

Curriculum Vitae
Neal W. Woodbury

Education:

University of California at Davis. B.S., Biochemistry 1979
University of Washington. Ph.D., Biochemistry 1986

Professional Experience:

Arizona State University, Prof. Chemistry and Biochemistry 1998 – present
Director, Center for BioOptical Nanotechnology, 2002 – present
The Biodesign Institute at ASU
Director, NSF IGERT Biomolecular Nanotechnology 2000 – present
Director, NSF RTG Optical Biomolecular Dev. Program 1996 – 2002
Director, Photosynthesis Center 1997 – 2000
Assoc. Prof. Chemistry and Biochemistry, ASU 1994 – 1998
Asst. Prof. Chemistry and Biochemistry, ASU 1987 – 1994
Stanford University, NSF Postdoctoral Fellow with S. Boxer 1987 – 1988
Carnegie Inst. of Washington, Dept. of Plant Biology, NSF 1986 – 1987
Postdoctoral fellow with W. Thompson
Univ. of Washington, Graduate Research with W. Parson 1979 – 1986

Honors, Awards, and Service to the Profession:

Gary Krahenbuhl Difference Maker Award, recipient 2008
Professor of the Year, nominee 2008
Professor of the Year, nominee 2007
National Academy of Science Workshop 2005
Chemical Imaging Committee Member
NSF MPS-MCB Joint Review Panel member 2004-present
NSF Biophysics Panel member 1997-1999
Outstanding Supervisor Award 2004
American Chemical Society Panel Member 2004 – 2005
Photochemistry and Photobiology, Associate Editor 2002 – present
NSF IGERT Panel member 2002 – 2006
NSF Bio. Inst. Dev. Panel member 1998
NSF Presidential Young Investigator Award 1991
NSF Postdoctoral Fellowship in Plant Molecular Biology 1985

Undergraduates Mentored: (For recorded years between 1997 and 2007)

Jason Hanna, 2008	Jenny (Yijie) Sun, 2006-	Rowena Campbell, 2002
Kristen Mapes, 2008	2007	Jeremy Babendure, 1998-
Conor Cox, 2007	Tram Vu, 2006-2007	2001
Julie Noh, 2007	Mahomed Rashaad Sidique,	Jenny Bever, 2000-2001
Raza Mushtaq, 2007	2006-2007	Aki Pickens, 2000-2001
Tam Dao, 2007	Amy (Khanh) Nguyen,	Dariusz Krawczyk, 2001
Anh Vu, 2005-2006	2005-2007	Sawsan Hamad, 2000
Crystal Moran, 2005-2007	Brooke Brelsford 2003-2006	Shelly Clayton, 1997-1998
Anh Ho, 2005-2006	YiWen Sun, 2005	Jessica Dalsing, 1997-1998
Vytas Pabedinskas, 2006-	Bill Seibt, 2003-2004	Keith Page, 1997-1998
2007	Bess Stillman, 2003-2004	Joel Hindorf, 1997-1998
Christa Laser, 2006-2007	Troy Hancock, 2003-2004	Rebecca Piskorowski, 1997
	T.K. Schiefer, 2002	Craig Magee, 1997

High School Students Mentored:

Ekta Bajaj, 2005
Emily Kimball, 2006
Anthony Garcia, 2007

Helen Jing, 2007
Shemonti Hasan, 2008
Katherine Cai, 2008

Teachers Mentored:

Renu Singh, 2007
Meredith Morrissey, 2007
Afroza Rahman, 2007

Nancy Herrick, 2007
Teresa Clark, 2008
Lynnette Chapman, 2008

Graduate Theses Mentored:

Dennis Gallo, Professor, Augusta University
Jeffrey Peloquin, Professor Boise State University
Marty Thompson, Professor, Michigan Technological University
Liza Eastman, graduated, last known profession- high school teacher
Evaldas Katilius, ASU
Weizong Xiao, Citibank

Arlene Haffa, Professor, University of Wisconsin @ Oshkosh
Jon Jackson, graduated
Ben Bowen, ASU
Zivile Katiliene, ASU
Matthew Rosenow, Public Health Scientist, Az. Dept. of Health Services
Allan Scruggs, BNI, ASU
Trent Northen, Scripps

