation technologies; (4) Managed activities for NIH Phase I/II SBIR grant aimed to investigate and develop a novel chiral separation technology.
- 2004 – 2013 **Assistant Professor**, March 2007 - **Associate Professor**, **La Jolla Bioengineering Institute**, La Jolla, CA. Research work on the molecular mechanisms of mechano-chemical signal transduction in cells. Time-resolved fluorescence spectroscopy and imaging of GPCR, and G protein conformational dynamics in cells and lipid bilayers using FRET. Time resolved FRET studies of the dynamics of bradykinin receptor, PTH receptor, PECAM, eNOS and secondary intracellular messengers (Ca<sup>2+</sup>, cAMP) in response to fluid shear stress stimulation. Fluorescence correlation spectroscopy and time-resolved fluorescence studies of lipid diffusion (membrane fluidity), membrane polarity (hydration) and membrane dipole potential in cell membranes and artificial lipid bilayers (liposomes and supported lipid bilayers) under mechanical stress. Effects of polyunsaturated fatty acids on GPCR conformational dynamics and function. The work also involved building up a new laboratory for femtosecond time-resolved fluorescence spectroscopy and imaging of live cells at LJBI and setting up a computational core for molecular dynamics simulations.
- June 2001 – May 2004 **Senior Staff Scientist, Genoptix, Inc. (a Novartis Company)**, San Diego, CA  
Research work in the areas of biophotonics, optical tweezers, radiation pressure forces and elastic light scattering on single cells, flow cytometry, optical force based, label-free cell discrimination and sorting, particle dynamics in optical fields and in microfluidic channels as applied to single cell analysis (for cancer

diagnostics). The work involved building complicated optical imaging systems for studying interaction between laser beams and live cells as well as theoretical analysis.

2000 – 2001 **Research Assistant Professor**, Department of Chemical Physics, **Lund University**, Sweden. Fundamental non-equilibrium chemical dynamics in complex systems. Applications of femtosecond- and single molecule spectroscopies to study energy conversion processes in artificial photosynthetic systems inside protein nanocavities.

1997 – 2000 **Postdoctoral Scholar, California Institute of Technology**. Ultrafast chemical reaction dynamics in the gas and condensed phase. Advisor: A. H. Zewail, **1999 Nobel Laureate in Chemistry**. Applications of femtosecond fluorescence up-conversion and transient absorption techniques to study double proton transfer in solution, and isomerization, dissociation-recombination and electron transfer reactions inside nanocavities. Experimental and theoretical studies of elementary chemical reactions and the role of microscopic friction using femtosecond LIF spectroscopy and ultrahigh pressure techniques. Studies of deactivation of the excited states via conical intersections and valence isomerization processes of azabenzenes in condensed phase using femtosecond transient absorption and *ab initio* methods. The work also involved setting up a new lab for fluorescence up-conversion and transient absorption spectrometers.

1994 – 1996 **Graduate Research Assistant**, Department of Chemical Physics, Chemistry Center, **Lund University**, Lund, Sweden.

1993 - 1994 **Graduate Research Assistant**, Department of Physical Chemistry, **Umeå University**, Sweden. Transfer of the research group to Lund in 1994. Excitation energy dynamics in photosynthetic and model systems. Experimental and theoretical studies of excitation energy transfer, vibrational and electronic coherence and relaxation processes in photosynthetic antennae of purple bacteria using femtosecond spectroscopy in combination with exciton theory and density matrix methods. First time observation of vibrational coherence and estimation of exciton coherence length in LH1 and LH2 light harvesting complexes. Studies of isomerization and excited state deactivation of porphyrin dimers in solution and exciton-exciton annihilation in phthalocyanine colloids and films. Application of quantum chemical calculations for data analysis. The work also involved setting up and using three different femtosecond transient absorption spectrometers, including development of advanced data acquisition software (currently used by at least four research groups).

1988 – 1992 **Research Assistant, Institute of Physics**, Laboratory for molecular processes, Lithuanian Academy of Sciences, Vilnius, Lithuania. Nonlinear picosecond spectroscopy: Experimental studies of nonlinear resonances and exciton dynamics in molecular crystals using four-wave mixing, CARS, transient absorption and transient gratings techniques.

1986 – 1988 **Research Assistant**, Physics Department, **Vilnius University**, Lithuania. Undergraduate research work in applied theoretical physics. Applications of singular integral equations to boundary problems in electrodynamics: developments of methods and computer programs.

