

## Michael A. Waxman (Vaksman)

E-mail: mwaxman@uwsuper.edu

### PERSONAL DATA

Age: 59

Marital Status: Married to Sophia M. Waxman

Children: Marina Vaksman, aged 34, and Alex Waxman, aged 18  
in the US: US Citizen

### EDUCATION

1992-93 Department of Chemistry, TEXAS A&M UNIVERSITY, College Station, Texas.  
Post-doctoral training in Physical Chemistry.

1990-92 School of Chemistry, TEL-AVIV UNIVERSITY, Tel-Aviv, Israel.  
Ph.D. in Chemistry, 1993.

1975-80 NOVOSIBIRSK ELECTRIC ENGINEERING INSTITUTE, Novosibirsk, USSR.  
Department of Engineering Physics. M.S. in Physical Electronics and Lasers.  
(**Diploma with honors**, 1980)

1972-75 MOSCOW UNIVERSITY, Moscow, USSR  
Mathematics (graduated **with highest honors**).  
High School, Specialization in Science and English (graduated **with highest honors - gold medal**).

### PROFESSIONAL EXPERIENCE

1997- present DEPARTMENT OF CHEMISTRY, UNIVERSITY OF WISCONSIN-SUPERIOR  
**Assistant Professor**(1997-99); **Associate Professor**(1999-2004); **Professor of Chemistry**(2004- ).  
*Courses to teach:* Physical Chemistry, Physical Chemistry Lab, Advanced Topics, General Chemistry, Elements and the Environment, Physics, and Senior Seminar in Chemistry. *Other duties:* development of a novel curriculum in Physical Chemistry using the current research topics of the instructor; modernization of the Physical Chemistry Lab (introduction of lasers into the lab curriculum); supervision of undergraduate research in Physical Chemistry; creating and advising the Science Club and participating in its activities; service in the University Committee on Academic Conduct, International Student, in the Assessment and the Day Care Advisory Committees, IRB, and in EMR and Faculty Development and Sabbatical Committees; proposing and moderating Faculty noon seminar series.

1993-1997 DEPARTMENT OF CHEMISTRY, UNIVERSITY OF DETROIT MERCY  
**Assistant Professor.** *Courses to teach:* undergraduate and graduate Physical Chemistry,

Majors, Analytical Chemistry. *Other duties:* development of a novel curriculum in Physical Chemistry using multi-media tools; modernization of the General Chemistry Lab and the Physical Chemistry Lab (experiment on the Liquid Chromatography With the Computerized Laser-Based Detection System etc.); research in Physical Chemistry, supervision of undergraduate research; student advising. *Committee Service:* College Committees- Computers and Instructional Technology, Committee for the Math Curriculum Revision, and the Seed Grants Committee; Departmental Committees - Dow Lectures, Curriculum (Chair), Computers (Chair), Instrumentation, Building and Safety.

1992- DEPARTMENT OF CHEMISTRY, TEXAS A&M UNIVERSITY  
1993 COLLEGE STATION, TEXAS

**Research Associate.** Computer and analytical studies in laser spectroscopy, photochemistry, surface science and gas kinetics, as well as in polymer dynamics. Have predicted *a novel kinetic phenomenon - Mixed light-induced drift (MLID)*. Computer modeling of the dynamics of polymer thin films. Programming in FORTRAN and C.

1990 - 92 SCHOOL OF CHEMISTRY, TEL-AVIV UNIVERSITY, ISRAEL

**Research Assistant and Advanced Ph.D. Student.** Studies in laser spectroscopy, photochemistry, surface science, and gas kinetics.

1980 -90 NOVOSIBIRSK UNIVERSITY, NOVOSIBIRSK REGIONAL SYSTEM OF PUBLIC  
(part-time) EDUCATION, NOVOSIBIRSK, USSR

Teaching Physical Chemistry and Physics (Mechanics, Optics, Electricity and Magnetism, Thermophysics, and Quantum Mechanics).

1985 - 90 SIBERIAN POWER RESEARCH INSTITUTE, NOVOSIBIRSK, USSR

**Research Associate.** Duties included: Computer choice of optimal parameters for a powder pyropress. Job required solving systems of equations describing kinetics of the powder combustion which results in a matrix acceleration and pressing of wires.

(b) Search for prospective directions for further activity of the group.

1980 - 84 INSTITUTE FOR AUTOMATICS & ELECTROMETRY,

Siberian Branch of the Soviet Academy of Sciences, NOVOSIBIRSK, USSR

**Research Assistant.** Studies in laser spectroscopy, photochemistry, surface science, and gas kinetics (theory and computation). Have predicted *several novel kinetic phenomena*.

## HONORS AND AWARDS

1999 Gustav Ohaus Award for Innovation in College Science Teaching. - Presented by the National Science Teachers Association.

2001 Annual Award for Excellence in Research, University of Wisconsin - Superior.

2005 Annual Award for Excellence in Scholarship, University of Wisconsin - Superior.

**PROPOSALS AND GRANTS**

<u>Title</u>	<u>Agency</u>	<u>Amount</u>	<u>Status</u>
Thermal/Fluid Sciences Knowledge Area Development (with 2 co-PIs)	NSF	\$243,780	Funded (1995-97)
Dynamics of phase separation in polymer thin films	FGIP Research Grant (University of Detroit-Mercy)	\$3,000	Funded (1995-97)
Studying the Anisotropy of Gas-Surface Scattering by Surface Light-Induced Drift	Research Corporation	\$29,000	Funded (1999-03)
Integrating Mathematics and Science Through Mathematical Modeling, CBL Experimentation, and Student On-line Collaborative Projects (with Dr. James W. Lane)	University of Wisconsin System	\$41,019	Funded (1999-00)
Lab modernization proposal for the purchase of a computer projection system (with Dr. James W. Lane)	University of Wisconsin System	\$6490	Funded (2000)
Studying surface light-induced drift and a new drift mechanism	Petroleum Research Fund of the American		Funded (2003-06)

in various systems	Chemical Society	\$50,000	
Lab modernization proposal for the purchase of a modern polarimeter (with Dr. James W. Lane)	University of Wisconsin System	\$13,800	Funded (2005)
Enhancement of heat dissipation in non-pneumatic tires	American Science and Technology, Chicago, IL	\$28,805	Funded (2007)

In 2008-2015 working on the UWS research team studying the biofuels made of northern plants and later the properties of one of these plants (highbush cranberry). Funding provided by the Army Research Lab under Agreement # W911NF-08-2-0029 and later by WiSYS.

