RESUME - S.M. LINDSAY

PERSONAL:

Born: July 3, 1951 London, England. Naturalized U.S. Citizen: December 21, 1984. Married, three children.

EDUCATION:

B.Sc.(1st Class Hons.), Physics, University of Manchester (England), 1972.
Diploma in Advanced Studies (Distinction), University of Manchester, 1973.
Ph.D., Physics, University of Manchester, 1976.

PROFESSIONAL EXPERIENCE:

2014 -	University Professor, Arizona State University
2008-	Regent's Professor, Arizona State University
2005 -	Consultant, Agilent Technologies
2003-	Professor of Chemistry
2002-	Edward and Nadine Carson Presidential Chair in Physics Director, Center for Single Molecule Biophysics
2000 - 2005	Technology advisor, Molecular Imaging Corp.
1994 - 2000	Vice President, Research & Development, Co-founder, Molecular Imaging Corp.
1991 - 1992	Interim Director, Center for Solid State Science, Arizona State University.
1989 -	Professor, Arizona State University.
1985 - 1989	Associate Chairman, Department of Physics.
1984 - 1989	Associate Professor, Arizona State University.
1979 - 1984	Assistant Professor, Arizona State University.
1977 - 1979	Consultant, Philips Industries, London.
1975 - 1977	Research Fellow, University of Manchester.

PROFESSIONAL ACTIVITIES AND HONORS:

Elected Fellow, National Academy of Inventors (US) 2014

Delivered H.H. King Lecture in Chemistry, Kansas State University, 2014

Lindsay Festschrift papers published in a special issue of the Journal of Physics Condensed Matter, 25 April 2012.

Elected Fellow of the Institute of Physics (UK) 2011.

Runner-up, Parent's Association Professor of the Year Award, 2010.

Regent's Professor, 2008.

Faculty Distinguished Achievement Award, ASU, 2007

Elected Fellow of the American Association for the Advancement of Science for *"Seminal contributions to single molecule biophysics, including the development and application of scanning probe microscopy technologies to important problems in biophysics"* 2003.

Shared R&D 100 award with Peter Hinterdorfer and Jeremy Nelson on behalf of Molecular Imaging for development of molecular recognition imaging.

"Arizona Innovator of the Year Award" (with Tianwei Jing and George Sibbald) Arizona Chamber of Commerce, High Tech Cluster (Medical Devices) 1999.

Chair, Division of Biological Physics of the American Physical Society, 1995-6

Vice-Chair Division of Biological Physics of the American Physical Society, 1994-5.

H. Willard Davis Lectureship in Chemistry, University of South Carolina (1994).

Humbolt Senior Scientist Research Award (1993).

Faculty Graduate Mentoring Award, ASU (1993).

National Advisory Committee for the National Surface Analysis Center for Biomedical Problems, University of Seattle, WA, 1992-1993.

Elected Fellow of the American Physical Society (1990) for:
"*Pioneering studies in the application of scanning tunneling microscopy to imaging bio-molecules, especially images of the DNA double helix in water".*

Executive Committee, Division of Biological Physics of the American Physical Society, 1986-1989.

EDITORIAL APPOINTMENTS:
Editorial Board, IOP Nano Futures, 2018 -

Biophysical Journal, Editorial Board, 2002 - 2009

Ultramicroscopy, Associate Editor for Probe Microscopy, 1995 -

Nanobiology, Associate Editor for the Americas, 1994 - 2000

AIP Press International Series in Basic and Applied Biological Physics, Founding Editorial Board, 1994-

Founding Editorial Board, American Journal of Nanomedicine, 2004 - 2007

U.S. PATENTS GRANTED:

1. "Cell and Substrate for Electrochemical Studies" S.M. Lindsay, US Patent 4,868,396, Sept. 19, 1989.

2. "A Method for Visualizing the Base Sequence of Nucleic Acid Polymers" S.M. Lindsay and M. Philipp, US Patent 5,106,729, April 21, 1992.

3. "Potentiostatic Preparation of Molecular Adsorbates for Scanning Probe Microscopy" S.M. Lindsay, US Patent 5,155,361, October 13, 1992 and RE 35317, August 27, 1996.

4. "Electrochemical Identification of molecules in a scanning probe microscope", S.M. Lindsay, T.W. Jing, US Patent 5,495,109, Feb. 27, 1996.

5. "Method of electrochemical identification of single organic molecules using scanning tunneling microscopy", N.J. Tao, S.M. Lindsay, US Patent 5,497,000, March 5, 1996.

6. "Magnetic modulation of force sensor for AC detection in an atomic force microscope" S.M. Lindsay, US Patent 5,513,518, May 7, 1996.

7. "Controlled force microscope for operation in liquids" S.M. Lindsay, US Patent 5,515,719, May 14, 1996

8. “Formation of a Magnetic Film on an Atomic Force Microscope Cantilever”, S.M. Lindsay, US Patent 5,612,491, March 18, 1997.

9. “Tip Etching System and Method for Etching Platinum-Containing Wire”, S.M. Lindsay, Tianwei Jing, Yuri Lyubchenko and A.A. Gall, US Patent 5,630,932, May 20, 1997.

10. “Microscope for Force and Tunneling Microscopy in Liquids” S.M. Lindsay, US Patent 5,621,210, April 15, 1997.

11. “Variable Temperature Scanning Probe Microscope based on a Peltier Device” S.M. Lindsay, US Patent 5,654,546, August 5, 1997.

12. “Scanning Probe Microscope” S.M. Lindsay and T. Jing, US Patent 5,675,154, October 7, 1997.

13. “Hybrid control system for scanning probe microscopes”, S.M. Lindsay and T.W. Jing, US Patent 5,805,448, September 8, 1998.

14. “MDI device with ultrasound sensor to detect aerosol dispensing”, Alan Wachter and S.M. Lindsay, U.S. Patent 5,794,612, August 18, 1998.

15. “Scanning probe microscope” S.M. Lindsay and T.W. Jing, U.S. Patent 5,760,396, June 2, 1998.

16. “Magnetically-oscillated probe microscope for operation in liquids” Han; Wenhai, Lindsay; S. M., Harbaugh; Steven K., Jing; Tianwei U.S. Patent 5,753,814, May 19, 1998

17. “Scanning probe microscope for use in fluids” S.M. Lindsay and T.W. Jing, U.S. Patent 5,750,989, May 12, 1998.

18. “Heated Stage for a scanning probe microscope” S.M. Lindsay and T.W. Jing, US Patent 5821545, Oct. 13, 1998.

19. “Cantilevers for a magnetically driven atomic force microscope” W. Han, S.M. Lindsay, T.W. Jing, US Patent 5,866,805, February 2, 1999.

20. "Microscope for compliance measurement" S.M. Lindsay, T.W. Jing. W. Han, US Patent 5,983,712, November 16, 1999.

21. "Tip coating system for scanning probe microscopy" S.M. Lindsay, T.W. Jing, Y.L. Lyubchenko, Gall, A.A. US Patent 6,017,590, Jan. 2000

22. Conducting scanning probe microscope with environmental control S.M. Lindsay and T.W. Jing, US Patent 6,051,825 April 18, 2000

23. "Intrapulmonary delivery device" A. Wachter and S.M. Lindsay, US Patent 6,085,742 July 11, 2000

24. "Force sensing probe for scanning probe microscopy" S.M. Lindsay and T.W. Jing, US Patent 6,121,611, September 19, 2000

25. "Magnetic modulation of force sensor for AC detection in an atomic force microscope" W. Han, S.M. Lindsay, T.W. Jing, US Patent 6134955, October 24, 2000.

26. “Vibrating tip conducting probe microscope” S.M. Lindsay, Tianwei Jing, US Patent 6,245,204, June 12, 2001.

27. “Devices based on molecular electronics”, S.M. Lindsay, D. Gust and X.D. Cui, US Patent 6673424, Jan 6, 2004.

28. "Scanning probe microscope and solenoid driven cantilever assembly" S.M. Lindsay and Tianwei Jing, US Patent 6,734,438, May 11, 2004.

29. "Topography and recognition imaging atomic force microscope and method of operation" Hinterdorfer; Peter (Linz, AT), Nelson; Jeremy (Mesa, AZ), Lindsay; Stuart M. (Phoenix, AZ) US Patent 7,152,462 issued December 26, 2006.
30. "Fast scanning stage for a scanning probe microscope" S.M. Lindsay and T.W. Jing, US Patent 7,687,767, March 30, 2010.

31. "Nanopore and carbon nanotube based DNA sequencer and a serial recognition sequencer" Stuart Lindsay, Jin He, Peiming Zhang and Kevin Reinhart, US patent 8,628,649 issued Jan 14, 2014

32. "Modified Nucleic Acid Nanoarrays and uses Therefor" John Chaput, Stuart Lindsay, Hao Yan and Peiming Zhang, US Patent 8,685,894 April 1, 2014.