## Graduate and Postdoctoral Advisors

Graduate Advisor: **Prof. Villy Sundström**, Lund University, Sweden.

Postdoctoral Advisor: **1999 Nobel Laureate Prof. Ahmed H. Zewail**, California Institute of Technology, Pasadena, CA.

## Awards and Honors

- 1996 **Prize for the best Ph.D. thesis in chemistry in Sweden** awarded jointly by The Swedish Chemical Society (Kemistsamfundet) and The Swedish Association of Scientists (Sveriges Naturvetareförbund).
- 1996 Post Doctoral Fellowship awarded by The Swedish Foundation for International Cooperation in Research and Higher Education (STINT).
- 1999 *Wilhelm Faxes* prize awarded by Lund University.

## Research Funding Awards

**1 R44CA250768-01** (PI: Chachisvilis, M.) 3/15/2020 – 2/28/2022  
NIH/NCI: Clinical performance of hemodynamics-based non-invasive device for skin cancer testing.  
Total (direct + indirect): \$1,998,435.00  
The main goal of this project is to develop a non-invasive skin cancer diagnostic device.

**1 R44CA203038-01A1** (PI: Chachisvilis, M.) 5/1/2016 – 12/31/2019  
NIH/NCI: Hemodynamic Noninvasive Skin Cancer Diagnostics.  
Total (direct + indirect): \$1,898,779.00  
The main goal of this project is to develop a non-invasive skin cancer diagnostic device.

**1R43GM119431-01** (PI: Chachisvilis, M; Kodis, G.) 9/16/2016-active  
NIH/NIGMS: Chiral separation and analysis by molecular propeller effect  
Total (direct + indirect): \$296,418  
The goal of this project is to test a new method for chiral analysis and separation.

**1 R01 HL86943-05** (PI - Chachisvilis) 4/04/2007 – 3/31/2013  
NIH: Mechanosensitivity of Cell Membranes: Role of Lipid-Protein Interactions  
Total (direct + indirect): \$2,130,750.00  
The central hypothesis is that the plasma membrane of endothelial cell acts as a mechanosensitive element; i.e. changes in the physical properties of the membrane under mechanical stress can regulate activity of membrane proteins coupled with intracellular signaling pathways.

**R01 HL086943-05S1** (PI - Chachisvilis) 09/01/2010 - 03/31/2013  
NIH: Mechanosensitivity of Cell Membranes: Role of Lipid-Protein Interactions  
Total (direct + indirect): \$313,992  
This is a Postdoctoral Research Supplement to Promote Diversity in Health-Related Research for Dr. Jose Candelario who is a postdoctoral fellow in PI's group.

**R01HL086943-03S1** ARRA (PI - Chachisvilis) 7/15/2009 – 6/30/2012

**NIH:** Mechanosensitivity of Cell Membranes: Role of Lipid-Protein Interactions  
Total (direct + indirect): \$382,064  
This is a ARRA supplement to add computational modeling capability to R01 HL86943.

**5R44GM103405** (PI – Osman Kibar, acting PI - Chachisvilis) 1/1/2012 – 12/31/2014  
**NIH:** Hydrodynamic chirality: a novel method for chiral separation and analysis.  
Total: \$1,260,702.00  
The primary objective of this project was to demonstrate feasibility and develop a novel chiral separation technology. Acting PI was fully responsible for project management.

**MCB 0721396** (PI - Chachisvilis) 9/01/2007 – 2/28/2010  
**NSF:** The Role of Dipole Potential in Mechanosensing  
Total: \$200,000.00  
The primary objective of this project focuses on understanding the role of dipole potential of the lipid bilayer membrane in mediating mechanochemical signal transduction in live cells.

**TG-MCB100143** (PI - Chachisvilis) 2010 – 2012 (extendable)  
1,500,000 SU on TACC Sun Constellation Cluster (Ranger)  
500,000 SU on NCSA Linux Cluster (Abe/Queen Bee/Steele)  
**NSF** Teragrid/XSEDE Resource Title: Mechanosensitivity of Lipid Bilayer Membranes.  
This award provides access to computational resources for molecular dynamics simulations.

**Dnr 96/219** (PI - Chachisvilis) 1997 – 2000  
The Swedish Foundation for International Cooperation in Research and Higher Education  
(**STINT**): Femtosecond reaction dynamics in the phase transition region.  
Postdoctoral fellowship.