**Michael A. Waxman (Vaksman)**

**LIST OF PUBLICATIONS**

1. M.A. Vaksman and A.V. Ghiner  
Formation of axial particle density gradient by laser-induced photodissociation of gases. Sov. Phys.-Tech. Phys. (USA) **26**, #12, pp. 1528-1529 (1981).
2. I.M. Beterov, M.A. Vaksman, Ya.G. Epelbaum, and N.I. Yurshina  
Steady-state saturated photodissociation of bromine molecules in an argon laser radiation field. Sov. J. Quantum Electron. (USA) **12**, #1, pp. 42-27 (1982).
3. M.A. Vaksman  
Saturated laser photodissociation of a gas of diatomic molecules. Opt. & Spectrosc. (USA) **53**, pp. 154-157 (1982).
4. M.A. Vaksman and A.V. Ghiner  
Formation of longitudinal particle density gradient in velocity-selective laser photodissociation. Sov. J. Quantum Electron. (USA) **12**, #5, pp. 570-573 (1982).
5. A.V. Ghiner and M.A. Vaksman  
The increase of the longitudinal gradient of particle concentration under velocity-selective photodissociation by laser. Opt. Commun. **41**, #4, pp. 263-267 (1982).
6. M.A. Vaksman and A.V. Ghiner  
Sound emission and Raman scattering in a gas during velocity-selective optical excitation. Sov. Tech. Phys. Lett. (USA) **9**, pp. 504-505 (1983).
7. A.V. Ghiner, M.I. Stockmann, and M.A. Vaksman  
Surface light-induced drift of the rarefied gas. Phys. Lett. (Elsevier, Netherlands) **96A**, #2, pp. 79-82 (1983).
8. M.A. Vaksman  
Gas drifting caused by velocity-dependent excitation. Sov. Phys. Tech. Phys. (USA) **29**, pp. 681-682 (1984).
9. A.V. Ghiner and M.A. Vaksman  
Change in near-the-surface state of gas under velocity-selective excitation. Phys. Lett. (Elsevier, Netherlands) **100A**, #8, pp. 428-432 (1984).
10. M.A. Vaksman  
Light-induced gas drift as a method for studying the scattering of particles by a surface. Phys. Chem. & Mech. Surf. (Great Britain) **3**, pp. 3222-3228 (1985).

11. M.A. Vaksman and A.V. Ghiner  
Theoretical analysis of the motion of a dense gas which interacts with a wall during velocity-selective excitation.  
  
Sov. Phys. - JETP (USA) **62**, pp. 23-29 (1985).
12. M.A. Vaksman and A.N. Kiselev  
Computer choice of optimal parameters for a powder pyro-press and its design. Oral Presentation at the All-Union Conference on Progress in Power Research.- Novosibirsk, 1989.
13. M.A. Vaksman  
Influence of resonance exchange during velocity-selective excitation of a gas. Phys. Rev. **A 44**, # 5, pp. 3125-3129 (1991).
14. M.A. Vaksman  
Surface light-induced drift caused by roughness.  
Phys. Rev. **A 44**, # 7, pp. R4102-R4105 (1991) [Rapid Communication].
15. M.A. Vaksman and A. Ben-Reuven  
Surface light-induced drift affected by chemical reactions. Phys. Rev. **A 45**, #11, pp. 7883-7886 (1992).
16. M.A. Vaksman and A. Ben-Reuven  
Surface light-induced drift as a tool to study gas-surface interactions. - Talk at the 12th International Vacuum Congress/8th International Conference on Solid Surfaces, October 12-16, 1992, The Hague, Netherlands. - Surface Science **287/288**, pp.196-200 (1993).
17. M.A. Vaksman  
Surface-induced pressure gradient formation in a gas mixture.  
Phys. Rev. **A 48**, #1, pp. R26-R29 (1993) [Rapid Communication].
18. M.A. Vaksman and W.E. McMullen.  
Phase separation dynamics of model thin films.  
Phys. Rev. **E 49**, #5, pp. 4724-4727 (1994).
19. M.A. Vaksman  
Surface light-induced drift in porous media.  
Phys. Rev. **A 52**, #3, pp. 2179-2184 (1995).
20. M.A. Vaksman and Isabela Podgorski  
Surface light-induced flux magnitude at low radiation intensities.- Canadian Journal of Physics **74**, pp. 251-254 (1996).

21. A.V. Ghiner and M.A. Vaksman  
The problem of stability of stationary states and H-theorem analogy for molecular gases under velocity-selective excitation. - in:  
*Coherence and Quantum Optics VII*, edited by J. Eberly, L. Mandel, and E. Wolf.-Plenum Press, N.Y.-London, 1996, pp. 659-660.
  
22. M.A. Vaksman  
Surface light-induced drift in porous media. -in: *Coherence and Quantum Optics VII*. edited by J. Eberly, L. Mandel, and E. Wolf.- Plenum Press, N.Y.-London, 1996, pp. 629-630.
  
23. A.V. Ghiner and M.A. Vaksman  
Stationary states and their stability for molecular gases under velocity-selective excitation. *Phys. Rev.* **A54**, #4, pp. 3270 - 3275 (1996).
  
24. M.A. Vaksman  
The study of anisotropy of gas-surface scattering using Surface light-induced drift. *Chemical Physics Letters* (Elsevier, Netherlands) **267**, pp. 77-81 (1997).
  