Current Graduate Students in Woodbury Laboratory:

Teresa Murray
Jason Lappe
Pallav Kumar
Matthew Greving

Jinglin Fu
Jack Emery
Zhi Guo

Committee Assignments:

David LeBard, current ASU
Gary Moore, current ASU
Daniel Farrel, current ASU
Lisha Lin, current ASU
Elizabeth McCullum, current ASU
Leo Petrossian, current ASU
Yan Wang, current ASU
Uma Swamy, current ASU
Brian Connolly, current ASU
Rahul Chhabra, current ASU
Craig Magee, Post-doc, ASU
Stan Conrad
Frederica Bogani, current ASU
Todd Windman, current ASU
Michele Pysher, current ASU
Martha Medina, Procter & Gamble, Ohio
Melissa Tomalka,

Rodrigo Palacios, University of Texas, Austin
Greg Uyeda,
Michael Hambourger, current ASU
Ben Varco-Merth
Jennifer Sniegowski, USDA Agricultural Research Service
Yana Bukhman, current ASU
Alex Smith, City of Tempe
Jason Raymond
Stephen Straight
Melissa (Tomalka) McLaughlin
Jeanne Cordova, current ASU
Yana Bukhman
Debbie Mi
Joseph Springer,
Brett Barney, Utah State University

Diane Hu-Lince, Illumina in the DNA Analysis Division
Robert Bousquet
Darius Kuciauskas
Lara Ledenbach
Soley Ozer
Nathan Polson,
M. Roy
F. Selvaraj.
Sharon Stone
John Sumida
Derek Tatman
John Schloendorn, ASU
Manikandadas Mathilakathu
Madathil, ASU
Robert Lawrence, ASU
Matthew Rosenow, Public Health Scientist, Az. Dept. of Health Services

Postdocs Sponsored:

Arlene Haffa, Professor University of Wisconsin
@ Oshkosh
Kou Timpmann, Inst. of Physics, Estonia
Heather Murchison
Hadi Tabarra, ASU
Haiyu Wang, ASU
Allan Scruggs, ASU

Douglas Daniel, ASU
Zivile Katiliene, ASU
Evaldas Katilius, ASU
Arman Ghodousi, Naval Research
Laimonas Kelbauskas, ASU
Jie Pan, ASU

Collaborators:

James Allen, Arizona State Univ.
Ty Caudle, Arizona State Univ.
Yung Chang, Arizona State Univ.
Douglas Daniel, Arizona State Univ.
Arvi Freiberg, Inst. of Physics, Estonia
J. Devens Gust, Arizona State Univ.
Gordon Hager, NIH – NCI
Mark Hayes, Arizona State Univ.
Su Lin, Arizona State Univ.
Gordon Tollin, Univ. of Arizona
Dennis Lohr, Arizona State Univ.
Ron Lukas, Barrows Neurological
Yuri Lyubchenko, Univ. of Nebraska
Jose Menendez, Arizona State Univ.
Thomas Picraux, Arizona State Univ.
Alan Rawls, Arizona State Univ.
Linda Reha-Krantz, Univ. of Alberta

Daniel Sarewitz, Columbia Univ.
Aileen Taguchi, Arizona State Univ.
Nongjian Tao, Arizona State Univ.
Kou Timpmann, Inst. of Physics, Estonia
Trevor Thornton, Arizona State Univ.
Stuart Lindsay, Arizona State Univ.
Rebekka Wachter, Arizona State Univ.
Joe Wang, Arizona State Univ.
Andrew Webber, Arizona State Univ.
JoAnn Williams, Arizona State Univ.
John Chaput, Arizona State Univ.
Evaldas Katilius, Arizona State Univ.
Stephen Johnston, Arizona State Univ.
Hao Yan, Arizona State Univ.
Giovanna Ghirlanda, Arizona State Univ.