33. "Nanopore and Carbon Nanotube-based DNA Sequencer" Colin Nuckolls, Jinyao Tang, Stuart Lindsay, Jin He, Peiming Zhang, Kevin Reinhart U.S. Patent 8,961,757 Feb. 24, 2015.

34. "Trans-base Tunnel Reader for Sequencing" Kevin Reinhart, Stuart Lindsay, Peiming Zhang U.S. Patent 8,968,540 March 3, 2015.

35. "Controlled Tunnel Gap Device for Sequencing Polymers" U.S. Patent No. 9,140,682 Stuart Lindsay, Shuai Chang, Jin He, Peiming Zhang, Shuo Huang, Sept. 22, 2015.

36. "Systems and devices for molecule sensing and method of manufacturing thereof", US Patent 9,274,430, Brett Gyarfas, Stuart Lindsay and Pei Pang, March 1, 2016.

37. "Devices and methods for target molecule characterization" US Patent 9,395,352, Stuart Lindsay and Peiming Zhang, July 19, 2016.

38. "Method and apparatus for measuring phosphorylation kinetics on large arrays", US Patent 9,442,111, Stuart Lindsay and Joshua Labaer, Sept 13, 2016.

39. "Nanopore-Based Sequencer" Stuart Lindsay, Peiming Zhang, US Patent 9,593,372, March 14, 2017.

40. "Chemistry, systems and methods of translocation of a polymer through a nanopore" Stuart Lindsay, Peiming Zhang, Suditpta Biswas. US Patent 9.766,248, September 19, 2017.

41. "Controlled tunnel gap device for sequencing polymers" Lindsay; Stuart, Chang; Shuai, He; Jin, Zhang; Peiming, Huang; Shuo, US Patent 9,810,691, November 7, 2017.

42. ″Translocation of a polymer through a nanopore" Lindsay, Stuart, Zhang, Peiming. US Patent 9,952,198, April 24, 2018.

43."Systems, apparatuses and methods for reading an amino acid sequence", Lindsay, Stuart, Zhang, Peiming, Zhao, Yanan, US Patent 10,139,417, November 27 2018.

44. "Digital protein sensing chip and methods for detection of low concentrations of molecules" Lindsay, Stuart, Zhang, Peiming, Pang, Pei, US Patent 10,145,846 December 4, 2018.

45. "Three arm Y-shaped bisbiotin ligand", Zhang, Peiming, Lindsay, Stuart, Senapati, Subhadip, Biswas, Sovan. US Patent 10,156,572, December 18, 2018.

46. "Single molecule detection based on conductance fluctuations" Stuart Lindsay and Peiming Zhang. U.S. patent number 10,379,102 August 13, 2019.

EXTERNAL FUNDING

My lab has been externally funded continuously since July 1980. Sources include the NSF, ONR, EPA, NIH and the Research Corporation. Funding from Private companies includes JD Scientific, Angstrom Technology, Molecular Imaging, Agilent Technologies Bristol Meyers Squibb and Roche. I have been PI on two Nanoscale Interdisciplinary Research Team awards and leader of a MRSEC project. Major equipment grants include acquisition of the dual beam FIB at ASU. Other non-research funding includes several NSF grants for teaching activities and a grant from the Metanexus Institute.

I currently direct a research center in the Biodesign institute in which my personal external funding is over $1M/yr.

Ph.D. STUDENTS GRADUATED:

1. Alan Adshead, *Multipass Fabry Perot Spectroscopy of Polymers* (Physics - 1979). (supervised at Manchester after the death of I.W. Shepherd)

2. Mark Anderson, *Tandem Interferometry of the Low Frequency Two Phonon Difference Spectrum of Silicon* (Physics - 1982).

3. John Powell, *Low Frequency Dynamics of DNA* (Physics - 1983).

4. Brad Halfpap, *Network Connectivity and the Dynamics of Glasses* (Physics - 1987).

5. Nongjian Tao, *Structure and Dynamics of the DNA Hydration Shells* (Physics - 1988).

6. Thomas Weidlich, *Raman Spectroscopy from the low frequency vibrations of DNA in Highly Crystalline Films, Oligonucleotide Crystals and Polynucleotide Solutions* (Physics - 1989).

7. Larry Nagahara, *Investigations at the Solid-Liquid Interface by Scanning Tunneling Microscopy* (Physics - 1991).

8. Rick Oden, *Investigations of the reconstructed gold surface with electrochemical scanning probe microscopy"* (Physics - 1993).

9. Yinquan Li, *A study of colloidal interactions and structures by atomic force microscopy (AFM).* (Physics - 1993).

10. James DeRose, *A scanning probe microscopy study of single and double stranded DNA at the liquid-solid interface* (Physics - 1993).

11. Jin Pan, *Electron Tunneling in Electrochemical Scanning Tunneling Microscopy* (Physics - 1994).

12. David Lampner, *Scanning Tunneling Microscopy Studies of Cytosine and Ribonucleic Acid deposited on Au(111)* (Physics - 1995).

13. Dimitry Rekesh, *An investigation of the potential of Scanning Tunneling Microscopy for sequencing of DNA* (Physics - 1996).

14. Xiadong Cui, *Investigation of single molecule electronics by scanning probe microscopy* (Physics - 2001).

15. Jin He, *Electron transport through single molecules* (Physics - 2005)

16. Brian Ashcroft, *Forced Translocation of DNA Hairpins through a tight molecular Nanopore studied by Atomic Force Microscopy.* (Physics - 2007)

17. Quinn Spadola, *Novel Approaches to DNA Sequencing* (Physics - 2008).

18. Rawiwan Laocharoensuk, *Synthetic Metal Nanowires: Applications Towards On-demand Reactions and Autonomous Motions* (Chemistry - 2008) (I took over supervision of Rawiwan after the departure of Joe Wang.)

19. Shahid Qamar, *DNA Translocation Through a Molecular Nanopore: A Molecular Dynamics Study*. (Physics - 2009)

20. Liyun Lin, *Atomic Force Microscopy Recognition Imaging for Recognition Imaging*. (Physics - 2009)

21. Lisha Lin, *The proof of concept for a novel approach to DNA sequencing* (Chemistry, 2009)

22. Ashley Kibel *Instrumentation for Molecular Electronics Device Research* (Physics, 2010)

23. Qiang Fu, *Atomic Force Microscopy for Chromatin Structure Study* (PhD in Chemistry, 2010)

24. Shuo Huang, *Recognition Tunneling: Approaches towards Next Generation DNA Sequencing* (PhD in Physics, 2011)

25. Shreya Bhattacharyya, *Measurement of Molecular Conductance* (PhD in Chemistry, 2011)

26. Pei Pang, *Carbon Nanotube Based Nanofluidic Devices* (PhD in Physics, 2011)

27. Di Cao, *Electronic and Ionic Transport in Carbon Nanotubes and Other Nanostructures* (PhD in Physics, 2011)

28. Parminder Kaur, *AFM study of gene silencing by DNA methylation and its interactions involving chromatin and methyl CpG binding proteins* (PhD in Physics, 2012)

29. Shuai Chang, *DNA sequencing by recognition tunneling* (PhD in Physics, 2012)

30. Hao Liu **"***Towards Single Molecule DNA Sequencing*" (PhD in Chemistry 2013)

31. Padmini Krishnakumar "*Nanofluidics for Single Molecule DNA Sequencing*" (PhD in Physics 2013)

32. Yanan Zhao, *Application of Recognition Tunneling in single molecule identification* (PhD in Physics, 2014).

33. Subhadip Senipati, *Studying Biomolecular Structures and Their Interaction Using Atomic Force Microscopy* (PhD in Chemistry 2014).