25. M.A. Vaksman  
Surface Light-Induced Drift. - In: "Computational Studies of New Materials", edited by T.F. George and Dan Jelski, Chap. XI, pp. 295-333. World Scientific Publishing Company (Singapore, 1999), ISBN 981-02-3325-6.
  
26. M.A. Vaksman  
Light-Induced "Worm" in the Undergraduate Physical Chemistry. *The Chemical Educator* (Springer-Verlag, New York) **4**, no. 1 (1999).
  
27. M.A. Vaksman and Justin L. Dahl  
Surface Light-Induced Drift Arising due to Anisotropic Gas-Surface Scattering in the Models With And Without Boundary Conditions. *Canadian Journal of Physics* **77**, no. 2, pp. 145-155 (1999).
  
28. A.D. Streater and M.A. Vaksman  
Surface Light-Induced Drift Resulting from Inelastic Scattering. *Canadian Journal of Physics* **78**, no. 4, pp. 285-291 (2000).
  
29. M.H. Towns, D. Sauder, G. Long, M. Kahlow, K. Marden, R. Stout, M.A. Waxman, and T.J. Zielinski  
Interinstitutional Peer Review on the Internet: Crossing Boundaries - Electronically- in a StudentRefereed Assignment. *Journal of College Science Teaching* **30**, no. 4, pp. 256-260 (2001).

30. M.A. Vaksman  
Exploring Light Amplification by Stimulated Emission in Lasers.  
Journal of Chemical Education (*Section: Mathcad in the Chemistry Curriculum*) **78**, no. 2, p. 271 (2001).
31. M.A. Vaksman and J.W. Lane  
Using Guided Inquiry to Study Optical Activity and Optical Rotatory Dispersion in a CrossDisciplinary Chemistry Lab.  
Journal of Chemical Education (*Section: In the Laboratory*) **78**, no. 11, pp. 1507-1509 (2001) .
32. Michael A.Waxman, Tyler Morgus, and Alan D. Streater  
Flux measurements of alkali atoms diffusing via multiple surface scattering in a silanated glass tube.  
Journal of Physics B: Atomic, Molecular and Optical Physics **35**, no. 20, pp. 4125-4138 (2002).
33. Michael A.Waxman (Vaksman)  
New mechanism of the gas drift occurring in presence of an evanescent wave.  
Phys. Lett. **A 315**, no. 3-4, pp. 194-198 (2003) .
34. Michael A.Waxman (Vaksman)  
New mechanism of the gas drift near a magnetized surface.  
Chem. Phys. Lett. **383**, no. 1-2, pp. 35-39 (2004).
35. Nader Enayati, James W. Lane, and Michael Waxman  
Biofuels: A Promise or a Glitch. An assessment of biofuels production. -  
Presented at the 2007 CAET Alternative Energy Symposium, Chicago, IL, August 9-10, 2007.
36. Michael A.Waxman  
Helping Students to Grasp the Formula for Centripetal Acceleration. - Journal  
of College Science Teaching **39**, no. 2, p. 8 (2009).
37. Michael A.Waxman  
Exploring Rotations Due to Radiation Pressure: 2D to 3D Transition Is Interesting! - The  
Physics Teacher **48**, no. 1, p. 30 (2010).
38. Michael A.Waxman  
Using physics to investigate blood flow in arteries: A case study for pre-med students. - American  
Journal of Physics **78**, no. 9, pp. 970-973 (2010).
39. James W. Lane, Paul Hlina, Kurt Hukriede, Adam Jersett, Damodar Koirala, Aaron Stewart,  
and Michael A.Waxman



Probing Wisconsin Highbush Cranberry (*V. Trilobum*), Dotted Horsemint (*M. Punctata*), and American Hazelnut (*C. Americana*) as Potential Biodiesel Feedstocks. - *Industrial Crops and Products* **36**, n. 1, pp. 531-535 (2012).

40. James W. Lane, Kurt Hukriede, Adam Jersett, Damodar Koirala, Dan Levings, Aaron Stewart, and Michael A. Waxman  
Synthesis And Characterization Of New Biodiesels Derived From Oils Of Plants Growing In Northern Wisconsin And Minnesota. - *Journal of the American Oil Chemists Society* **89**, n. 4, pp. 721-725 (2012).
41. Donghua Zuo, James W. Lane, Dan Culy, Michael Schultz, Allison Pullar, and Michael A. Waxman  
Sulfonic acid functionalized mesoporous SBA-15 catalysts for biodiesel production. - *Applied Catalysis B: Environmental* **129**, pp. 342-350 (2013).
42. Michael A. Waxman  
Reinforcing Harmonic Oscillators in Electrostatics. – *Physics Education* **32**, issue 1, pp. 1 - 4 (2016).
43. Michael A. Waxman

Raising Personal Interactions And Feedback In Distance-Learning Introductory And Advanced Science Classes. – In: *Proceedings of the 32nd Distance Teaching and Learning Conference*, August 9-11, 2016, Madison, WI, p. 232.

#### **CHAired SESSIONS AT CONFERENCES/MEETINGS**

- (i) ACS Fall Scientific Meeting "Chemistry's Image in Society", October 26, 1996, Delta College, Midland, Michigan - Symposium Chair.
- (ii) Biofuels and Energy Independence Symposium (BEIS 2009), September 3, 2009, Superior, WI.
- (iii) Biofuels and Energy Independence Symposium (BEIS 2010), September 2, 2010, Superior, WI.