Courses Taught:

<u>Semester</u>	<u>Course</u>	<u>Credit Hrs</u>
Spr 07	CHM 194 (Nanoscience: Concepts and Applications)	3
Spr 07	CHM591 (IGERT* Seminar Discussion)	1
Fall 06	CHM591 (IGERT* Seminar Discussion)	1
Fall 06	CHM341 (Phys. Chem.)	3
Spr 06	CHM591 (IGERT* Seminar Discussion)	1
Spr 06	BCH462 (Biochem)	3
Fall 05	CHM341 (Phys. Chem.)	3
Fall 05	CHM591 (IGERT* Seminar Discussion)	1
Spr 04	BCH462 (Biochem)	3
Fall 04	CHM591 (IGERT* Seminar Discussion)	1
Fall 04	CHM598 (IGERT lecture)	3
Spr 03	CHM591 (IGERT* Seminar Discussion)	1
Spr 03	BCH462 (Biochem)	3
Fall 03	CHM598 (IGERT lecture)	3
Fall 03	CHM 591 (IGERT* Seminar Discussion)	1
Fall 02	CHM598 (IGERT* Seminar Discussion)	1
Fall 02	CHM598 (IGERT lecture)	3
Spr 01	CHM467 (Biochem. Lab)	3
Spr 01	CHM598 (IGERT Discussion)	1
Fall 00	CHM341 (Phys. Chem.)	3
Fall 00	CHM598 (RTG* Discussion)	1
Spr 00	CHM467 (Biochem. Lab)	3
Spr 00	CHM598 (RTG Discussion)	1
Fall 99	CHM598 (RTG lecture)	3
Fall 99	CHM598 (RTG Discussion)	1
Spr 99	CHM598 (RTG Discussion)	1
Spr 99	CHM467 (Biochem. Lab)	2
Fall 98	CHM341 (Phys. Chem.)	3
Fall 98	CHM492 (RTG Discussion)	1
Spr 98	CHM467 (Biochem. Lab)	2
Spr 98	CHM463 (Biophys. Chem. Lecture)	3

*RTG stands for Research Training Group and IGERT stands for Integrated Graduate Education and Research Training. These are NSF funded graduate programs directed by N. Woodbury.

**Note: On sabbatical for Fall 01 and Spring 02.

Invited Presentations:

1-2-02 through 1-5-02: Inter-American Photochemical Society 13th Winter Conference,
Arizona State University

3-02: "B-side electron transfer in bacterial photosynthetic reaction centers", Ohio State University

3-15-02: Southwest Regional BioPartnering Expo, Tucson, Arizona

7-02: Gordon Research Conference on Photosynthesis

9-26-02: Linking Basic Science and Biotechnology to Biomedical Challenges Workshop,
Arizona State University

10-11-02: "Powering and Controlling Biology with Light", ASU Chemistry Department

12-07-02: "Reading and Writing Biology and Chemistry with Light", Mayo/Arizona State University Research Forum, Mayo Clinic Scottsdale

12-02-02 through 12-04-02: "Powering and Controlling Biology with Light", Ohio State University, Columbus, Ohio

6-22-03 through 6-27-03: "Evolving Methodology", Discussion Leader, Gordon Research Conference on Photosynthesis, Bristol, Rhode Island

7-5-03 through 7-9-03: "Photosynthesis: New Developments", American Society for Photobiology, Baltimore, Maryland

12-12-03 through 12-20-03: "Powering and Controlling Biology with Light", Max-Planck Institute - IGERT Class Trip, Muelheim Germany

2-12-04 through 2-13-04: "Powering and Controlling Biology with Light", Gonzaga University, Spokane, Washington

5-3-04 through 5-5-04: Roadmap Project Launch Meeting, National Institute of Health, Washington DC

10-28-04 through 10-30-04: "Powering and Controlling Biology with Light", Boise State University, Boise, Idaho

12-17-04: "Optically Directed Molecular Evolution: Extending photolithography from solid state materials to chemistry and biology", IBM Almaden, San Jose, California

2-17-05 through 2-19-05: "Powering and Controlling Biology with Light", Michigan Technological University, Houghton, Michigan

4-28-05: "Optically Directed Molecular Evolution", Arizona NanoCluster Seminar, Phoenix Chapter Seminar: BioTech, Tempe, Arizona