**K 620-288/2000, K 5104-2698/1999** (PI - Chachisvilis) 3/6/2000 -9/21/2001  
**Swedish Natural Science Research Council:** Fundamental Nonequilibrium Chemical Processes in Complex Systems.  
Total: \$120,000.00  
Research and equipment grant.

### Professional Associations

1998 - present American Chemical Society.  
2006 Biophysical Society.

### Teaching Experience

1997 Series of lectures for junior graduate students on various methods and techniques of time resolved femtosecond spectroscopy at Lund University.  
2000 Graduate course on Photochemistry and Spectroscopy at Lund University.  
2001 Graduate Course on applications of lasers to spectroscopy within Lund Laser Center.  
2003-2004 Lectures on light scattering in biology for bioengineering class at UCSD

### Master Thesis Co-Advisor:

(1) Dakota Watson, La Jolla Bioengineering Institute, La Jolla, CA;

(2) Valeria Liverini, Dept. of Physics, Swiss Federal Institute of Technology, Zürich, Switzerland;

#### **Doctoral Thesis Co-Advisor:**

(1) Bing Shao, ECE Department, University of California, San Diego, CA

#### **Postdoctoral-Scholar Sponsor**

- (1) Dr. Lee Wey Yang, Harvard University.
- (2) Dr. Dora Toledo Warshaviak, Schrodinger Inc.
- (3) Dr. Jose Candelario, La Jolla Bioengineering Institute.
- (4) Dr. Srinivas Alla, UT MD Anderson Cancer Center.

#### **Academic Internship Advisor for UCSD undergraduate students:**

Sarah Widner, Kalli C. Catcott, Leah Clemmer, Michael Muellner, Hesam Tavakoli, Nicole Baumgartner, Francisca Ryani, Saurabh Rane, Nicholas Johnsen.

#### **Patents**

1. Methods and apparatus for sorting cells using an optical switch in a microfluidic channel network, United States 7,745,221, Issued on June, 2010.
2. Separation and manipulation of a chiral object, United States 7,935,906, Issued on May, 2011.
3. Methods and apparatus for sorting cells using an optical switch in a microfluidic channel network, United States 8,426,209, Issued on April, 2013.
4. Separation and manipulation of a chiral object, United States US 8,698,031, Issued 2014.
5. Methods and apparatus for optophoretic diagnosis of cells and particles, United States 20040067167, Filed on April, 2002.
6. Enhancing phoretic separation, United States 20090188800, Filed on January, 2009.
7. Moving a small object in a direction, United States 20090239281, Filed on March, 2009.
8. Enzymatic or organic catalytic chemical reactions, United States 20100120087, Filed on January, 2010.
9. Asymmetric systems, United States 20100190198, Filed on August, 2009.
10. Renewable energy extraction, United States 20120006027, Filed on July, 2011.
11. Skin perfusion monitoring device, PCT/us2014/068909, Filed on December, 2014.
12. Cutaneous blood flow monitoring device, United States 62162597, Filed on May, 2015.
13. Chiral separation and analysis by molecular propeller effect, United States, Filed on June 2015.
14. Skin perfusion monitoring device, Australia AU2014360173B2, Issued on August 15, 2019.

#### **List of Publications**

52 original peer-reviewed research papers. Multiple papers cited over 200 times.

1. Jonathon B. Clemens, Osman Kibar and **Mirianas Chachisvilis**, A molecular propeller effect for chiral separation and analysis, *Nature Commun.* 6:7868 (2015) doi: 10.1038/ncomms8868.
2. Chachisvilis M. Chiral Analysis, 2 ed. Polavarapu PL, editor. USA: Elsevier; 2018. Chapter 19, Chiral Analysis and Separation Using Molecular Rotation; p.753-778. 790p.
3. Y. Terazono, G. Kodis, **M. Chachisvilis**, B.R. Cherry, M. Fournier, A. Moore, T.A. Moore, and D. Gust, Multiporphyrin Arrays with  $\pi$ - $\pi$  Interchromophore Interactions, *JACS*, 137 (2015) 245-258.
4. J. Candelario and **M. Chachisvilis**, Activity of bradykinin B<sub>2</sub> receptor is regulated by long-chain polyunsaturated fatty acids, *PLoS ONE*, 8 (2013) e68151.

