**Curriculum Vitae**

Dariya Malyarenko
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**Education**

- Ph.D. in Applied Science, The College of William and Mary, 1998-2001
- M.S. in Polymer Science, The College of William and Mary, 1996-1998
- B.S. (Honors) Engineer-Physicist. Molecular Physics Major. Minors: Physics Teacher and Reviewer-Translator, Kiev State Taras Shevchenko University, 1989-1994

**Additional Training and Expertise**

- Solid state NMR lab administration (2 years): operation and maintenance of home-built 300 MHz and 150 MHz spectrometers (cryogenics upkeep, tuning, troubleshooting, repair, user training)
- UNIX workstation administration (2 years): 3-workstation subnetwork administration (software installation, system upgrade, and support for 10 users)
- Computational programming in C (4 years): NMR data simulation using numerical methods; data base systems (relational model, OCI, SQL) and computational physics programming course work
- Maple, PVWAVE, Matlab (3 years): data visualization and programming, data processing
- Biochemistry and Patent Law: optional course work
- Peptide mass spectrometry (1 year): substrate preparation and acquisition of TOF-SIMS data for calibration peptides, signal processing and linear discriminant classification of SELDI MS data.

**Employment**

- Technical Project Lead - NIH SBIR Phase I: INCOGEN Inc., College of William and Mary, and Eastern Virginia Medical School (April 2003 - October 2003)
- CTRF Post Doctoral Researcher - joint position at the College of William and Mary and INCOGEN, Inc. (March 2002-present)
- Post Doctoral Research Fellow - Solid State NMR, The College of William and Mary, Williamsburg, VA (September 2001- February 2002)
- Research Assistant - Solid State NMR, The College of William and Mary, Williamsburg, VA (August 1996 - August 2001)
- Engineer Physicist - Physics of Liquids Lab, Kiev University, Ukraine (August 1994 - July 1996)
- Associate Translator - scientific literature (Ukrainian-English-Russian), "Svitanok" Translation Department, Kiev, Ukraine (January 1993- July 1996)

**Research Projects**

- *SELDI Proteomics Signal Processing and Quality Control* - target filter design and implementation for SELDI proteomics data (CTRF, Williamsburg, VA)
- *Proteomics Software for Cancer Diagnostics* - coordinator of technical collaboration between W&M, INCOGEN and EVMS; software development for SELDI data analysis and classification;

interim and final reports, and technical parts for two pending NIH (SBIR Phase II and BRP) proposals (INCOGEN, Inc., Williamsburg, VA);

- *Ga+ TOF-SIMS Analysis for MS Calibration Peptides* - analysis of measured lineshapes, adducts, and fragmentation patterns for MS calibration peptides on different substrates; SELDI chip imaging for pooled serum samples (Applied Research Center, Newport News, VA)
- *Dipolar Interaction Characterization for Nitride Films* - CN REAPDOR data acquisition and analysis (College of W&M, Williamsburg, VA)
- *Dynamics and Conformation of Polycrystalline Cyclic Dipeptides from 2H NMR and CN-REDOR* - REDOR Data Acquisition and Analysis Optimization (College of W&M, williamsburg, VA)
- *Solid State NMR Characterization of Structural and Motional Parameter Distributions in PAMAM Dendrimer Salts* (Ph.D. Dissertation, College of W&M, Williamsburg, VA)
- *Fluctuation Kinetics in Methanol-Hexane Binary Mixture Near the Critical Exfoliation Point Under Gravity* (Diploma of Specialist (M.S.), Kiev State Taras Shevchenko University, Kiev, Ukraine)
- *The Study of Sol-Gel Transition Kinetics using Photo-Correlation Spectroscopy* (Undergraduate Thesis, Kiev State Taras Shevchenko University, Kiev, Ukraine)

**Research Interests**

- Time series analysis, filtering and classification of spectroscopic data for cancer profiling proteomics: software development for automatic detection and characterization of random and coherent noise in time series; noise filtering and resolution enhancement; peak detection and selection of optimum classification subset.
- Influence of molecular motion on the structural parameters measured by NMR: design of solid state NMR experimental for simultaneous characterization of motional geometry and rates, and dipolar couplings in isotopically labeled peptides; calculation of correction factors for measured distances according to relevant motional models.
- Functional NMR and MS: determination of structure-function relation for organic and biological polymers.

**Refereed Papers**

"Ga+ TOF-SIMS Lineshape Analysis for Resolution Enhancement of MALDI MS Spectra of a Peptide Mixture" Sept. 2003 *SIMS XIV Conf. Proc.*, 2004 in press (Malyarenko, D. I., Chen, H., Wilkerson, A.L., Tracy, E.R., Cooke, W.E., Manos, D.M., Sasinowski, M., Semmes, O.J.)

"A 13C NMR Spectroscopic Study of Hard and Elastic Amorphous Carbon Nitride Thin Films", *Phys. Rev. B*, 2002, 66, p.153402 (Gammon W.J., Malyarenko D.I., Kraft O., Hoatson G.L., Reilly A.C., and Holloway B.C.)

"Quantitative Characterization of Librational Rate Distributions for G2 PAMAM Dendrimer Salt from Deuteron Magic Angle Spinning Spectra", *Macromol.*, 2001, 34(22),p.7911 (Malyarenko D.I., Vold R.L., Hoatson G.L.)

"Solid State NMR Study of Polyamidoammonium Dendrimer Salts. 2. Relaxation and Molecular Motion", *Macromol.*, 2000, 33(20), p.7508 (Malyarenko D.I., Vold R.L., Hoatson G.L.)