#### **PRESENTATIONS**

- (i) M.A. Vaksman and A. Ben-Reuven  
Surface light-induced drift as a tool to study gas-surface interactions. - Talk at the 12th International Vacuum Congress/8th International Conference on Solid Surfaces, October 12-16, 1992, The Hague, Netherlands.
- (ii) M.A. Vaksman  
Some recent results on surface light-induced drift. - Molecular Physics and Quantum Optics Seminar at Huygens Laboratory, October 16, 1992 Leiden University, Leiden, The Netherlands.
- (iii) M.A. Vaksman  
Surface light-induced drift.- Talk at the Southwest Theoretical Chemistry Conference, November 13-14, 1992, College Station, Texas.
- (iv) M.A. Vaksman  
Dynamics of spinodal decomposition in polymer thin films. -  
Talk at "Progress in Chemistry" Symposium, September 13-14, 1993, College Station, Texas.
- (v) M.A. Vaksman  
Surface light-induced drift. -  
Invited talk at Physical Chemistry Seminar, February 16, 1995, University of Michigan, Ann Arbor, Michigan.
- (vi) M.A. Vaksman  
Surface light-induced drift in porous media. -  
Report at the 7-th Rochester Conference on Coherence and Quantum Optics, June 7-10, 1995. Rochester, New York.
- (vii) M.A. Vaksman and A.V. Ghiner  
The problem of stability of stationary states and H-theorem analogy for molecular gases under velocity-selective excitation. -  
Report at the 7-th Rochester Conference on Coherence and Quantum Optics, June 7-10, 1995. Rochester, New York.
- (viii) M.A. Vaksman  
Surface light-induced drift: theory and prospects for experiments. -  
Invited talk at Physics Seminar, June 12, 1995, Lehigh University, Bethlehem, Pennsylvania.
- (ix) M. Schumack and M.A. Vaksman  
Main features of the thermodynamics curriculum development using the multimedia tools. - Report at the Regional Conference on Multimedia Curriculum Development, September 14, 1995. Detroit, Michigan.
- (x) M.A. Vaksman

Using Surface light-induced drift to study porous media. -

Report at the 51-st ACS Fall Scientific Meeting "Materials For Emerging Technologies", November 4, 1995, Delta College, Midland, Michigan.

- (xi) Ginger Musolf and M.A. Vaksman  
Light-induced "worm": idea, approach, algorithm. -  
Report at the 1996 Great Lakes College Chemistry Conference, March 16, 1996, Michigan State University, Lansing, Michigan.
- (xii) M.A. Vaksman and Isabela Podgorski  
Surface light-induced flux magnitude at different radiation intensities.-  
Report at the Gordon Research Conference on Atomic and Molecular Interactions, June 30 - July 5, 1996, New London, New Hampshire.
- (xiii) M.A. Vaksman  
The study of anisotropy of gas-surface scattering using Surface light-induced drift.-  
Talk at the ACS Fall Scientific Meeting "Chemistry's Image in Society", October 26, 1996, Delta College, Midland, Michigan.
- (xiv) M.A. Vaksman and M. Schumack  
Thermodynamics curriculum development for engineering using multimedia tools.- Presented at the ACS National Meeting, April 13-17, 1997, San Francisco, California.
- (xv) M.A. Vaksman and F. Burovich  
Two approaches to study surface light-induced drift arising from angular-dependent scattering.- Presented at the ACS National Meeting, April 13-17, 1997, San Francisco, California.
- (xvi) K. Belfield, S. Das, M. Schumack, and M.A. Vaksman  
Development and Implementation of the Thermophysics Knowledge Area for the Greenfield Coalition for New Manufacturing Engineering Education. Presented at the International Conference on Engineering Education '97, August 1997, Chicago, Illinois.
- (xvii) Mark Schumack, Michael Vaksman, Shuvra Das, Kevin Belfield, Mukasa Ssemakula, Richard Pryor, Vladimir Sheyman, and William W. Schultz; 'Thermophysics for Manufacturing Engineers: A Nontraditional Approach' Proceedings, 1997 Annual Conference of American Society of Electrical Engineering, June 15-19, 1997, Milwaukee, WI.
- (xviii) M.A. Vaksman  
Using Surface Light-Induced Drift to Study Gas-Surface Interaction.  
Invited talk at the Chemistry Seminar at the University of Minnesota-Duluth, September 12, 1997, Duluth, Minnesota.
- (xix) M.A. Vaksman  
Surface Light-Induced Drift and Demons (Pre-Halloween Story).  
Talk at the Chemistry Seminar, University of Wisconsin-Superior, September 29, 1997.

- (xx) M.A. Vaksman  
Teaching material-balance equation and Beer-Lambert law through applications of light-induced “worm”.  
Presented at the Gordon Research Conference “Innovations In College Chemistry Teaching”, January 4 - 8, 1998, Ventura, California.
- (xxi) M.A. Vaksman  
Using WWW for cooperative learning in Northern Wisconsin.  
Presented at the Gordon Research Conference “Innovations In College Chemistry Teaching”, January 4 - 8, 1998, Ventura, California.
- (xxii) George M. Shalhoub, George R. Long, Deborah Sauder, Marcia Hamby Towns, Roland Stout, Gabriela Weaver, Michael Kahlow, Michael A. Vaksman, M. Elizabeth Derrick, and Theresa Julia Zielinski  
Collaborative learning across the Web. Presented at the Gordon Research Conference “Innovations In College Chemistry Teaching”, January 4 - 8, 1998, Ventura, California.
- (xxiii) Theresa Julia Zielinski, Marcia Hamby Towns, Michael A. Vaksman, Deborah Sauder, Michael Kahlow, Roland Stout, and George R. Long  
USING THE WWW TO FORM AN INTERCOLLEGIATE COOPERATIVE LEARNING COMMUNITY. -Presented at the 215th ACS National Meeting, March 29 - April 2, 1998, Dallas, Texas.
- (xxiv) M.A. Vaksman and Justin L. Dahl  
“ABNORMAL” SURFACE LIGHT-INDUCED DRIFT BETWEEN TWO PLATES IN A MODEL WITH BOUNDARY CONDITIONS.- Presented at the 216th ACS National Meeting, August 23-27, 1998, Boston, Massachusetts.
- (xxv) Michael A. Vaksman and Justin L. Dahl  
MODELING THE LASER-PHOTOTAXIS MOTILITY OF ALGAE USING MATERIALBALANCE EQUATION.- Presented at the 216th ACS National Meeting, August 23-27, 1998, Boston, Massachusetts.
- (xxvi) G. Long, M.H. Towns, R. Stout, D. Sauder, M. Vaksman, G.C. Weaver, M. Kahlow, G. Shaloub, D.G. Miles, T. Zielinski  
PHYSICAL CHEMISTRY ON-LINE: DEVELOPMENT OF AN INTERCOLLEGIATE LEARNING COMMUNITY.- Presented at the 216th ACS National Meeting, August 23-27, 1998, Boston, Massachusetts.
- (xxvii) R. Stout, M.H. Towns, K.L. Marden, D. Sauder, G. Long, M.A. Vaksman, M. Kahlow, T.J. Zielinski  
INTERINSTITUTIONAL PEER-REVIEW ON THE INTERNET: GENERATING A PROFESSIONAL ATMOSPHERE FOR WRITING IN PHYSICAL CHEMISTRY.- Presented at the 217th ACS National Meeting, March 23-27, 1999, Anaheim, California.