5-18-05 through 5-20-05: "University of the Future", IGERT PI Workshop, Washington DC

5-20-05 through 5-27-05: "Development of Water Splitting Catalysts Using a Novel Molecular Evolution Approach", 2005 DOE Hydrogen Program Review, Washington DC

10-25-05: "Nanomedicine and It's Impact on Your Health", Journeys of the Mind Biodesign Institute, Arizona State University

1-5-06 through 1-8-06: "15th Western Photosynthesis Conference", California

4-20-06 "Evolution on a Chip: Making Molecules Work for Us?" Science Café, Tempe, AZ

5-14-06 through 5-16-06 NSF 2006 IGERT Project Meeting-Poster Presentation

5-16-06 through 5-19-06 "Development of Water Splitting Catalysts Using a Novel Molecular Evolution Approach" DOE's Hydrogen Program 2006 Annual Merit Review, Arlington, VA

6-27-06 "Energy Crisis: Lessons Learned from Biology", Biodesign Institute High School Intern Brown Bag Seminar, Tempe, AZ

6-29-06 "GA\$: A HORIZON Miniseries", KAET Ch.8 HORIZION, Tempe, AZ

10-01-06 "Directed Molecular Assembly, and Self assembly & Bio-inspired materials", Corning, NY

2-19-07 "Optically Directed Evolution", University of Arizona, Tucson, AZ

7-10-07 through 7-12-07, Tec de Monterrey, Mexico, ASU Info Session to Undergraduate and Graduate Students from the Division of Health Sciences and the Division of Engineering and Architecture at the Campus Ciudad de Mexico

11-26-07 through 11-28-07, "Grand Challenges in Biosensing and Bioactuation Research", University of Maryland, College Park, MD

Publications:

Katilius, E., C. L. Flores, et al. (2007). "Exploring the Sequence Space of a DNA Aptamer Using Microarrays." Nucleic Acids Research, In Review.

NC L. Kelbauskas, R. Bash, P. DeBartolo, J. Sun, N. Woodbury, and D. Lohr (2007) Sequence-Dependent Variations Associated with H2A/H2B Depletion of Nucleosomes. Submitted

NC L. Kelbauskas, R. Bash, J. Yodh, N. Woodbury, and D. Lohr (2007) Sequence-Dependent Nucleosome Structure and Stability Variations Detected by Förster Resonance Energy Transfer†. *Biochemistry* 46: 2239-2248

SL Haiyu Wang, James P. Allen, JoAnn C. Williams, Sean Blankert, Christa Laser and Neal W. Woodbury* (2007) Protein Dynamics Control the Kinetics of Initial Electron Transfer in Photosynthesis. *Science* 316: 747-750

K Gibasiewicz, VM Ramesh, S Lin, K Redding, NW Woodbury & AN Webber (2006) Two equilibration pools of chlorophylls in the Photosystem I core antenna. *Photosynth. Res.*

T Northen, D Brune & N Woodbury (2006) Synthesis and Characterization of Peptide Grafted Porous Polymer Microstructures. *Biomacromolecules* 7: 750-754

E Katilius, Z Katilene & NW Woodbury (2006) Singlaling aptamers created using fluorescent nucleotide analogs. *Analytical Chemistry* 78 (18): 6484-6489

E Katilius & N Woodbury (2006) Multi-photon excitation of fluorescent DNA base analogs. *J. Biomed. Opt.* 11: 044004

S Lin, E Katilius, RP Ilagan, GN Gibson, HA Frank & NW Woodbury (2006) Mechanism of carotenoid singlet excited state energy transfer in modified bacterial reaction centers. *J. Phys. Chem. B* 110 (31): 15556-15563

H Wang, S Lin & N Woodbury (2006) Electronic Transitions of the Soret Band of Reaction Centers from *Rhodobacter sphaeroides* Studied by Femtosecond Transient Absorbance Spectroscopy. *J. Phys. Chem B* 110: 6956-6961