34. Weisi Song, *Nanofluidic Pathways for Single Molecule Translocation and Sequencing -- Nanotubes and Nanopores* (PhD in Physics, 2015)

35. JongOne Im, *Electrical Single Molecule Measurements with Scanning Tunneling Microscope* (PhD in Physics, 2016).

36. Sudipta Biswas, *Synthesis of Organic Linkers for Studying Biomolecular Interactions, Site-Specific Chemical Modification of Peptides and its Translocation Studies Through Nanopore* (PhD in Chemistry, 2016)

37. Suman Sen, *Identification of Biomolecular Building Blocks by Recognition Tunneling: Stride towards Nanopore Sequencing of Biomolecules* (PhD in Chemistry, 2016)

38. Sovan Biswas, *Design, Synthesis and Association Study of Universal Readers for Recognition Tunneling* (PhD in Chemistry, 2016)

POSTDOCTORALS SUPERVISED:

1. Mark Anderson	1982-1984 *(Senior Scientist, Spectra Physics Inc., Palto Alto, CA.).*
2. John Powell	1983-1985 (*Professor of Physics, Department Head, Reed College, Portland, OR.)*
3. Brad Halfpap	1987-1989 (*Professor of Physics, Ripon College, Ripon, WI.).*
4. Nonjain Tao	1990-1992 (*Assistant Professor of Physics, Florida International University, Miami, FL., Professor of Electrical Engineering, ASU).*
5. Thomas Thundat	1989-1991 (*Staff Scientist, Oak Ridge National Laboratory, Oak Ridge, TN).*
6. Scott Lee	1986-1988 (*Professor of Physics, University of Toledo, OH.).*
7. William Oliver	1988-1992 (*Professor of Physics, Department Chair, University of Arkansas, Fayetteville, AR).*
8. Tianwei Jing	1992- 1995 *(Director of R&D, Agilent Nanomeasurements Division, Chandler, AZ)*
9. Jim Campbell	1994 – 1995 *(Research Associate, UT El Paso).*
10. Wenhai Han	1995 – 1998 *(Applications Scientist, Agilent Technologies).*
11. Gerry Leatherman	1996 – 1998 *(Process Scientist, Intel Corp).*
12. Yangzhang Liu	1997-1990 *(Senior Scientist, Seagate Corp.)*
13. Sanford Leuba	1999-2000 *(Assistant Prof. University of Pittsburgh)*
14. Xi-Zheng Feng	1999-2000 (*Professor, Tianjian University, PRC*)
15. Ralph Bash	2001- 2006 (*Deceased*)
16. Ganesh Ramachandran	2001- 2003 (*Consultant scientist, NIST*)

17. Hongda Wang 2001- 2008 (*Professor, State Key Laboratory of Electroanalytical Chemistry, Changchun Institute, PRC*)

18. Fan Chen 2002- 2005 (*Postdoctoral scientist, Rice University*)

19. Iris Visoly 2004- 2007 (*Professor of Chemistry, Ben Gurion University, Israel)*

20. Jin He 2005 – 2007 (*Assistant Research Professor, Biodesign Institute*)

21. Feng Liang 2007-

22. Brett Gyarfas 2010-2012 *(Chief engineer for a start-up)*

23. Brian Ashcroft 2011- 2017 (*Engineer for American Airlines)*

24. Pei Pang 2011-

25. Weisi Song 2015 –

26. Yanan Zhao 2015 – 2017 (*Engineer for 2 Pore Guys)*

27. Bintian Zhang 2016 –

28. JongOne Im 2016 -

M.S. STUDENTS GRADUATED:

1. Mary Hakim, *The Speed of Sound in DNA* (Physics - 1983).

2. Ben Barris, *Imaging Biopolymers in Water by Scanning Tunneling Microscopy* (Physics - 1987).

3. Qi Rui, *Low Frequency Raman Spectra of RNA Homopolymers* (Physics - 1988).

4. Chris DeMarco, *Studies of the Elastic Properties of Ternary Chalcogenide Alloys* (Physics - 1988).

5. Ken Egan, *Intermittent Contact AFM in Linear DNA Imaging* (Physics - 2000).

6. Liyun Lin *Aptamer Development for Recognition Imaging* (Biochemistry - 2007).

7. Phanikumar Khonipandi, Professional Science Masters in Nanoscience, 2010.

TEACHING:

University of Manchester
Graduate classes in polymer physics, 1977-78.

Arizona State University
PHY321, PHY322; Analytical Mechanics, 1979-1982.
PHY117, PHY118; Freshman Physics Laboratories, 1982-1985.
PHY591; Molecular Biophysics, 1986.
PHY334, PHY335; Intermediate Physics Laboratory, 1987-1988.
PHY333; Electronics Laboratory and lecture, 1988-1991, 1999-2001
PHY591B; "The New Microscopies (STM and AFM)", Spring 1992, Fall 1995.
PHY581, 582; Graduate Solid State Physics, Fall, 1992, Spring 1993, Fall 1996, Spring 1998.
PHY 191B; "Beginners guide to quantum mechanics" (Freshman seminar), Spring 1994.
PHY 442, "Statistical Physics", Spring, 1996
PHY113 and PHY 114 "General Physics Laboratory, Fall 1997.
PHY 190 "Physics as a Profession" Fall 1997
PHY484 "Introduction to Physics Teaching" Fall 1997.
PHY 333 "Electronic measurements and circuits" Spring and Fall, 1998-2002, Fall 2003, Spring, Fall 2004, Spring 2005.
CHM 113 Introduction to Chemistry, Fall 2005, Fall 2006, Fall 2007.
PHY 498/594/NAN 544 Introduction to Nanoscience Spring 2006, Spring 2007, 2008, 2009, 2010, 2011, Spring 2012, Spring 2013, Spring 2014, Spring 2015, Spring 2016, Spring 2017 *Online class since 2010*
PHY 111 Introductory Physics Fall 2009, Fall 2010, Spring 2011, Fall 2011, Spring 2012, Fall, 2012, Spring 2013, Fall 2013, Spring 2014, Spring 2015, Spring 2016 *Online class since 2010*
PHY111 recordings for ASU Online, Fall 2015, Fall 2016

Publication related to teaching:

University Physics Laboratory' published by Walsh Associates, Tempe AZ (1983).
General Physics Laboratory 1: PHY113 Spring 1998
General Physics Laboratory 2: PHY114 Spring 1998

BOOK
"Introduction to Nanoscience" Oxford University Press, October 2009.

PUBLICATIONS IN REFEREED JOURNALS :
Total citations >24,000, h-index = 77 (Google Scholar, December 2017)

1) "Multipass Fabry-Perot Spectroscopy of Polymers", S.M. Lindsay, A.J. Hartley and I.W. Shepherd, Polymer **17**, 501-507 (1976).

2) "Hypersound Propagation in Oriented Poly(methyl methacrylate)" S.M. Lindsay and I.W. Shepherd, J. Polymer Science, Polymer Symposium **58,** 85-96 (1977).

3) `"Multiple Hypersonic Relaxations and the α Transition in Poly(dimethylsiloxane)", S.M. Lindsay, A. Adshead and I.W. Shepherd, Polymer **18**, 862 (1977).

4) "A High Contrast Multipass Fabry Perot Spectrometer", S.M. Lindsay and I.W. Shepherd, J. Phys **E10**, 150-154 (1977).

5) "Correction of Brillioun Linewidths Measured by Multipass Fabry-Perot Spectroscopy", S.M. Lindsay, S. Burgess and I.W. Shepherd, Applied Optics **16**, 1404-1407 (1977).

6) "Linear Scanning Circuit for a Piezeoelectrically Controlled Fabry-Perot Etalon", S.M. Lindsay and I.W. Shepherd, Rev. Sci. Instrum. **48**, 1228-1229 (1977).

7) "Laser Light Spot Mapping of Depletion in Power SemiconductorDevices", S.M. Lindsay, Phys. Stat. Sol.(a) **53**, 311-320 (1979).

8) "Brillouin Scattering from Oligomers of Poly(dimethylsiloxane) and assignment of the α Loss Peak in Polymers", A. Adshead, S.M.Lindsay, C.G. Delides, T.A. King and I.W. Shepherd, Polymer **20**, 329-332 (1979).

9) "Studies of Polymer Dynamics by Multipass Fabry-Perot Spectroscopy", S. M. Lindsay and I.W. Shepherd, in Advances in Chemistry **ser.174**, 207-226 (1979).

10) "The Hypersonic Loss Process in Polydimethyl Siloxane and the Effects of Crosslinking", S. M. Lindsay and A. Adshead, Polymer **21**, 1355-1358 (1980).

11) "Construction and Alignment of a High Performance Multipass Vernier Tandem Fabry-Perot Interferometer", S.M. Lindsay, M.W. Anderson and J.R. Sandercock, Rev. Sci. Instrum. **52**, 1478-1486 (1981).

12) "The Sublinear Behaviour of Electron Beam and Photo-Induced Currents in a p-n Junction as a Test of Injection Levels", S.M. Lindsay, S.M. Davidson and R.M. Innes, Phys. Stat. Sol. (b) **107**, K9-K12 (1981).

13) "Brillioun Scattering from Polyurethane Gels", A. Adshead and S.M.Lindsay, Polymer **23**, 1884-1888 (1982).

14) "Injection and Doping Dependence of SEM and Scanning Light Spot Diffusion Length Measurements in Silicon Power Rectifiers", S.M. Davidson, R.M. Innes and S.M. Lindsay, Solid State Electronics **25**, 261-272 (1982).

15) "Observation of Hypersonic Shear Waves in Poly(methylmethacrylate) and Poly(styrene) by Brillioun Scattering", S.M. Lindsay, B. Halawith and G.D. Patterson, J. Polymer Sci. (Letters) **20**, 583-588 (1982).

16) "Possible Observation of a Defect Resonance in DNA", S.M. Lindsay and J. Powell, Biopolymers **22**, 2045-2060 (1983).