(xxviii) Michael A. Vaksman and James W. Lane

USING GUIDED INQUIRY TO STUDY OPTICAL ACTIVITY AND OPTICAL ROTATORY DISPERSION IN PHYSICAL CHEMISTRY LAB.- Presented at the 218th ACS National Meeting, August 22-26, 1999, New Orleans, Louisiana.

(xxxi) Michael A. Vaksman

EXPLORING LASER GENERATION USING A MATHCAD-BASED MODULE.- Presented at the 218th ACS National Meeting, August 22-26, 1999, New Orleans, Louisiana.

(xxix) M.A. Vaksman

Studying Gas-Surface Interactions by Surface Light-Induced Drift.

Invited talk at the Chemistry Seminar at the North Dakota State University, September 16, 1999, Fargo, North Dakota.

(xxx) M.A. Vaksman

Studying Gas-Surface Interactions by Surface Light-Induced Drift.

Invited talk at the Chemistry Seminar at the University of North Dakota, September 17, 1999, Grand Forks, North Dakota.

(xxxix) M.A. Waxman and J.W. Lane

Applying He-Ne Laser for Studying Optical Rotatory Dispersion in a Cross-Disciplinary Lab. -Talk at the 220th ACS National Meeting, August 20-24, 2000, Washington DC.

(xxxii) A.D. Streater and M.A. Waxman

Surface Light-Induced Drift Resulting from Inelastic Scattering.-Presented at the 220th ACS National Meeting, August 20-24, 2000, Washington DC.

(xxxiii) M.A. Waxman and J.W. Lane

New Cross-Disciplinary Laser Lab for Studying Optical Rotatory Dispersion. - Presented at the UWSYSTEM Chemistry Faculties Meeting, October 13-14, 2000, La Crosse, WI.

(xxxiv) M.A. Waxman and J.W. Lane

"NEW CROSS-DISCIPLINARY LASER LAB IN CHEMISTRY"

- Dean's Colloquium, University of Wisconsin-Superior, Superior, Wisconsin, December 7, 2000.

(xxxv) Kelly Jukich, A.D. Streater, and M.A. Waxman

Computer Simulations of Surface Light-Induced Drift (SLID) Arising in a Tube and a T-shaped Vessel. - Presented at the 222nd ACS National Meeting, August 26-31, 2001, Chicago, IL.

(xxxvi) M.A. Waxman

Unpredictability in Research. - Invited talk at the Students of Excellence Presentation and Reception, University of Wisconsin-Superior, Superior, Wisconsin, May 7, 2002

- (xvii) Michael A. Waxman, Tyler Morgus, and Alan D. Streater  
Numerical Simulations of Flux of Alkali Atoms Diffusing via Multiple Surface Scattering And of Surface Light-Induced Drift (SLID) In a Tube. - Presented at the 224th ACS National Meeting, August 18-22, 2002, Boston, MA.
- (xviii) Michael A. Waxman, Tyler Morgus, and Alan D. Streater  
Numerical Simulations of Flux of Alkali Atoms Diffusing via Multiple Surface Scattering And of Surface Light-Induced Drift (SLID) In a Tube. - Presented at the University of Wisconsin System Chemistry Faculties Meeting, September 27-28, 2002, Stevens Point, WI .
- (xxxix) Michael A. Waxman (Vaksman)  
New mechanism of the gas drift occurring in presence of an evanescent wave.- Presented at the 226th ACS National Meeting, September 7-11, 2003, New York City, NY.
- (xL) Michael A. Waxman (Vaksman), Hyun-ju (Judy) Lee, and Derek Oien  
New mechanism of the gas drift occurring in presence of an evanescent wave: Drift between two surfaces.- Presented at the 226th ACS National Meeting, September 7-11, 2003, New York City, NY.
- (xLi) Michael A. Waxman  
Introducing guided-inquiry labs in Physical Chemistry in Northern Wisconsin: problems and solutions.- Presented at the 226th ACS National Meeting, September 7-11, 2003, New York City, NY.
- (xLii) Michael A. Waxman  
Surface light-induced drift and a new mechanism of the gas drift occurring in the presence of an evanescent wave. - To be presented at the Chemistry Departmental Seminar, University of Minnesota-Duluth, September 19, 2003, Duluth, MN.
- (xLiii) Michael A. Waxman  
Using Evanescent Waves and Inhomogeneous Magnetic Fields to Initiate the Drift of a Gas. – Invited talks at the Institute of Multidisciplinary Research for Advanced Materials, Tohoku University, December 19, 2003, Sendai, Japan; at the School of Physics and Center for Nearfield Atom-Photon Technology, Seoul National University, December 23, 2003, Seoul, South Korea; and at the Interdisciplinary Graduate School of Science and Engineering, Tokyo Institute of Technology, December 25, 2003, Tokyo, Japan.
- (xLiv) Michael A. Waxman (Vaksman), Hyun-ju (Judy) Lee, and Derek Oien  
New mechanism of the gas drift occurring in presence of an evanescent wave: Drift between two surfaces.- Presented at the 10<sup>th</sup> National Conference of the Council on Undergraduate Research (CUR), June 23-26, 2004, La Crosse, WI.
- (xLv) Michael A. Waxman, Kelly Alaspa, Shashika Fernando, Hyun-ju (Judy) Lee, Champika Siristena, and Derek Oien

New mechanisms of gas drift near a magnetized surface or an evanescent wave: Drift between two surfaces.- Presented at the 228th ACS National Meeting, August 22-26, 2004, Philadelphia, PA.