ALM Haffa, S Lin, R LoBrutto, JAC Williams, AKW Taguchi, JP Allen & N Woodbury (2005) Environmental Control of Primary Photochemistry in a Mutant Bacterial Reaction Center. *J. Phys. Chem. B* 109: 19923-19928

A Scruggs, CL Flores, R Wachter & N Woodbury (2005) Development and Characterization of Green Fluorescent Protein Mutants with Altered Lifetimes. *Biochemistry* 44: 13377-13384

D LoVullo, DC Daniel, J Yodh, D Lohr & N Woodbury (2005) A Fluorescence resonance energy transfer-based probe to monitor nucleosome structure. *Analytical Biochemistry* 341: 165-172

T Northen & N Woodbury (2005) Light-Directed Movement of Polymer Microstructures. *Langmuir* 21: 4949 - 4953

Z Katilene, E Katilius, GH Uyeda, JC Williams & NW Woodbury (2004) Increasing the rate of energy transfer between the LHI antenna and the reaction center in the photosynthetic bacterium *Rhodobacter sphaeroides*. *J. Phys. Chem. B* 108: 3863-3870

B Bowen, A Scruggs, J Enderlein, M Sauer & N Woodbury (2004) Implementation of neural networks for the identification of single-molecules. *J. Phys. Chem. A* 108: 4799-4804

- E Katilius, JL Babendure, S Lin & N Woodbury (2004) Electron Transfer Dynamics in Rhodobacter sphaeroides Reaction Center Mutants with a Modified Ligand for the Monomer Bacteriochlorophyll on the Active Side. *Photosynth. Res.* 81: 165-180
- RJ Sension, AG Cole, AD Harris, CC Fox, N Woodbury, S Lin & ENG Marsh (2004) Photolysis and Recombination of Adenosylcobalamin Bound to Glutamate Mutase. *J. Phys. Chem. B* 126: 1598-1599
- E Katilius & N Woodbury (2004) Multi-Photon Excitation Fluorescence Correlation Spectroscopy of Fluorescent DNA Base Analogs. *Proc. of SPIE* 5323: 160-167
- E Katilius & N Woodbury (2004) Purple bacteria: Electron Acceptors and Donors. In: WJ Lennarz & MD Lane (eds) *Encyclopedia of Biological Chemistry*, pp 586-581. Academic Press/Elsevier Science
- ALM Haffa, S Lin, JAC Williams, B Bowen, AKW Taguchi, JP Allen & N Woodbury (2004) Controlling the Pathway of Photosynthetic Charge Separation in Bacterial Reaction Centers. *J. Phys. Chem. B* 108: 4-7
- K Gibasiewicz, VM Ramesh, S Lin, K Redding, NW Woodbury & AN Webber (2003) Excitonic interactions in wild-type and mutant PSI reaction centers. *Biophys. J.* 85: 2547-2559
- BP Bowen, J Enderlain & NW Woodbury (2003) Multiparameter single-molecule fluorescence measurements of DNA intercalating fluorophores. *Proc. SPIE-Int. Soc. Opt. Eng.* 4962: 22-26
- A Scruggs & N Woodbury (2003) Optical Processing of Bacterial Libraries for Directed Evolution. *Biotechnology and Bioengineering* 84: 445-451
- G Montano, BP Bowen, JT LaBelle, N Woodbury, VB Pizziconi & RE Blankenship (2003) Characterization of Chlorobium tepidum chlorosomes- A calculation of bacteriochlorophyll c per chlorosome and oligomer modeling. *Biophys. J.* 85: 2560-2565
- S Lin, E Katilius, AKW Taguchi & N Woodbury (2003) Excitation energy transfer from carotenoid to bacteriochlorophyll in the photosynthetic purple bacterial reaction center of Rhodobacter sphaeroides. *J. Phys. Chem. B* 107: 14103-14108
- E Katilius, J Bever, Z Katiliene, S Lin, AKW Taguchi & N Woodbury (2003) Manipulations of the B-Side Charge-Separated States' Energetics in the Rhodobacter sphaeroides Reaction Center. *J. Phys. Chem. B* 107: 12029-12034
- Z Katiliene, E Katilius & NW Woodbury (2003) Single Molecule Detection of DNA Looping by NgoMIV Restriction Endonuclease. *Biophys. J.* 84: 4053-4061
- Z Katiliene, E Katilius & N Woodbury (2003) Energy Trapping and Detrapping in Reaction Center Mutants from Rhodobacter sphaeroides. *Biophys. J.* 84: 3240-3251
- ALM Haffa, S Lin, JC Williams, AKW Taguchi, JP Allen & NW Woodbury (2003) High yield of long-lived B-side charge separation at room temperature in mutant bacterial reaction centers. *J. Phys. Chem. B* 107: 12503-12510
- A Freiberg, M Ratsep, K Timpmann, G Trinkunas & NW Woodbury (2003) Self-trapped excitons in LH2 antenna complexes between 5 K and ambient temperature. *J. Phys. Chem. B* 107: 11510-11519
- B Bowen, J Enderlein & N Woodbury (2003) Single-molecule Fluorescence Spectroscopy of TOTO on Poly-AT and Poly-GC DNA. *Photochemistry and Photobiology* 78: 576-581
- B Bowen & N Woodbury (2003) TOTO Binding Affinity Analysis Using Single-Molecule Fluorescence Spectroscopy. *Photochemistry and Photobiology* 78: 582-586
- B Bowen & N Woodbury (2003) Single-Molecule Fluorescent Lifetime and Anisotropy Measurements of the Red Fluorescent Protein, DsRed, in Solution. *Photochemistry and Photobiology* 77: 362-369