17) "The Speed of Sound in DNA", M. Hakim, S.M. Lindsay and J. Powell, Biopolymers **23**, 1185-1192 (1984).

18) "Brillouin Scattering from Thermal Magnons in a Thin Co Film", S.P. Vernon, S.M. Lindsay and M.B. Stearns, Phys. Rev. **B29**, 4439-4442 (1984).

19) "Quasi-Elastic Light Scattering in Silicon", M.W. Anderson, S.M. Lindsay and R.T. Harley, J. Phys. C., **17**, 6877-6882 (1984).

20) "Observation of Low Lying Raman Bands in DNA by Tandem Interferometry", S.M. Lindsay, J. Powell and A. Rupprecht, Phys. Rev. Lett. **53**, 1853-1855 (1984).

21) "Interhelical Effects on the Low Frequency Modes and Phase Transitions of Li- and Na-DNA", C. DeMarco, S.M. Lindsay, M. Porkorny, J. Powell and A. Rupprecht, Biopolymers **24**, 2035--2040 (1985).

22) "Quasi-Elastic Light Scattering from Silicon and Diamond", S.M.Lindsay, H.E. Jackson, R.T. Harley and M.W. Anderson, *Proc. 17th Intern. Conf. on the Physics of Semiconductors* (eds. J.D. Chadi and W.A. Harrison, Springer-Verlag, New York, 1985), p. 1411-1144.

23) "Quasi-Elastic Light Scattering from Diamond" H.E. Jackson, R.T.Harley, S.M. Lindsay and M.W. Anderson, Phys. Rev. Lett. **54**, 459-461 (1985).

24) "Brillouin Studies of Solid HF at High Pressure" S.A. Lee, D.A. Pinnick, S.M. Lindsay and R.C. Hanson *Proceedings of the Second International Conference on Phonon Physics* (World Scientific Publishing, Singapore, 1985).

25) "Brillouin Spectroscopy of Langmuir-Blodgett Films" R. Zanoni, C. Naselli, J. Bell, G. Stegeman, R. Sprague C. Seaton and S.M. Lindsay, Thin Solid Films **134**, 179-186 (1985).

26) "A Mechanism for the Large Anisotropic Swelling of DNA Films" G. Lewen, S.M. Lindsay, N.J. Tao, T. Weidlich, R.J. Graham and A.Rupprecht, Biopolymers **25**, 765-770 (1985).

27) "Elastic and Photoelastic Anisotropy of Solid HF at High Pressure" S.A. Lee, D.A. Pinnick, S.M. Lindsay and R.C. Hanson, Phys. Rev. **B34**, 2799-2806 (1986).

28) "Rigidity Percolation in the $Ge_xAs_ySe_{1-x-y}$ Alloy System" B. Halfpap and

S.M. Lindsay, Phys. Rev. Lett. **57**, 847-849 (1986).

29) "The Dynamics of the DNA Hydration Shell at GHz. Frequencies" N.J. Tao, S.M. Lindsay and A. Rupprecht, Biopolymers **26**, 171-188 (1987).

30) "The Optical Properties of Solid DNA" T. Weidlich, S.M. Lindsay and A. Rupprecht, Biopolymers **26**, 439-454 (1987).

31) "A Brillouin Scattering Study of the Hydration of Li- and Na-DNAFilms" S.A. Lee, S.M. Lindsay, J.W. Powell, T. Weidlich, S.M. Lindsay and A. Rupprecht, Biopolymers **26**, 1637-1665 (1987).

32) "Comment on Resonant Microwave Absorption by Dissolved DNA" S.M. Lindsay and N.J. Tao, Physical Review Letters **59**, 518 (1987).

33) "The Active Role of the DNA Hydration Shell" S.M. Lindsay and N.J. Tao, in *Structure and Expression: DNA and its Drug Complexes* (Eds. M.H. and R.H. Sarma) Adenine, N.Y. 217-227 (1988).

34) "Imaging DNA Molecules on a Metal Surface Under Water by STM" S.M. Lindsay and B. Barris, J. Vac. Sci. Technol. **A6**, 544-547 (1988).

35) "The Origin of the A to B Transition in DNA Fibers and Films" S.M. Lindsay, S.A. Lee, J. Powell, T. Weidlich, C. DeMarco, G.D. Lewen, N.J. Tao and A. Rupprecht, Biopolymers **27**, 1015-1043 (1988).

36) "Dynamic Coupling Between DNA and its Primary Hydration Shell Studied by Brillioun Scattering" N.J. Tao, S.M. Lindsay and A. Rupprecht, Biopolymers **27**, 1655-1671 (1988).

37) "Images of DNA Fragments in an Aqueous Environment by Scanning Tunneling Microscopy" B.Barris, U. Knipping, S.M. Lindsay, L. Nagahara and T. Thundat, Biopolymers **27**, 1691-1696 (1988).

38) "Low Frequency Raman Spectra of DNA: A Comparison between 2 Oligonucleotide Crystals and Highly Crystalline Films of Calf Thymus DNA" T. Weidlich, S.M. Lindsay, S.A. Lee, N.J. Tao, G.D.Lewen, W.L. Peticolas, G.A. Thomas and A. Rupprecht, J. Phys. Chem. (Letters) **92**, 3315-3317 (1988).

39) "Counterion Effects on the Structure and Dynamics of Solid DNA" T. Weidlich, S.M. Lindsay, and A. Rupprecht, Phys. Rev. Lett. **61**, 1674-1677 (1988).

40) "Coupling of Acoustic Phonons in LiCl Aqueous Solutions to a Relaxation Mode of the Ionic Hydration Shell, and Observation of Central Peaks in Inelastic Light Scattering" N.J. Tao and S.M. Lindsay, J. Phys. Chem. letters **92**, 5855-5857 (1988).

41) "Adsorbate Deformation as a Contrast Mechanism in STM Images of Biopolymers in an aqueous Environment: Images of the Unstained, Hydrated DNA Double Helix" S.M. Lindsay, T. Thundat and L. Nagahara, J. Microsc. **152**, 213-220 (1988).

42) "Tip Bias Induced Surface Modification on Gold Surfaces" U. Knipping, T. Thundat, L. Nagahara and S.M. Lindsay, J. Microsc. **152**, 145-148 (1988).

43) "An Investigation of Mercury Adsorption in Thin Gold Films by STM" M.A. George, T. Thundat, S.M. Lindsay and W.S. Glaunsinger, J. Microsc. **152**, 703-713 (1988).

44). "A Low Frequency Raman Study of Polynucleotides" T. Weidlich and S.M. Lindsay, J. Phys. Chem (letters) **92**, 6479-6482 (1988).

45) "Sonic velocities in Bone at 10 GHz Frequencies" S. Lees, N-J Tao and S.M. Lindsay, *Acoustical Imaging **17*** (H. Shimzu, N. Chubachi and J. Kushibiki, eds, Plenum, NY, 1989) pp 371-380.

46) "Structure of the DNA Hydration Shells Studied by Raman Spectroscopy" N.J. Tao, S.M. Lindsay and A. Rupprecht, Biopolymers **28**, 1019-1030 (1989).

47) "Images of the DNA double helix in water" S.M. Lindsay, T. Thundat, L.Nagahara, U. Knipping and R.L. Rill, Science **244**, 1063-1064 (1989).

48) "Preparation and Characterization of STM Tips for Electrochemical Studies" L. Nagahara, T. Thundat and S.M. Lindsay, Rev. Sci. Instrum. **60**, 3128 - 3130 (1989).

49) "STM and AFM Images of Nucleosome DNA Under Water" S.M. Lindsay, L.A. Nagahara, T. Thundat, U. Knipping, R.L. Rill, B. Drake, C.B. Prater, A.L. Weisenhorn, S.A.C. Gould and P.K. Hansma, J. Biomol. Struct. Dyn. **7**, 279 - 287 (1989).

50) "Sequence, Packing and Nanometer Scale Structure in STM Images of Nucleic Acids Under Water" S.M. Lindsay, L.A. Nagahara, T. Thundat and P. Oden, J. Biomol. Struct. Dyn. **7**, 289 - 299 (1989).

51) "Reorientational Relaxation of Water Molecules in LiCl Solution Studied by Depolarized Rayleigh Scattering" N.J. Tao and S.M. Lindsay, J. Phys. Condens. Matter **1**, 8709-8720 (1989).

52) "Conformational Flexibility in DNA: Ion Mediated Interactions and the Shape of Genes" S.M. Lindsay, J. Molecular Liquids, **41**, 315-325 (1989).

53) "Imaging Biological Polymers in Water" S.M. Lindsay, EMSA Bulletin, **19:2,** 60-64 (1989).

54) ``Direct Observation of Bioelectrochemical Processes by Scanning Tunneling Microscopy" T. Thundat, L.A. Nagahara, P. Oden and S.M. Lindsay, J. Vac. Sci. Technol. **A 8**, 645-647 (1990).