(xLvi) Michael A. Waxman, Kelly Alaspa, Shashika Fernando, Hyun-ju (Judy) Lee, Champika Siristena, and Derek Oien

New mechanisms of gas drift near a magnetized surface or an evanescent wave: Drift between two surfaces.- Presented at the University of Wisconsin System Chemistry Faculties Meeting, October 12, 2004, Milwaukee, WI .

(xLvii) Luke Hafdahl, Jeremy Niskala, and Michael A. Waxman

Drift of a gas of three-level particles near a magnetized surface or an evanescent-wave field. - Presented at the 231<sup>st</sup> ACS National Meeting, March 26-30, 2006, Atlanta, GA.

(xLviii) Michael A. Waxman

New mechanisms of the gas drift near a magnetized surface or an evanescent wave.-

Presented at the Chemistry Departmental Seminar, University of Minnesota-Duluth, September 15, 2006, Duluth, MN.

(xLix) Mary Balcer, Shaun Lynch, Michael Waxman, and Ted Cox

AACU Science/Technology Presentation: Lessons Learned about Engaging Science/Technology Issues.-

Presented at the UW-Superior Faculty and Staff Enhancement Day, January 14, 2009, Superior, WI.

(l) Michael A. Waxman

Using Physics to Investigate Blood Flow In Arteries: A Case Study For Pre-med Students.-

Presented at the Summer National Meeting of the American Association of Physics Teachers, July 25-29, 2009, Ann Arbor, MI.

(li) Michael A. Waxman

Exploring Rotations Due to Radiation Pressure: 2D to 3D Transition Is Interesting! -

Presented at the Summer National Meeting of the American Association of Physics Teachers, July 25-29, 2009, Ann Arbor, MI.

(lii) James W. Lane, Amir Fattahian, and Michael A. Waxman

New Biodiesels Derived from Oils of Plants Growing in Northern Wisconsin and Minnesota.- Presented at the Biofuels and Energy Independence Symposium (BEIS 2009), September 3, 2009, Superior, WI.

(liii) Michael A. Waxman, James W. Lane, and Damodar Koirala

Crystallization And Melting Behavior of Unsaturated Methyl Esters Contained in Biofuels -

Presented at the Biofuels and Energy Independence Symposium (BEIS 2009), September 3, 2009, Superior, WI.

(liv) Michael A. Waxman, James W. Lane, and Damodar Koirala

Crystallization And Melting Behavior of Unsaturated Methyl Esters Contained in Biofuels.– Probing with Differential Scanning Calorimetry. – Presented at the Conference on Alternative Energy Technologies (CAET), October 1-2, 2009, Chicago, IL.

(Lv) James W. Lane, Kurt Hukriede, Damodar Koirala, Dan Levings, Aaron Stewart, and Michael A. Waxman

Researching For a Better Wisconsin Biodiesel. – Presented at the Wisconsin Science & Technology Symposium 2010 (WSTS 2010), July 22-23, 2010, Green Bay, WI.

(Lvi) James W. Lane, Kurt Hukriede, Adam Jersett, Allison Pullar, and Michael A. Waxman Some Aspects Of Biofuels Work At UW-Superior. – Presented at the Wisconsin Science & Technology Symposium 2010 (WSTS 2010), July 22-23, 2010, Green Bay, WI.

(Lvii) James W. Lane, Kurt Hukriede, Damodar Koirala, Dan Levings, Aaron Stewart, and Michael A. Waxman

Synthesis And Characterization Of New Biodiesels Derived From Oils Of Plants Growing In Northern Wisconsin And Minnesota. – Presented at the 240th ACS National Meeting, August 22-26, 2010, Boston, MA.

(Lviii) James W. Lane, Kurt Hukriede, Damodar Koirala, Aaron Stewart, and Michael A. Waxman

Studying Low-Temperature Properties And Energy Content Of New Biodiesels Derived From Oils Of Plants Growing In Northern Wisconsin And Minnesota.– Presented at the Undergraduate Student Symposium of the 240th ACS National Meeting, August 22-26, 2010, Boston, MA.

(Lix) James W. Lane, Kurt Hukriede, Damodar Koirala, Dan Levings, Aaron Stewart, and Michael A. Waxman

Synthesis And Characterization Of New Biodiesels Derived From Oils Of Plants Growing In Northern Wisconsin And Minnesota. – Presented at the Second Biofuels and Energy Independence Symposium (BEIS 2010), September 2, 2010, Superior, WI.

(Lx) James W. Lane, Allison Pullar, Michael Schultz, Michael A. Waxman, and Donghua Zuo  
Designing a Heterogeneous Acid Catalyst for Biodiesel Production. – Presented at the Wisconsin Science & Technology Symposium 2011 (WSTS 2011), July 28-29, 2011, Whitewater, WI.

(Lxi) James W. Lane, Kurt Hukriede, Adam Jersett, Damodar Koirala, Nicholas Osborn, and Michael A. Waxman

Characterization Of Low-Temperature Properties of New Biodiesels and Their Mixtures Derived From Oils Of Plants Growing In Northern Climates. - Presented at the Wisconsin Science & Technology Symposium 2011 (WSTS 2011), July 28-29, 2011, Whitewater, WI.