- J Babendure, PA Liddell, R Bash, D LoVullo, TK Schiefer, M Williams, DC Daniel, M Thompson, AKW Taguchi, D Lohr & N Woodbury (2003) Development of a Fluorescent Probe For the Study of Nucleosome Assembly and Dynamics. *Analytical Biochemistry* 317: 1-11
- JG Yodh, N Woodbury, LS Shlyakhtenko, YL Lyubchenko & D Lohr (2002) Mapping nucleosome locations on the 208-12 by AFM provides clear evidence for cooperativity in array occupation. *Biochemistry* 41: 3565-3574
- E Katilius, Z Katiliene, S Lin, AKW Taguchi & NW Woodbury (2002) B-side electron transfer in the HE(M182) reaction center mutant from *Rhodobacter sphaeroides*. *J. Phys. Chem. B* 106: 12344-12350
- E Katilius, Z Katiliene, S Lin, AKW Taguchi & NW Woodbury (2002) B side electron transfer in a *Rhodobacter sphaeroides* reaction center mutant in which the B side monomer bacteriochlorophyll is replaced with bacteriopheophytin: Low-temperature study and energetics of charge-separated states. *J. Phys. Chem. B* 106: 1471-1475
- ALM Haffa, S Lin, E Katilius, JC Williams, AKW Taguchi, JP Allen & NW Woodbury (2002) The dependence of the initial electron-transfer rate on driving force in *Rhodobacter sphaeroides* reaction Centers. *J. Phys. Chem. B* 106: 7376-7384
- K Gibasiewicz, VM Ramesh, S Lin, NW Woodbury & AN Webber (2002) Excitation dynamics in eukaryotic pS I from *Chlamydomonas reinhardtii* CC 2696 at 10 K. Direct detection of the reaction center exciton states. *J. Phys. Chem. B* 106: 6322-6330
- DC Daniel, M Thompson & NW Woodbury (2002) DNA-binding interactions and conformational fluctuations of Tc3 transposase DNA binding domain examined with single molecule fluorescence spectroscopy. *Biophys. J.* 82: 1654-1666
- JC Williams, ALM Haffa, JL McCulley, NW Woodbury & JP Allen (2001) Electrostatic interactions between charged amino acid residues and the bacteriochlorophyll dimer in reaction centers from *Rhodobacter sphaeroides*. *Biochemistry* 40: 15403-15407
- K Timpmann, Z Katiliene, NW Woodbury & A Freiberg (2001) Exciton self trapping in one-dimensional photosynthetic antennas. *J. Phys. Chem. B* 105: 12223-12225
- M Thompson & NW Woodbury (2001) Thermodynamics of specific and nonspecific DNA binding by two DNA-binding domains conjugated to fluorescent probes. *Biophys. J.* 81: 1793-1804
- S Lin, E Katilius, ALM Haffa, AKW Taguchi & NW Woodbury (2001) Blue light drives B-side electron transfer in bacterial photosynthetic reaction centers. *Biochemistry* 40: 13767-13773
- K Gibasiewicz, VM Ramesh, AN Melkozernov, S Lin, NW Woodbury, RE Blankenship & AN Webber (2001) Excitation dynamics in the core antenna of PSI from *Chlamydomonas reinhardtii* CC 2696 at room temperature. *J. Phys. Chem. B* 105: 11498-11506
- S Devanathan, S Lin, MA Cusanovich, N Woodbury & G Tollin (2001) Early photocycle kinetic behavior of the E46A and Y42F mutants of photoactive yellow protein: Femtosecond spectroscopy. *Biophys. J.* 81: 2314-2319
- RC Bash, J Yodh, Y Lyubchenko, N Woodbury & D Lohr (2001) Population analysis of subsaturated 172-12 nucleosomal arrays by atomic force microscopy detects nonrandom behavior that is favored by histone acetylation and short repeat length. *J. Biol. Chem.* 276: 48362-48370
- K Timpmann, NW Woodbury & A Freiberg (2000) Unraveling exciton relaxation and energy transfer in LH2 photosynthetic antennas. *J. Phys. Chem. B* 104: 9769-9771
- M Thompson & NW Woodbury (2000) Fluorescent and photochemical properties of a single zinc finger conjugated to a fluorescent DNA-binding probe. *Biochemistry* 39: 4327-4338
- JE Eastman, AKW Taguchi, S Lin, JA Jackson & NW Woodbury (2000) Characterization of a *Rhodobacter capsulatus* reaction center mutant that enhances the distinction between spectral forms of the initial electron donor. *Biochemistry* 39: 14787-14798