54) "Scanning Tunneling Microscopy studies of semiconductor electrochemistry" T. Thundat, L.A. Nagahara and S.M. Lindsay, J. Vac. Sci. Technol. **A 8**, 539-543 (1990).

56) "How does the Scanning Tunneling Microscope Image Biopolymers?" S.M. Lindsay, O.F. Sankey and K.E. Schmidt, Comments on Molecular and Cellular Biophysics, **A7**, 109-129 (1991).

57) "Pressure and Resonance Effects in Scanning Tunneling Microscopy of Molecular Adsorbates" S.M. Lindsay, O.F. Sankey, Y. Li and C. Herbst, J. Phys. Chem. **94**, 4655-4660 (1990).

58) "Electrical, Spectroscopic and Morphological Investigations of Chromium Diffusion through Thin Gold Films" M.A. George, W.S. Glaunsinger, T. Thundat and S.M. Lindsay, Thin Solid Films, **189**, 59-72 (1990).

59) "Modification of Tantalum Surfaces by Scanning Tunneling Microscopy in an Electrochemistry Cell" T. Thundat, L.A. Nagahara, S.M. Lindsay, M.A. George and W.S. Glausinger, J. Vac. Sci. Technol. **A8**, 3537-3541 (1990).

60) "Thermally induced changes in electrical and topographical properties of thin gold films" Q. Bo, M.A. George, I. Sorenson, W.S. Glaunsinger, T. Thundat and S.M. Lindsay, J. Vac. Sci. Technol. **A8**, 1491-1497 (1990).

61) "Surface Brillouin Scattering from Graphite" S.A. Lee and S.M. Lindsay, Phys. Stat. Sol. **B 157**, k83 - k86 (1990).

62) "Low frequency Raman Spectra of Z-DNA" T. Weidlich, S.M. Lindsay, W.L. Peticolas and G.A. Thomas, J. Biomol. Struct. Dynamics **7,** 849-858 (1990).

63) "Fragility of the Ge-As-Se Glassforming liquids in Relation to Rigidity Percolation and the Kauzmann Paradox" M. Tatsumisago, B.L. Halfpap, J.L. Green, S.M. Lindsay and C.A. Angell, Physical Review Letters **64**, 1549-1552 (1990).

64) "Electrochemical Deposition of Molecular Adsorbates for In Situ Scanning Probe Microscopy" L.A. Nagahara, T. Thundat, P.I. Oden, S.M. Lindsay and R.L. Rill, Ultramicroscpopy **33,** 107-116 (1990).

65) "A Quasielastic Light Scattering Study at the 1q to 2q Transition within the Incommensurate phase of $Ba_2NaNb_5O_{15}$" W.F. Oliver, J.F. Scott, S.A. Lee and S.M. Lindsay, J. Physics: Condensed Matter **2**, 2465-2471 (1990).

66) "Studies of Compact Hard Tissues and Collagen by means of Brillouin Light Scattering" S. Lees, N.J. Tao and S.M. Lindsay, Connective Tissue Research, **24**, 187-205 (1990).

67) "Brillioun Scattering Study of Methanol at High Pressures" S.A. Lee, A. Anderson, S.M. Lindsay and R.C. Hanson, High Pressure Research, **3**, 230-232 (1990).

68) "A Raman Study of Low Frequency Intrahelical Modes in A-, B-, and C-DNA" T. Weidlich, S.M. Lindsay, Qi Rui, A. Rupprecht, W.L. Peticolas and G.A. Thomas, J. Biomolecular Structure and Dynamics, **8**, 139-171 (1990).

69) "Nanolithography on Semiconductor Surfaces under an Etching Solution" L.A. Nagahara, T. Thundat and S.M. Lindsay, Applied Physics Letters, **57**, 270-272 (1990).

70) "Can the Scanning Tunneling Microscope Sequence DNA?" S.M. Lindsay and M. Philipp, Genetic Analysis **8**, 8-13 (1991).

71)"Effects of Network Topology on Low-Temperature Relaxation in Ge-As-Se Glasses, as probed by Persistent Infrared Spectral Hole Burning" S.P. Love, A.J. Seivers, B.L. Halfpap, and S.M. Lindsay, Physical Review Letters **65**, 1792-1795 (1990).

72) "Scanning Tunneling Microscopy Investigations of Polysilicon Films under Solution" J.P. Carrejo, T. Thundat, L.A. Nagahara, S.M. Lindsay and A. Majumdar, J. Vac. Sci. Technol. **B9**, 955-959 (1991).

73) "A Technique for Stable Adhesion of DNA to a Modified Graphite Surface for Imaging by STM" Yu. L. Lyubchenko, S.M. Lindsay, J.A. DeRose and T. Thundat, J. Vac. Sci. Technol. **B9**, 1288-1290 (1991).

74) "Electrochemical Deposition of Nucleic Acids for Scanning Probe Microscopy" J.A. DeRose, S.M. Lindsay, L.A. Nagahara, P.I. Oden and T. Thundat, J. Vac. Sci. Technol. **B9**, 1166-1170 (1991).

75) "Studies of the Electrical Properties of Large Molecular Adsorbates" S.M. Lindsay, Y. Li., J. Pan, T. Thundat, L.A. Nagahara, P.I. Oden, J.A. DeRose and U. Knipping, J. Vac. Sci. Technol. **B9**, 1096-1101 (1991).

76) "Superperiodic Features Observed on Graphite under Solution with Scanning Tunneling Microscopy" P.I. Oden, T. Thundat, L.A. Nagahara, S.M. Lindsay, G.B. Adams and O.F. Sankey, Surface Science Letters **254**, L454-L459 (1991).

77) "Gold Grown Epitaxially on Mica: Conditions for Large Area Flat Faces" J.A. DeRose, T. Thundat, L.A. Nagahara and S.M. Lindsay, Surface Science **256**, 102-108 (1991).

78) "Polystyrene Latex Spheres as a Size Calibration for the Atomic Force Microscope" Y. Li and S.M. Lindsay, Review of Scientific Instruments **62**, 2630-2633 (1991).

79) "Observations of the 22X√3 Reconstruction of Au(111) under Aqueous Solutions using Scanning Tunneling Microscopy" N.J. Tao and S.M. Lindsay, Applied Physics **70**, 5141-5143 (1991).

80) "High Pressure Viscoelastic Properties and Equation of State of Liquids Derived from Brillouin Data" W.F. Oliver, C.A. Herbst, S.M. Lindsay and G.H. Wolf, Physical Review Letters **67,** 2795-2798 (1991).

81) "A general method for determination of Brillouin linewidths by correction for instrumental effects and aperture broadening: Application to high pressure diamond anvil cell experiments" W.F. Oliver, C.A. Herbst, S.M. Lindsay and G.H. Wolf, Rev. Sci. Instrum. **63** 1884-1895 (1992).

82) "Observation of a phase transition in Li- and Na-hyaluronate films" S.A. Lee, W.F. Oliver, Z. Song, A. Rupprecht and S.M. Lindsay, Biopolymers **32**, 303-306 (1992).

83) "Imaging porphyrin-based molecules on a gold substrate in ambient conditions" D.K. Luttrull, J. Graham, J.A. DeRose, D. Gust, T.A. Moore and S.M. Lindsay, Langmuir **8**, 765-768 (1992).

84) "Potentiostatic deposition of DNA for scanning probe microscopy" S.M. Lindsay, N.J. Tao, J.A. DeRose, P.I. Oden, Yu. L. Lyubchenko, R.E. Harrington and L. Shlyakhtenko, Biophysical Journal **61**, 1570-1584 (1992).

85) "Atomic force and scanning tunneling microscopy observations of whisker crystals and surface modification on evaporated gold films" P.I. Oden, L.A. Nagahara, J. Graham, J. Pan, N.J. Tao, Y. Li, T.G. Thundat, J.A.DeRose and S.M. Lindsay, Ultramicroscopy **42-44**, 580-586 (1992).

86) "Initial stages of underpotential deposition of Pb on reconstructed and unreconstructed Au(111)" N.J. Tao, J. Pan, Y. Li, P.I. Oden, J.A. DeRose, and S.M. Lindsay, Surface Science Letters **271**, L338-L344 (1992).

87) "Atomic Force Microscopy of Long DNA: Imaging in Air and Under Water" Y. Lyubchenko, L. Shlyakhtenko, R.E. Harrington, P.I. Oden and S.M. Lindsay, Proceedings of the National Academy of Science (USA) **90,** 2137-2140 (1993).

88) "Kinetics of a potential induced 23X√3 to 1X1 transition of Au(111) studied by in-situ scanning tunneling microscopy" N.J. Tao and S.M. Lindsay, Surface Science Letters **274**, L546-L553 (1992).