"Solid State NMR Study of Polyamidoammonium Dendrimer Salts. 1. Structure and Hydrogen Bonding", *Macromol.*, 2000, 33(4), p.1268 (Malyarenko D.I., Vold R.L., Hoatson G.L.)

"Relaxation Times for Inhomogeneous Solution under Gravity near the Critical Exfoliation Point", *Ukr. J. Phys.*,1997, 42, p.314 (in Ukrainian, Alekhin A. D., Malyarenko D. I., Ostapchuk Yu. L.)

"Studying Mass-Transfer Velocity and Viscosity of a Nonhomogeneous Binary Mixture near the Exfoliation Critical Temperature", *Ukr. J. Phys.*, 1996, 41, p.193 (in Ukrainian, Alekhin A.D., Bulavin L.A., Malyarenko D.I., Shvydka D.B.)

**Other Papers**

"NIH SBIR Phase I Final Report", *INCOGEN Internal Report 11-31-03* (Malyarenko, D., Tracy, E., Trosset, M., Chen, H., Sasinowski, M.) Nov. 2003, pp.60

"Bioinformatics Platform for Bioengengineering Research Partnership", *NIH BRP proposal, Preliminary Studies and Rationale* (Malyarenko D., Miller K., Cooke, W., Chen, H.) Aug. 2003, item C, pp. 12 (pending)

"Proteomics Software for Cancer Diagnostics", *NIH SBIR Phase II proposal, Research Plan* (Malyarenko, D., Miller, K., Sasinowski, M., Manos, D., Trosset, M.) Aug. 2003, items A-D, pp.25 (pending: $2,000,000; rated fundable by reviewers)

"A Method of Time-Domain Filtering and Deconvolution of Overlapped Spectral Records in the Presense of Noise", *Provisional Patent Application, WM03-04* (Malyarenko, D. and Manos, D.) Sept. 2003, pp.27

"Analysis and Filtering of Hardware Noise (Non-Biological Intensity Variations) in SELDI TOF MS Data", *INCOGEN, W&M and EVMS Proprietery Technical Summary* (Malyarenko, D. and Manos, D.) Jul. 2003, pp.14

"Proteomics Software for Cancer Diagnostics", *NIH SBIR Phase I proposal, Research Plan* (Malyarenko, D., Sasinowska H., Manos, D., Sasinowski, M.) Aug. 2002, items a-d, pp.15 (funded: $188,000)

"REDOR-How-Tos", *User Manual for Tripple Resonance Experiments on NTNMR Tecmag Spectrometer in W&M Solid State NMR Laboratory*, Jan. 2002

"Solid State Deuteron NMR Studies of Structure and Hydrogen Bonding in Polyamidoamine Dendrimer Salts", preprint *Polym. Mat. Sci. Eng.*, (Malyarenko, D., Vold, R., Hoatson,G.) v.82, 2000, p.165-166

"Solid State Deuteron NMR Studies of Relaxation and Motion in Polyamidoammonium Chloride Dendrimers", preprint *Polym. Mat. Sci. Eng.*, (Malyarenko, D., Vold, R., Hoatson,G.) v.82, 2000, p.157-158

**Conference Presentations**

AVS 50th – contributed poster: *"The Systematic Study of Ga+ TOF-SIMS High Mass Molecular Ion Registration, Composition and Fragmentation of Selected Peptide Hormones on Silver Substrate"* (Baltimore, MD, November 2003)

SIMS XIV – contributed poster: *"Ga+ TOF-SIMS Lineshape Analysis for Resolution Enhancement of MALDI MS Spectra of a Peptide Mixture"* (San Diego, CA, September 2003)

CTRF Bioinformatics Workshop 2 – invited talk: *"Signal Processing for Clinical Applications of Mass Spectrometry"* (Blacksburg, VA, December 2002);

CTRF Bioinformatics Workshop 1 - invited talk: *"SELDI MS: Technique and Data Analysis. Approach for Cancer Diagnosis"* (Williamsburg, VA, May 2002);

RMC'2000 – contributed poster: *"Deuteron NMR Studies of Rates and Activation Energies of Intramolecular Motion in Polyamidoammonium Chloride Dendrimers"* (Broomfield, CO, 2000; RMC travel stipend recipient);

ACS National Meeting'2000 - co-author for two invited presentations: *"Solid State Deuteron NMR Studies of Structure and Hydrogen Bonding in Polyamidoamine Dendrimer salts and Solid State Deuteron NMR Studies of Relaxation and Motion in Polyamidoammonium Chloride Dendrimers"* (San Francisco, CA, 2000);

40th ENC'99–contributed poster: *"Structure and Dynamics of Deuterated PAMAM Dendrimers"* (Orlando, Fl, 1999);

39th ENC'98–contributed poster: *"2H NMR Spectra of PAMAM Dendrimer Salts"* (Monterey, CA, 1998; ENC travel stipend recipient);

International Liquid State Conference – contributed poster: *"The Particularities of Movement of Binary Mixture Components Near the Critical Exfoliation Point Under Gravity"* (Lviv, Ukraine, 1996);

4th Asian Thermophysical Properties Conference – contributed poster: *"The Particularities of Mass Transfer of Binary Mixture Components in Supercritical Exfoliation Range"* (Tokyo, Japan, 1995);

International Conference on Supercritical Fluid Extraction – contributed poster: *"The Velocity of Mass Transfer of Binary Mixture Components in Supercritical Exfoliation Range"* (Makhachkala, Russia,1995);