5. J. Candelario and **M. Chachisvilis**, Real time detection of G protein activation using monomolecular G $\gamma$  FRET sensors, *Journal of Receptors and Signal Transduction*, 33 (2013) 63-72.
6. J. Candelario, H. Tavakoli and **M. Chachisvilis**, PTH1 receptor is involved in mediating cellular response to long-chain polyunsaturated fatty acids, *PLoS ONE*, 7 (2012) e52583.
7. A. Srinivas Reddy, D. T. Warshaviak and **M. Chachisvilis**, Effect of Membrane Tension on the Physical Properties of DOPC Lipid Bilayer Membrane, *Biochimica et Biophysica Acta: Biomembranes*, 1818 (2012) 2271–2281.
8. J. Candelario and **M. Chachisvilis**, Mechanical stress stimulates conformational changes in 5-hydroxytryptamine receptor 1B in bone cells, *Cellular and Molecular Bioeng.* 5 (2012) 277-286.
9. D. T. Warshaviak, M. J. Muellner and **M. Chachisvilis**, Effect of membrane tension on the electric field and dipole potential of lipid bilayer membrane. *Biochimica et Biophysica Acta* 1808 (2011) 2608-2617.
10. V.Garg, G. Kodis, **M. Chachisvilis**, M. Hamburger, A.L. Moore, T.A. Moore, D. Gust, Conformationally constrained macrocyclic diporphyrin-fullerene artificial photosynthetic reaction center, *JACS*, 133 (2011) 2944-54.
11. Y.-L. Zhang, H. Tavakoli, and **M. Chachisvilis**, Apparent PKA Activity Responds to Intermittent Hypoxia in Bone Cells: A Redox Pathway? *Am. J. Physiol. Heart Circ. Physiol.* 299 (2010), H225-H235.
12. Y.-L. Zhang, J.A. Frangos and **M. Chachisvilis**, Mechanotransduction by membrane mediated activation of G protein coupled receptors and G proteins, Cellular Mechanotransduction, eds. M. Mofrad and R. Kamm, Cambridge University Press, 2009, 89-119.
13. Y.-L. Zhang, J.A. Frangos, and **M. Chachisvilis**, Mechanical stimulus alters conformation of type 1 parathyroid hormone receptor in bone cells, *Am J Physiol Cell Physiol* 296 (2009) C1391-1399.
14. **M. Chachisvilis**, Y.-L. Zhang, J.A. Frangos, G Protein-coupled Receptors Sense Fluid Shear Stress in Endothelial Cells, *Proc. Natl. Acad. Sci. USA*, 103 (2006) 15463-15468.
15. B. Shao, J.S. Jaffe, **M. Chachisvilis**, S. Esener, Angular resolved light scattering for discriminating among marine picoplankton: modeling and experimental measurements, *Optics Express*, 14 (2006) 12473-12484.
16. Y.-L. Zhang, J.A. Frangos, and **M. Chachisvilis**, Laurdan Fluorescence Senses Mechanical Strain in the Lipid Bilayer Membrane, *Biochem. Biophys. Res. Commun.* 347 (2006) 838-841.
17. R.A. Flynn, B. Shao, **M. Chachisvilis**, M. Ozkan, S.C. Esener, Counter-propagating optical trapping system for size and refractive index measurement of microparticles, *Biosensors & Bioelectronics* 21 (2006) 1029-1036.
18. R.A. Flynn, B. Shao, **M. Chachisvilis**, M. Ozkan, S.C. Esener, Two-beam optical traps: Refractive index and size measurements of microscale objects, *Biomedical Microdevices* 7 (2005) 93-97.
19. D. Watson, N.D. Hagen, J. Diver, P. Marchand, and **M. Chachisvilis**, Elastic light scattering from single cells: orientational dynamics in optical trap, *Biophysical Journal* 87 (2004) 1.
20. A. H. Forster, M. M. Wang, W. F. Butler, **M. Chachisvilis**, T. D.Y. Chung, Sadik C. Esener, J. M. Hall, O. Kibar, K. Lykstad, P. J. Marchand, E. M. Mercer, L. M. Pestana, S. Sur, E. Tu, R. Yang, H. Zhang, and I. Kariv, Use of moving optical gradient fields for analysis of apoptotic cellular responses in a chronic myeloid leukemia cell model, *Analytical Biochemistry* 327 (2004) 14.
21. H. Zhang, E. Tu, N. D. Hagen, C. A. Schnabel, M. J. Paliotti, W. S. Hoo, P. M. Nguyen, J. R. Kohrumel, W. F. Butler, **M. Chachisvilis**, and P. J. Marchand, Time-of-Flight Optophoresis Analysis of Live Whole Cells in Microfluidic Channels, *Biomedical Microdevices*, 6 (2004) 11.