89) "In-situ Scanning Tunneling Microscopy of Iodine and Bromine adsorption on Au(111) under potential control" N.J. Tao and S.M. Lindsay, Journal of Physical Chemistry **96**, 5213 - 5217 (1992).

90) "Measuring the microelastic properties of Biological Material" N.J. Tao, S. M. Lindsay and S. Lees, Biophysical Journal, **63**, 1165-1169 (1992).

91) "Atomic Force Microscopy of Reovirus ds-RNA: A routine technique for for length measurements" Y. Lyubchenko, B.L. Jacobs and S.M. Lindsay, Nucleic Acids Research **20**, 3983 - 3986 (1992).

92) "Atomic Force Microscopy Imaging of Double Stranded DNA and RNA" Y. Lyubchenko, A.A. Gall, L.S. Shlyakhtenko, R.E. Harrington, B.L. Jacobs, P.I. Oden and S.M. Lindsay, Journal of Biomolecular Structure and Dynamics **10**, 589-606 (1992).

93) "Self Assembly of Molecular Superstructures studied by in situ STM: The DNA bases on Au(111)" N.J. Tao, J.A. DeRose and S.M. Lindsay, Journal of Physical Chemistry **97**, 910-919 (1993).

94) "The Au(111) 23X√3 surface as a test surface for comparing the atomic force and scanning tunneling microscopes" P.I. Oden, N.J. Tao and S.M. Lindsay, Journal of Vacuum Science and Technology, in press (1993).

95) "Atomic force microscopy of DNA and Bacteriophage in air, water and propanol: The role of adhesion forces" Y.L. Lyubchenko, P.I. Oden, D. Lampner, S.M. Lindsay and K.A. Dunker, Nucleic Acids Research **21**, 1117-1123 (1993).

96) " Direct measurement of interaction forces between colloidal particles using the scanning force microscope" Y.Q. Li, N.J. Tao, J. Pan, A.A. Garcia and S.M. Lindsay, Langmuir, **9**, 637-641 (1993).

97) "Brillouin-scattering study of hyaluronic acid: Dynamic coupling with the water of hydration and phase transitions" S.A. Lee, W.F. Oliver A. Rupprecht, S.M. Lindsay, Physical Review E **47** , 677-683 (1993).

98) "STM and AFM studies of biomaterials at a liquid-solid interface" S.M. Lindsay, Y.L. Lyubchenko, N.J. Tao, Y.Q. Li, P.I. Oden and J. Pan , Journal of Vacuum Science and Technology **11**, 808-815 (1993).

99) "A comparative SPM study of the surface morphology of Au films grown from the vapor onto glass, fused silica, and muscovite mica" J.A. DeRose, D.B. Lampner, S.M. Lindsay and N.J. Tao, Journal of Vacuum Science and Technology **11** 776-780 (1993).

100) "Structure of hydrated oligonucleotides studied by in-situ scanning tunneling microscopy" T.W. Jing. A.M. Jeffrey, J.A. DeRose, Y.L. Lyubchenko, , L.S. Schlyakhtenko, R.E. Harrington, E. Appella, J. Larsen, A. Vaught, D. Rekesh, F-X. Lu and S.M. Lindsay, Proc. Natl. Acad. Sci. (USA) **90**, 8934-8938 (1993).

101) "Identification of DNA-Cisplatin adducts in a blind trial of in-situ scanning tunneling microscopy" A.M. Jeffrey, T.W. Jing, J.A. DeRose, A. Vaught, D. Rekesh, F-X. Lu and S.M. Lindsay, Nucleic Acids Research **21**, 5896-5900 (1993).

102) "An atomic force microscopy study of a self-assembeled octadecyl mercaptan monolayer adsorbed on gold (111) under potential control" J. Pan, N.J. Tao and S.M. Lindsay, Langmuir **9**, 1556-1560 (1993).

103) "Interpretation of STM Images of Biomolecules" S.M. Lindsay, T.W. Jing, A. Vaught and D. Rekesh, Nanobiology, **3**, 17-27 (1994).

104) "Tunneling Barriers in Electrochemical Scanning Tunneling Microscopy" J. Pan, T.W. Jing and S.M. Lindsay, J. Phys. Chem., **98**, 4206-4208 (1994).

105) "Structure of three-way DNA junctions 1. Non-planar geometry" L.S. Shlyakhtenko, D. Rekesh, S.M. Lindsay, I. Kutyavin, E. Appella, R.E. Harrington and Y.L. Lyubchenko, J. Biomol. Struct. Dyn. **11**, 1175-1189 (1994).

106) "Non-exponential tunneling in water near an electrode" A. Vaught, T.W. Jing, S.M. Lindsay, Chemical Physics Letters **236** 306-310 (1995).

107) "Structure and Stability of Cytosine Adlayers on Au(111) - An in-situ STM study" Th. Wandlowski, D. Lampner and S.M. Lindsay, J. Electroanalytical Chemistry **404**, 215-226 (1996).

108) "Atomic Force Microscopy of Nucleoprotein Complexes" Y.L. Lyubchenko, B.L. Jacobs, S.M. Lindsay and A. Stasiak, Scanning Microscopy **9**, 705-727 (1995).

109) “Stable binding of Isocyanoporphyrin Molecules to Au(111): An STM study” W. Han, S. Li, S.M. Lindsay, D. Gust, T.A. Moore and A.L. Moore, Langmuir **12**, 5742 - 5744 (1996).

110) “Scanning Tunneling Microscopy of Mercapto-Hexyl-Oligonucleotides attached to Gold” D. Rekesh, Y. Lyubchenko, L.S. Shlyakhtenko and S.M. Lindsay, Biophysical Journal **71**, 1079 - 1086 (1996).

111) “Polymerization of the DNA binding fragment of p53 on DNA: Atomic Force Microscope Study” Y.L. Lyubchenko, L.S. Shlyakhtenko, A. Nagaich, A. Appella, R.E. Harrington and S.M. Lindsay, Scanning **12** 455-463 (1998).

112) “A magnetically driven oscillating probe microscope for operation in liquids” W. Han, S.M. Lindsay and T. Jing, Applied Physics Letters **69**, 4111-4113 (1996).

113) “Kinked DNA” W. Han, S.M. Lindsay, M. Dlakic and R.E. Harrington, Nature **386**, 563-564 (1997).

114) “Strained DNA is kinked by low concentrations of Zn^{2+}” W. Han, M. Dlakic, Y. Zhu, S.M. Lindsay and R.E. Harrington. Proc. Natl. Acad. Sci. (USA) **94** 10565-10570 (1997).

115) “STM Contrast, Electron Transfer Chemistry and Conduction in Molecules” W. Han, E.N. Durantini, T.A. Moore, A.L. Moore, D. Gust, P. Rez, G. Leatherman, G.R. Sealey, N.J. Tao and S.M. Lindsay, J. Phys. Chem. **101** 10719-10725 (1997).

116) “Probing Molecular Ordering at a Liquid-Solid Interface with a Magnetically Oscillated Atomic Force Microscope” W. Han and S.M. Lindsay, Applied Physics Letters **72** 1656-1658 (1998).

117) “Carotene as a Molecular Wire: Conducting Atomic Force Microscopy” G. Leatherman, E.N. Durantini, D. Gust, T.A. Moore, A.L. Moore, S. Stone, Z. Zhou P. Rez Y.Z. Liu and S.M. Lindsay, Journal of Physical Chemistry B **103** 4006-4010 (1999).

118) “Dynamic Force Microscopy in Fluid” M. Lantz, Y.Z. Liu, X.D. Cui, H. Tokumoto and S.M. Lindsay, Surface and Interface Analysis **27**, 354-360 (1999).

119) “Antibody recognition imaging by force microscopy” A. Raab, W. Han, D. Badt, S.J. Smith-Gill, S.M. Lindsay, H. Schindler and P. Hinterdorfer, Nature Biotechnology **17**, 901-5 (1999).

120) “Relationship between stiffness and force in single molecule pulling experiments” Y.Z. Liu, S.H. Leuba and S.M. Lindsay, Langmuir; **15**; 8547-8548
(1999).

121) "Conformational transition in DNA on a cold surface" Feng XZ, Bash R, Balagurumoorthy P, Lohr D, Harrington RE, Lindsay SM, *Nucleic Acids Res* 15;28(2):593-6, (2000).

122) "The mechanical properties of single chromatin fibers under tension" S.H. Leuba, J. Zlatanova, M.A. Karymov, R. Bash, Y.Z Liu, D. Lohr, R.E. Harrington and S.M. Lindsay, Single Molecules **1**, 185-193 (2000)

123) "Mechanically stretching single chromatin fibers" S.H. Leuba, M.A. Karymov, Y.Z. Liu, S.M. Lindsay and J. Zlatanova, Gene Therapy and Molecular Biology **4**, 297-301 (2000)

124) “Single molecule force spectroscopy in biology using the atomic force microscope” Zlatanova J, Lindsay SM, Leuba SH, Prog. Biophys. Mol. Bio. 74: (1-2) 37-61 (2000).