- S Devanathan, S Lin, MA Cusanovich, N Woodbury & G Tollin (2000) Early intermediates in the photocycle of the Glu46Gln mutant of photoactive yellow protein: Femtosecond spectroscopy. *Biophys. J.* 79: 2132-2137
- DC Daniel, M Thompson & NW Woodbury (2000) Fluorescence intensity fluctuations of individual labeled DNA fragments and a DNA binding protein in solution at the single molecule level: A comparison of photobleaching, diffusion, and binding dynamics. *J. Phys. Chem. B* 104: 1382-1390
- JG Yodh, YL Lyubchenko, LS Shlyakhtenko, N Woodbury & D Lohr (1999) Evidence for nonrandom behavior in 208-12 subsaturated nucleosomal array populations analyzed by AFM. *Biochemistry* 38: 15756-15763
- CK Tang, JAC Williams, AKW Taguchi, JP Allen & NW Woodbury (1999) P+HA- charge recombination reaction rate constant in *Rhodobacter sphaeroides* reaction centers is independent of the P/P+ midpoint potential. *Biochemistry* 38: 8794-8799
- S Lin, JA Jackson, AKW Taguchi & NW Woodbury (1999) B-side electron transfer promoted by absorbance of multiple photons in *Rhodobacter sphaeroides* R-26 reaction centers. *J. Phys. Chem. B* 103: 4757-4763
- E Katilius, T Turanchik, S Lin, AKW Taguchi & NW Woodbury (1999) B-side electron transfer in a *Rhodobacter sphaeroides* reaction center mutant in which the B-side monomer bacteriochlorophyll is replaced with bacteriopheophytin. *J. Phys. Chem. B* 103: 7386-7389
- A Freiberg, K Timpmann, R Ruus & NW Woodbury (1999) Disordered exciton analysis of linear and nonlinear absorption spectra of antenna bacteriochlorophyll aggregates: LH2-only mutant chromatophores of *Rhodobacter sphaeroides* at 8 K under spectrally selective excitation. *J. Phys. Chem. B* 103: 10032-10041
- S Devanathan, A Pacheco, L Ujj, M Cusanovich, G Tollin, S Lin & N Woodbury (1999) Femtosecond spectroscopic observations of initial intermediates in the photocycle of the photoactive yellow protein from *Ectothiorhodospira halophila*. *Biophys. J.* 77: 1017-1023
- S Lin, J Jackson, AKW Taguchi & NW Woodbury (1998) Excitation wavelength dependent spectral evolution in *Rhodobacter sphaeroides* R-26 reaction centers at low temperatures: The Q(y) transition region. *J. Phys. Chem. B* 102: 4016-4022
- A Freiberg, JA Jackson, S Lin & NW Woodbury (1998) Subpicosecond pump-supercontinuum probe spectroscopy of LH2 photosynthetic antenna proteins at low temperature. *J. Phys. Chem. A* 102: 4372-4380
- A Freiberg, K Timpmann, S Lin & NW Woodbury (1998) Exciton relaxation and transfer in the LH2 antenna network of photosynthetic bacteria. *J. Phys. Chem. B* 102: 10974-10982
- JA Jackson, S Lin, AKW Taguchi, JC Williams, JP Allen & NW Woodbury (1997) Energy transfer in *Rhodobacter sphaeroides* reaction centers with the initial electron donor oxidized or missing. *J. Phys. Chem. B* 101: 5747-5754
- AKW Taguchi, JE Eastman, DM Gallo, E Sheagley, WZ Xiao & NW Woodbury (1996) Asymmetry requirements in the photosynthetic reaction center of *Rhodobacter capsulatus*. *Biochemistry* 35: 3175-3186
- JM Peloquin, S Lin, AKW Taguchi & NW Woodbury (1996) Excitation wavelength dependence of bacterial reaction center photochemistry. 2. Low-temperature measurements and spectroscopy of charge separation. *J. Phys. Chem.* 100: 14228-14235
- S Lin, AKW Taguchi & NW Woodbury (1996) Excitation wavelength dependence of energy transfer and charge separation in reaction centers from *Rhodobacter sphaeroides*: Evidence for adiabatic electron transfer. *J. Phys. Chem.* 100: 17067-17078
- S Lin, WZ Xiao, JE Eastman, AKW Taguchi & NW Woodbury (1996) Low-temperature femtosecond-resolution transient absorption spectroscopy of large-scale symmetry mutants of bacterial reaction centers. *Biochemistry* 35: 3187-3196
- A Freiberg, JP Allen, JC Williams & NW Woodbury (1996) Energy trapping and detrapping by wild type and mutant reaction centers of purple non-sulfur bacteria. *Photosynth. Res.* 48: 309-319