22. M. M.-L. Grage, Y. Zaushitsyn, A. Yartsev, **M. Chachisvilis**, V. Sundström, and T. Pullerits, Ultrafast excitation energy transfer and trapping in a thin polymer film, *Phys. Review. B* 67 (2003) 205207.
23. M. M. Wang, C.A. Schnabel, **M. Chachisvilis**, R. Yang, M. J. Palioti, L. A. Simons, L. McMullin, N. Hagen, K. Lykstad, E. Tu, L. M. Pestana, S. Sur, H. Zhang, W. F. Butler, I. Kariv, and P. J. Marchand, Optical forces for noninvasive cellular analysis, *Applied Optics*, 42 (2003) 5765.
24. **M. Chachisvilis**, A.H. Zewail, Femtosecond dynamics of pyridine in the condensed phase: valence isomerization by conical intersections, *J. Phys. Chem. A* 103 (1999) 7408.
25. T. Fiebig, **M. Chachisvilis**, M.M. Manger, A. Douhal, I. Garcia-Ochoa, A. de La Hoz Ayuzo, A.H. Zewail, Femtosecond dynamics of double proton transfer in a model DNA base pair: 7-Azaindole dimers in the condensed phase, *J. Phys. Chem. A* 103 (1999) 7419.
26. A. Douhal, T. Fiebig, **M. Chachisvilis**, A.H. Zewail, Femtochemistry in nanocavities: Reactions in cyclodextrins, *J. Phys. Chem. A* 102 (1998) 1657.
27. **M. Chachisvilis**, I. Garcia-Ochoa, A. Douhal, A.H. Zewail, Femtochemistry in nanocavities: dissociation, recombination and vibrational cooling of iodine in cyclodextrin, *Chem. Phys. Lett.* 293 (1998) 153.
28. **M. Chachisvilis**, T. Fiebig, A. Douhal, A.H. Zewail, Femtosecond dynamics of a hydrogen-bonded model base pair in the condensed phase: Double proton transfer in 7-azaindole, *J. Phys. Chem. A* 102 (1998) 669.
29. J.S. Baskin, **M. Chachisvilis**, M. Gupta, A.H. Zewail, Femtosecond dynamics of solvation: Microscopic friction and coherent motion in dense fluids, *J. Phys. Chem. A* 102 (1998) 4158.
30. S. Jursenas, A. Gruodis, G. Kodis, **M. Chachisvilis**, V. Gulbinas, E.A. Silinsh, Free and self-trapped charge-transfer excitons in crystals of dipolar molecules of N,N-dimethylaminobenzylidene 1,3-indandione, *J. Phys. Chem. B* 102 (1998) 1086.
31. J.S. Baskin, M. Gupta, **M. Chachisvilis**, A.H. Zewail, Femtosecond dynamics of microscopic friction: nature of coherent versus diffusive motion from gas to liquid density, *Chem. Phys. Lett.* 275 (1997) 437.
32. **M. Chachisvilis**, O. Kuhn, T. Pullerits, V. Sundström, Excitons in photosynthetic purple bacteria: Wavelike motion or incoherent hopping? *J. Phys. Chem. B* 101 (1997) 7275.
33. **M. Chachisvilis** and V. Sundström, Femtosecond vibrational dynamics and relaxation in the core light-harvesting complex of photosynthetic purple bacteria, *Chem. Phys. Lett.* 261 (1996) 165.
34. **M. Chachisvilis**, V. Chervony, A. Shulga, B. Källebring, S. Larsson and V. Sundström, Spectral and Photophysical Properties of Ethylene-Bridged Side-to-Side Porphyrin Dimers. I. Ground State Absorption and Fluorescence Study and Calculation of Electronic Structure of tbis=OEP [trans-1,2-bis(meso-octaethylporphyrinyl)ethene], *J. Phys. Chem.* 100 (1996) 13857.
35. **M. Chachisvilis**, V. Chervony, A. Shulga, B. Källebring, S. Larsson and V. Sundström, Spectral and Photophysical Properties of Ethylene-Bridged Side-to-Side Porphyrin Dimers. II. Femtosecond Transient Absorption and Picosecond Fluorescence Study of tbis=OEP {trans-1,2-bis(meso-octaethylporphyrinyl)ethene}, *J. Phys. Chem.* 100 (1996) 13867.
36. T. Pullerits, **M. Chachisvilis**, and V. Sundström, Exciton delocalization length in the B850 antenna of Rhodobacter Sphaeroides, *J. Phys. Chem.* 100 (1996) 10787.
37. **M. Chachisvilis**, T. Pullerits, W. Westerhuis, C. N. Hunter, V. Sundström, Elementary Excitation in Photosynthetic Purple Bacteria: How Big Is It? *Springer Series in Chemical Physics*, 62 (1996) 314-315.
38. **M. Chachisvilis** and V. Sundström, The tunneling contributions to optical coherence in femtosecond pump-probe spectroscopy of a three level system. *J. Chem. Phys.* 104, (1996) 5734.