125) "Conformation and Rigidity of DNA Microcircles containing wafl Response Element for P53 Regulatory Protein" H. Zhou, Y. Zhang, Z.O. Yang, X.Z. Feng, S.M. Lindsay, P. Baalagurumoorthy and R.E. Harrington, J. Mol. Biol. **306**, 227-238 (2001)

126) “Reproducible Measurement of Single-Molecule Conductivity” X. D. Cui, A. Primak, X. Zarate, J. Tomfohr, O. F. Sankey, A. L. Moore, T. A. Moore, D. Gust, G. Harris and S. M. Lindsay, Science **294**, 571-574 (2001).

127) “Making electrical contacts to molecular monolayers” Cui, X.D., Zarate, X., Tomfohr, J., Primak, A., Moore, A.L., Moore, T.A., Gust, D., Harris, G., Sankey, O.F., Lindsay, S.M., Nanotechnology, **13** 5-14 (2002).

128) “Bias-induced forces in conducting atomic force microscopy and contact charging of organic monolayers” X.D. Cui, X. Zarate J. Tomfohr, A. Primak, A. L. Moore, T. A. Moore, D. Gust, G. Harris, O. F. Sankey, and S. M. Lindsay. Ultramicroscopy, **92** 67-76 (2002).

129) “Atomic Force Microscopy Reveals Kinks in the DNA response element DNA” P. Balagurumoorthy, S.M. Lindsay and R.E. Harrington, Biophysical Chemistry **101-102**, 611-623 (2002).

130) “Single Molecule Electronics and Tunneling in Molecules” S.M. Lindsay, Jap. J. Appl. Phys.**41**, 4867-4870 (2002).

131) “Changes in the Electronic Properties of a Molecule when it is wired into a circuit” Cui, X.D., Zarate, X., Tomfohr, J., Primak, A., Moore, A.L., Moore, T.A., Gust, D., Harris, G., Sankey, O.F. and Lindsay, S.M., J. Phys. Chem. B **106** 8609-8614, 2002.

132) “Glutaraldehyde modified mica: A new surface for atomic force microscopy of chromatin” H. Wang, R. Bash, J.G. Yodh, G.L. Hager, D. Lohr and S.M. Lindsay, Biophysical J.**83**, 3619-3625 (2002).

133) “Electrical measurements of a dithiolated electronic molecule via conducting atomic force microscopy” A.M. Rawlett, T.J. Hopson, L.A, Nagahara, R.K. Tsui, G.K. Ramachandaran and S.M. Lindsay, Applied Physics Letters **81** 3043-3045 (2002).

134) “Organic Molecules in an electrical circuit: An AFM study of a negative-differential resistance molecule” G.K. Ramachandran, L.A. Nagahara, R.K. Tsui and S.M. Lindsay, Proc. MRS, in press (2002)

135) “A Bond Fluctuation Mechanism for Stochastic Switching in Wired Molecules” G.K. Ramachandran, T.J. Hopson, A.R. Rawlett, L.A. Nagahara, A. Primak and S.M. Lindsay, Science **300**, 1413-1415 (2003).

136) “Nucleosomal Arrays can be Salt Reconstituted onto a Single Copy MMTV Promoter DNA Template: Their Properties Differ in Several Ways from those of Comparable 5s Concatemeric Arrays” R. Bash, H. Wang, J.G. Yodh, G.L. Hager, S.M. Lindsay and D. Lohr , Biochemistry **42**, 4681-4681 (2003).

137) "Charge Transfer on the Nanoscale: Current Status" David M. Adams, Louis Brus, Christopher E. D. Chidsey, Stephen Creager, Carol Creutz, Cherie R. Kagan, Prashant V. Kamat, Marya Lieberman, Stuart Lindsay, Rudolph A. Marcus, Robert M. Metzger, M. E. Michel-Beyerle, John R. Miller, Marshall D. Newton, Debra R. Rolison, Otto Sankey, Kirk S. Schanze, James Yardley and Xiaoyang Zhu J. Phys. Chem. **107**, 6668-6697, 2003;

138) The Electron Transport Properties of a Carotene Molecule in a Metal-(Single-Molecule)-Metal Junction Ganesh K. Ramachandran, J. K. Tomfohr, O. F. Sankey, Jun Li, X. Zarate, A. Primak, Y. Terazano, T. A. Moore, A. L. Moore, D. Gust, L. A. Nagahara and S. M. Lindsay, J. Phys. Chem. B, 107, 6162-6169 (2003).

139) Comparison of electronic transport measurements on organic molecules, Salomon, A., Cahen, D., Lindsay, S., Tomfohr, J., Engelkes, V.B., and Frisbie, C.D. Advanced Materials **15** 1881-1890 (2003)

140) Self-Assembled Monolayers of TTF Derivatives on Gold: Characterization and Electron Transport Studies, Elba Gomar-Nadal, Ganesh K. Ramachandran, Fan Chen , Timothy Burgin, Jaume Veciana, Concepció Rovira, David B. Amabilino, and Stuart M. Lindsay, J. Phys. Chem. **108**, 7213-7218 (2004).

141) Calibration of a pH sensitive buried channel silicon-on-insulator MOSFET for sensor applications, B. Ashcroft, B. Takulapalli, J. Yang, G. M. Laws, H. Q. Zhang, N. J. Tao, S. Lindsay, D. Gust, and T. J. Thornton, Phys. Stat. Sol. (b) **241**, 2291–2296 (2004).

142) Single-molecule recognition imaging microscopy, C. Stroh, H. Wang, R. Bash, B. Ashcroft, J. Nelson, H. Gruber, D. Lohr, S. M. Lindsay, and P. Hinterdorfer, Proc. Natl. Acad. Sci (USA)., **101** 12503–12507 (2004).

143) Using Atomic Force Microscopy to Study Nucleosome Remodeling on Individual Nucleosomal Arrays in Situ, H. Wang, R. Bash, J. G. Yodh,G. Hager, S. M. Lindsay and D. Lohr, Biophysical Journal **87**, 1964–1971 (2004).

144) "A Statistical Thermodynamic Model Applied to Experimental AFM Population and Location Data Is Able to Quantify DNA-Histone Binding Strength and Internucleosomal Interaction Differences between Acetylated and Unacetylated Nucleosomal Arrays" F. J. Solis, R. Bash, J. Yodh, S. M. Lindsay, and D. Lohr, Biophys. J. **87** 3372-3387 (2004).

145) "Electronic Decay Constant of Carotenoid Polyenes from Single-Molecule Measurements" He, J.; Chen, F.; Li, J.; Sankey, O. F.; Terazono, Y.; Herrero, C.; Gust, D.; Moore, T. A.; Moore, A. L.; Lindsay, S. M.;
J. Am. Chem. Soc.; (Communication); **2005**; *127*(5); 1384-1385.

146) "A Molecular Switch Based on Potential-Induced Changes of Oxidation State" Fan Chen, Jin He, Colin Nuckolls, Tucker Roberts, Jennifer E. Klare, and Stuart Lindsay, Nano Letters, **5** 503-506 (2005).

147) "Switching of a photochromic molecule on gold electrodes: single-molecule measurements" Jin He, Fan Chen, Paul A. Liddell, Joakim Andreasson, Stephen D. Straight, Devens Gust, Thomas A. Moore, Ana L. Moore, Jun Li, Otto F. Sankey and Stuart M. Lindsay, Nanotechnology **16**, 695- 702 (2005).

148) "Single-Molecule Electronic Measurements with Metal Electrodes", S.M. Lindsay, J. Chem. Ed. **82**, 727-733 (2005).

149) "Localization of Single Avidin-Biotin Interactions Using Simultaneous Topography and Molecular Recognition Imaging" A. Ebner , F. Kienberger , G. Kada , C. M. Stroh, M. Geretschläger, A. S. M. Kamruzzahan, L. Wildling , W. T. Johnson , B. Ashcroft , J. Nelson , S. M. Lindsay , H. J. Gruber and P. Hinterdorfer, Chem. Phys. Chem. **6**, 897-900 (2005).

150) "On the Mechanism of Negative Differential Resistance in Ferrocenylundecanethiol Self-Assembled Monolayers" He, J.; Lindsay, S. M.; *J. Am. Chem. Soc.;* (Communication); **2005**; *127*(34); 11932-11933.

151) "Self-assembling molecular pegboard", Lund, K., Y. Liu, S. Lindsay, and H. Yan: J. Am. Chem. Soc. (Communication) **126**, 17606-17607 (2005).

152) "Solution AFM Studies of Human Swi-Snf and Its Interactions with MMTV DNA and Chromatin" H. Wang, R. Bash, S. M. Lindsay and D. Lohr, Biophysical Journal **89,** 3386–3398 (2005).