(Lxii) Donghua Zuo, James Lane, Dan Culy, Michael Schultz, Allison Pullar, and Michael A. Waxman

Sulfonic acid functionalized mesoporous SBA-15 catalysts for low freezing point biodiesel production. – Accepted for oral presentation at 243rd ACS National Meeting, March 25,



2012, San Diego, CA. Division of Fuel Chemistry, Session: Fuels, Chemicals, Materials, and Energy from Biomass, Coal, Natural gas, and other Natural Resources.

- (Lxiii) Jim Lane and Michael Waxman. Identifying and Investigating Wisconsin Feedstocks for Biodiesels with Good Low-Temperature Properties. Presented at the 6<sup>th</sup> Annual Wisconsin Science and Technology Symposium, UW-Superior, July 22-23, 2013.
- (Lxiv) Julianne Merkes, Shanna Mueller, Alison Foglia, Michael Hoffman, Michael Waxman, James Lane. Antiviral Effects of Highbush Cranberry Extracts. Presented at the 74th Annual Meeting of the North Central Branch of the American Society for Microbiology, Superior, WI, October 10-11, 2014.
- (Lxv) Michael A. Waxman  
Raising Personal Interactions And Feedback In Distance-Learning Introductory And Advanced Science Classes. – Presented at the 32nd Distance Teaching and Learning Conference, Madison, WI, August 9-11, 2016.

#### **CONFERENCES AND WORKSHOPS ATTENDED (SELECTED)**

- (i) Texas A&M University CRAY Supercomputer Center. New User Orientation Workshop. College Station, Texas, April 15 - 30, 1993.
- (ii) NSF Regional Grants Seminar. Northwestern University, Illinois, October 27-28, 1994.
- (iii) Engineering and Science Cooperative Learning Workshop. University of Detroit Mercy, Detroit, MI, May 1, 1995.
- (iv) NRS NSF Regional Symposium on Undergraduate Science, Mathematics, Engineering and Technology Education. University of Michigan, Ann Arbor, MI, October 16, 1995.
- (v) "Educational Technology: What's New and How You Can Use It." Interactive Videoconference on Distance Learning & Multimedia Tools. January 25, 1996.
- (vi) "The Virtual University - Lessons from Across the Country." Engineering and Science Faculty Workshop. University of Detroit Mercy, Detroit, MI, May 23, 1996.
- (vii) "Changes in the Multimedia-Based Curriculum Development". Interactive Distance VideoConference by the faculty from Michigan State University, Lehigh University, Wayne State University, Lorentz Technological University, and University of Detroit Mercy. Detroit, Focus:HOPE, October 11, 1996.

- (viii) "Changing the Paradigm: A Partnership". Interactive Distance Video-Conference by the faculty from Lehigh University, University of Michigan, Wayne State University, Lorentz Technological University, and University of Detroit Mercy. Detroit, Focus:HOPE, February 21, 1997.
- (ix) Weekly Chemistry Seminars at University of Minnesota - Duluth (September 1997 - Present).
- (x) "Chemical Applications of Lasers" (Lasers in Chemistry Curriculum).  
NSF-sponsored lab-based course, 13 - 20 June 1998, James Madison University, Harrisonburg, VA.
- (xi) Research collaboration visit to Lehigh University (Department of Physics) Bethlehem, Pennsylvania, June 24 - July 6, 1999.
- (xii) Research collaboration visit to Lehigh University (Department of Physics) Bethlehem, Pennsylvania, May 29 - June 6, 2000.
- (xiii) 2<sup>nd</sup> Annual Physical Chemistry On-Line (PCOL) Developer's Meeting, Hood College, Frederick, Maryland, July 27-28, 2001.
- (xiv) Panel reviewer for the National Science Foundation, Washington DC, January 31-February 1, 2005.
- (xv) Process Oriented Guided Inquiry Learning (POGIL) Workshop, Washington College, Chestertown, MD, June 21-23, 2005.
- (xvi) Panel reviewer for the National Science Foundation, Washington DC, July 6-7, 2006.
- (xvii) Panel reviewer for the National Science Foundation, Washington DC, July , 2007.
- (xviii) Panel reviewer for the National Science Foundation, Washington DC, July 10-11, 2008.
- (xix) Conference of the American Association of Colleges and Universities "Engaging Science, Advancing Learning", Providence, RI, November 6-9, 2008.

- (xx) 2011 National SBIR/STTR Spring Conference “Growing the Innovation Ecosystem”, Madison, WI, April 12-13, 2011.
- (xxi) CETL Summer Assessment Forum, UW-Superior, Superior, WI, June 27-28, 2011.
- (xxii) 30th Distance Teaching and Learning Conference, Madison, WI, August 12-14, 2014.
- (xxiii) Sustainable Management Program retreat, Madison, WI, June 1-2, 2015 (represented UW-Superior).
- (xxiv) Pre-med advisors training session, University of Minnesota Medical School, July, 2015.
- (xxv) 32nd Distance Teaching and Learning Conference, Madison, WI, August 9-11, 2016.

### **SUPERVISION OF UNDERGRADUATE RESEARCH**

- (i) Isabela Podgorski and M.A. Vaksman  
Surface light-induced drift in different geometries.-  
Report at the 1995 Great Lakes College Chemistry Conference, March 25, 1995, Michigan State University, Lansing, Michigan.
- (ii) M.A. Vaksman and Isabela Podgorski  
Surface light-induced flux magnitude at low radiation intensities.-  
Canadian Journal of Physics **74**, pp. 251-254 (1996).
- (iii) Ginger Musolf and M.A. Vaksman  
Light-induced "worm": idea, approach, algorithm. -  
Report at the 1996 Great Lakes College Chemistry Conference, March 16, 1996, Michigan State University, Lansing, Michigan.
- (iv) Ginger Musolf and M.A. Vaksman Light-induced "worm". -  
Report at the 28th ACS Central Regional Meeting, June 9-12, 1996, Dayton, Ohio.
- (v) M.A. Vaksman and Isabela Podgorski  
Surface light-induced flux magnitude at different radiation intensities.-  
Report at the Gordon Research Conference on Atomic and Molecular Interactions, June 30 - July 5, 1996, New London, New Hampshire.