39. V. Gulbinas, **M. Chachisvilis**, L. Valkunas and V. Sundström, Excited state dynamics of phthalocyanine films. *J. Phys. Chem.* 100 (1996) 2213.
40. V. S. Chirvony, **M. Chachisvilis**, A. M. Shulga, B. Källebring, S. Larsson, V. Sundström, First Example of Ultrafast Photoisomerisation-Like Photophysics for Tetrapyrrol Systems: Ethylene-Bridged Porphyrin Dimers, *Springer Series in Chemical Physics* 62 (1996) 264-265.
41. S. Hess, **M. Chachisvilis**, K. Timpmann, M.R. Jones, G.J. Fowler, C.N. Hunter and V. Sundström, Temporally and spectrally resolved subpicosecond energy transfer within the peripheral antenna complex (LH2) and from LH2 to the core antenna complex in photosynthetic purple bacteria. *Proc. Natl. Acad. Sci. USA*, 92 (1995) 12333, PMID: PMC40351.
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43. **M. Chachisvilis**, H. Fidder and V. Sundström, Electronic coherence in pseudo two-colour pump-probe spectroscopy, *Chem. Phys. Lett.* 234 (1995) 141.
44. T. Pullerits, **M. Chachisvilis**, I. Fedchenia, M.R. Jones, C.N. Hunter, S. Larsson and V. Sundström, Coherent versus incoherent energy transfer in the light harvesting complexes of photosynthetic bacteria, *Lithuanian J. of Physics*, 34 (1994) 329.
45. V. Gulbinas, **M. Chachisvilis**, A. Persson, S. Svanberg and V. Sundström, Ultrafast excitation relaxation in colloidal particles of chloroaluminum phthalocyanine: one-dimensional exciton-exciton annihilation. *J. Phys. Chem.* 98 (1994) 8118.
46. V. Gulbinas, V. Sundström and **M. Chachisvilis**, Ultrafast excitation relaxation in metallophthalocyanines, *Lithuanian J. of Physics*, 34 (1994) 52.
47. S. Juršėnas, A. Gruodis, G. Kodis, **M. Chachisvilis**, and L. Valkūnas. Optical properties of polar molecular compounds derivatives of dimethylaminebenzylidene 1,3-indandione (DMABI). *Lithuanian J. of Physics*, 34 (1994) 361.
48. V. Gulbinas, **M. Chachisvilis**, L. Valkūnas, E. Gaižauskas, and V. Sundström. Temporal oscillations in femtosecond pump-probe spectroscopy. *Lithuanian J. of Physics*, 34 (1994) 67.
49. T. Pullerits, **M. Chachisvilis**, M.R. Jones, C.N. Hunter, and V. Sundström, Exciton dynamics in the light-harvesting complexes of *Rhodobacter sphaeroides*. *Chem. Phys. Lett.* 224 (1994) 355.
50. **M. Chachisvilis**, T. Pullerits, M.R. Jones, C.N. Hunter, and V. Sundström, Vibrational dynamics in the light-harvesting complexes of the photosynthetic bacterium *Rhodobacter sphaeroides*. *Chem. Phys. Lett.* 224 (1994) 345.
51. V. Kopp, I. Mochalov, A. Mikhailov and **M. Chachisvilis**, Interference of two-photon and Raman resonances in KGd (WO<sub>4</sub>)<sub>2</sub> Nd<sup>3+</sup> crystals. *Sov. Optics and Spectroscopy*, 5 (1991) 950.
52. V. Ivaska, M. Zilinskas and **M. Chachisvilis**, Investigation of magnetic field distribution in the transition: superconductor-ferromagnetic. *Lithuanian J. of Phys.* 29 (1989) 310.

## References

Available upon request.