- N Woodbury & JP Allen (1995) The pathway, kinetics and thermodynamics of electron transfer in the reaction centers of purple nonsulfur bacteria. In: RE Blankenship, M Madigan & B CE (eds) *Anoxygenic Photosynthetic Bacteria*. Kluwer Academic Publishing, Netherlands
- NW Woodbury, S Lin, XM Lin, JM Peloquin, AKW Taguchi, JC Williams & JP Allen (1995) The Role of Reaction-Center Excited-State Evolution During Charge Separation in a Rhodobacter-sphaeroides Mutant with an Initial Electron-Donor Midpoint Potential 260 mV above Wild-Type. *Chem. Phys.* 197: 405-421
- JM Peloquin, S Lin, AKW Taguchi & NW Woodbury (1995) Excitation Wavelength Dependence of Bacterial Reaction-Center Photochemistry. I. Ground-State and Excited-State Evolution. *J. Phys. Chem.* 99: 1349-1356
- WH Xiao, S Lin, AKW Taguchi & NW Woodbury (1994) Femtosecond Pump-Probe Analysis of Energy and Electron-Transfer in Photosynthetic Membranes of Rhodobacter-Capsulatus. *Biochemistry* 33: 8313-8322
- NW Woodbury, JM Peloquin, RG Alden, XM Lin, S Lin, AKW Taguchi, JC Williams & JP Allen (1994) Relationship between Thermodynamics and Mechanism During Photoinduced Charge Separation in Reaction Centers from Rhodobacter-Sphaeroides. *Biochemistry* 33: 8101-8112
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