- (vi) M.A. Vaksman and F. Burovich  
Two approaches to study surface light-induced drift arising from angular-dependent scattering.- Presented at the ACS National Meeting, April 13-17, 1997, San Francisco, California. (vii)  
M.A. Vaksman and Justin L. Dahl  
“Abnormal” surface light-induced drift between two plates in a model with boundary conditions.- Presented at the 216th ACS National Meeting, August 23-27, 1998, Boston, Massachusetts.
- (viii) Michael A. Vaksman and Justin L. Dahl  
Modeling the phototaxis motility of algae using material-balance equation.- Presented at the 216th ACS National Meeting, August 23-27, 1998, Boston, Massachusetts.
- (ix) M.A. Vaksman  
Light-Induced "Worm" in the Undergraduate Physical Chemistry.  
The Chemical Educator (Springer-Verlag, New York) **4**, no. 1 (1999).
- (x) M.A. Vaksman and Justin L. Dahl  
Surface Light-Induced Drift Arising due to Anisotropic Gas-Surface Scattering in the Models With And Without Boundary Conditions.  
Canadian Journal of Physics **77**, no. 2, pp. 145-155 (1999).
- (xi) Kelly Jukich, A.D. Streater, and M.A. Waxman  
Computer Simulations of Surface Light-Induced Drift (SLID) Arising in a Tube and a T-shaped Vessel. - Presented at the 222nd ACS National Meeting, August 26-31, 2001, Chicago, IL.
- (xii) Michael A. Waxman (Vaksman), Hyun-ju (Judy) Lee, and Derek Oien  
New mechanism of the gas drift occurring in presence of an evanescent wave: Drift between two surfaces.- Presented at the 226th ACS National Meeting, September 7-11, 2003, New York, NY.
- (xiii) Michael A. Waxman (Vaksman), Hyun-ju (Judy) Lee, and Derek Oien  
New mechanism of the gas drift occurring in presence of an evanescent wave: Drift between two surfaces.- Presented at the 10<sup>th</sup> National Conference of the Council on Undergraduate Research (CUR), June 23-26, 2004, La Crosse, WI
- (xiv) Michael A. Waxman, Kelly Alaspa, Shashika Fernando, Hyun-ju (Judy) Lee, Champika Siristena, and Derek Oien  
New mechanisms of gas drift near a magnetized surface or an evanescent wave: Drift between two surfaces.- Presented at the 228th ACS National Meeting, August 22-26, 2004, Philadelphia, PA.
- (xv) Luke Hafdahl, Jeremy Niskala, and Michael A. Waxman  
Drift of a gas of three-level particles near a magnetized surface or an evanescent-wave field. - Presented at the 231<sup>st</sup> ACS National Meeting, March 26-30, 2006, Atlanta, GA.

- (xvi) Michael A. Waxman, James W. Lane, and Damodar Koirala  
Crystallization And Melting Behavior of Unsaturated Methyl Esters Contained in Biofuels -  
Presented at the Biofuels and Energy Independence Symposium (BEIS 2009), September 3, 2009,  
Superior, WI.
- (xvii) Michael A. Waxman, James W. Lane, and Damodar Koirala  
Crystallization And Melting Behavior of Unsaturated Methyl Esters Contained in Biofuels.– Probing  
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- (xx) James W. Lane, Kurt Hukriede, Damodar Koirala, Dan Levings, Aaron Stewart, and Michael  
A. Waxman  
Synthesis And Characterization Of New Biodiesels Derived From Oils Of Plants Growing In Northern  
Wisconsin And Minnesota. – Presented at the 240th ACS National Meeting, August 22-26, 2010,  
Boston, MA.
- (xxi) James W. Lane, Kurt Hukriede, Damodar Koirala, Aaron Stewart, and Michael A. Waxman  
Studying Low-Temperature Properties And Energy Content Of New Biodiesels Derived From  
Oils Of Plants Growing In Northern Wisconsin And Minnesota.– Presented at the  
Undergraduate Student Symposium of the 240th ACS National Meeting, August 22-26, 2010,  
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- (xxii) James W. Lane, Allison Pullar, Michael Schultz, Michael A. Waxman, and Donghua Zuo  
Designing a Heterogeneous Acid Catalyst for Biodiesel Production. – Presented at the Wisconsin  
Science & Technology Symposium 2011 (WSTS 2011), July 28-29, 2011, Whitewater, WI.
- (xxiii) James W. Lane, Kurt Hukriede, Adam Jersett, Damodar Koirala, Nicholas Osborn, and Michael  
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Waxman  
Characterization Of Low-Temperature Properties of New Biodiesels and Their Mixtures Derived  
From Oils Of Plants Growing In Northern Climates. - Presented at the Wisconsin Science &  
Technology Symposium 2011 (WSTS 2011), July 28-29, 2011, Whitewater, WI.

- (xxiv) Donghua Zuo, James Lane, Dan Culy, Michael Schultz, Allison Pullar, and Michael A. Waxman Sulfonic acid functionalized mesoporous SBA-15 catalysts for low freezing point biodiesel production. – Accepted for oral presentation at 243rd ACS National Meeting, March 25, 2012, San Diego, CA. Division of Fuel Chemistry, Session: Fuels, Chemicals, Materials, and Energy from Biomass, Coal, Natural gas, and other Natural Resources.
- (xxv) Samantha Mcclung (Dr. Michael A. Waxman). Laser-induced drift of a dense gas due to the presence of an evanescent wave in a cylindrical or rectangular cell. – To be presented at the Undergraduate Research Symposium, UW-Superior, May 2018.