153) "Simultaneous *T*opography and *REC*ognition Mapping with PicoTREC: A Powerful New Technology That Can Be Used To Map Nanometer-Scale Molecular Binding Sites On A Variety Of Surfaces" W. T. Johnson, G. Kada, C. Stroh, H. Gruber, H. Wang, F. Kienberger, A. Ebner, S. Lindsay, and P. Hinterdorfer, NSTI-Nanotech **2,** 679-682 (2005).

154) "Redox-gated electron transport in electrically wired ferrocene molecules" Xiaoyin Xiao, Daniel Brune, Jin He, Stuart Lindsay, Christopher B. Gorman, Nongjian Tao, Chemical Physics, **326** 138-143 (2006).

155) "Measuring single molecule conductance with break junctions" Jin He, Otto Sankey, Myeong Lee, Nongjian Tao, Xiulan Li and Stuart Lindsay, Faraday Discussions **131** 145-154 (2006).

156) "Molecular Wires and Devices: Advances and Issues" S.M. Lindsay, Faraday Discussions, **141** 403-409 (2006).

157) "Conductance of Single Alkanedithiols: Conduction Mechanism and Effect of Molecule-Electrode Contacts" Li, X.; He, J.; Hihath, J.; Xu, B.; Lindsay, S. M.; Tao, N. *J. Am. Chem. Soc.* **128(6)**; 2135-2141 (2006).

158) "Isolation of an scFv targeting BRG1 using phage display with characterization by AFM" W.D. Marcus, H. Wang, D. Lohr, M.R. Sierks, S.M. Lindsay. Biochemical and Biophysical Research Communications 342 (2006) 1123–1129

159) "Conductance of a biomolecular wire", Visoly-Fisher, I.; Daie, K.; Terazono, Y.; Herrero, C.; Fungo, F.; Otero, L.; Durantini, E.; Silber, J. J.; Sereno, L.; Gust, D.; Moore, T. A.; Moore, A. L.; Lindsay, S. M., *Proc. Nat. Acad. Sci.* **103**, 8686–8690 (2006).

160) "Recognition Imaging with a DNA Aptamer" Lin, L.; Wang, H.; Liu, Y.; Yan, H.; Lindsay, S. M., *Biophys. J.* **90**, 4236–4238 (2006).

161) "In situ measurements of oligoaniline conductance: Linking electrochemistry and molecular electronics" Chen, F.; Nuckolls, C.; Lindsay, S. M., *Chemical Physics***, 324**, 236-243 (2006).

162) "Identification and repair of positive binding antibodies containing randomly generated amber codons from synthetic phage display libraries" Marcus WD, Lindsay SM, Sierks MR Biotechnology Progress **22**: 919-922 (2006)

163) "AFM imaging of protein movements: Histone H2A–H2B release during nucleosome remodeling" Bash R, Wang H, Anderson C, Yodh J, Hager G, Lindsay, SM, Lohr D FEBS Letters **580**, 4757-4761 (2006).

164) "Electrochemical Origin of Voltage-Controlled Molecular Conductance Switching" J. He, Q. Fu, S.M. Lindsay, J.W. Ciszek and J.M. Tour ,J. Am. Chem. Soc., 2006. **128**: 14828-14835.

165) "Molecular Transport Junctions: Clearing Mists" S.M. Lindsay and M.A. Ratner, Advanced Materials, **19** 23-31 (2007).

166) "Using atomic force microscopy to study chromatin structure and nucleosome remodeling" D. Lohr, R. Bash, H. Wang, J. Yodh and S.M. Lindsay, Methods, 2007. **41**: 333–341 (2007)

167) **"**Properties of nucleosomes in acetylated mouse mammary tumor virus versus 5S arrays**"** Solis, F. J., Bash, R., Wang, H., Yodh, J., Lindsay, S., Lohr, D., Biochemistry **46**, 5623-5634 (2007).

168) "Length dependence of charge transport in oligoanilines" He, Jin, Chen, Fan, Lindsay, Stuart, Nuckolls, Colin, Applied Physics Letters **90** 072112-1 to 3 (2007).

169) "Determination of Single Molecule Conductances of Alkanedithiols by Conducting-Atomic Force Microscopy with Large Gold Nanoparticles", T. Morita and S. Lindsay, Journal of the American Chemical Society (Communication) **129**, 7262-7263 (2007).

171) "Interactions of TRF2 with model telomeric ends" Sheik J. Khan, Giscard Yanez, Kenneth Seldeen, Hongda Wang, Stuart M. Lindsay and Terace M. Fletcher, Biochemical and Biophysical Research Comm. **363**, 44-50 (2007).

171) "Tetrameric Structure of Centromeric Nucleosomes in Interphase Drosophila Cells", Yamini Dalal, Hongda Wang, Stuart Lindsay, Steven Henikoff, Public Library of Science, Biology, **5**, e218, 1 to 12 (2007).

172) "Identification of DNA base-pairing via tunnel current decay" Jin He, Lisha Lin, Peiming Zhang and Stuart Lindsay, Nano Letters, **7**, 3854-3858 (2007).

173) "Spatially addressable multiprotein nanoarrays templated by aptamer-tagged DNA nanoarchitectures" R. Chhabra, Rahul, J. Sharma, Y-G Ke, Yan Liu, S. Rinker, S. Lindsay, H. Yan. J. Am. Chem. Soc. (Communication) **129**, 1034 (2007).

174) "In Vitro Selection of Histone H4 Aptamers for Recognition Imaging Microscopy" Liyun Lin, Doris Hom Stuart M. Lindsay and John C. Chaput, J. Am. Chem. Soc. (Communication) **129**, 14568-14569 (2007).

175) "Self-Assembled Water-Soluble Nucleic Acid Probe Tiles for Label-Free RNA Hybridization Assays" Yonggang Ke, Stuart Lindsay, Yung Chang, Yan Liu, Hao Yan, Science **319** 180-183 (2008).

176) "Can an atomic force microscope sequence DNA using a nanopore?", Qamar S, Williams PM, Lindsay, SM. Biophys. J. **94**, 1233-1240 (2008).

177) "Imaging Glycosylation" Hongda Wang, Linda Obenauer-Kutner, Mei Lin, Yunping Huang, Michael J. Grace and Stuart M. Lindsay, J. Am. Chem. Soc. **130**, 8154–8155 (2008).

178) "Charge transport in mesoscopic conducting polymer wires" He, J., Forzani, E. S., Nagahara, L. A., Tao, N. & Lindsay, S. *J. Phys: Condens. Matter* **20**, 374120-8 (2008).

179) "Transverse Tunneling through DNA Hydrogen Bonded to an Electrode" He, J., Lin, L., Zhang, P., Spadola, Q., Xi, Z., Fu, Q. & Lindsay, S. *Nano Letters* **8**, 2530-2534 (2008).

180) "Developing DNA tiles for oligonucleotide hybridization assay with higher accuracy and efficiency" Ke, Yonggang, Nangreave, Jeanette, Yan, Hao, Lindsay, Stuart, Liu, Yan, Chemical Communications Issue: **43** Pages: 5622-5624 (2008).

181) "Nanopore Sequencing." Branton, B., D. Deamer, A. Marziali, H. Bayley, S. A. Benner, T. Butler, M. Di Ventra, S. Garaj, A. Hibbs, X. Huang, S. B. Jovanovich, P. S. Krstic, S. Lindsay, X. S. Ling, C. H. Mastrangelo, A. Meller, J. S. Oliver, Y. V. Pershin, J. M.

Ramsey, R. Riehn, G. V. Soni, V. Tabard-Cossa, M. Wanunu, M. Wiggin and J. Schloss (2008). Nature Biotechnology **26**: 1146-1153.

182) "An AFM/Rotaxane Molecular Reading Head for Sequence-Dependent DNA Structure." Ashcroft, B., Q. Spadola, S. Qamar, P. Zhang, G. Kada, R. Bension and S. M. Lindsay (2008). Small **4**: 1468-1475.

183) "Reduction-induced switching of single-molecule conductance of fullerene derivatives" Morita T, Lindsay, S.M., J. Phys. Chem. B. **112** 10563-10572 (2008).

184) "Characterization of an antibody scFv that recognizes fibrillar insulin and β-amyloid using atomic force microscopy", Warren D. Marcus, Hongda Wang, Stuart M. Lindsay, Michael R. Sierks, Nanomedicine **4**, 1-7 (2008).

184) "A hydrogen-bonded electron-tunneling circuit reads the base composition of unmodified DNA", He, J., Lin, L., Liu, H., Zhang, P., Lee, M., Sankey, O. F. & Lindsay, S. M. *Nanotechnology* **20**, 075102-075110 (2009).

186) "Tunnel conductance of Watson-Crick nucleoside-basepairs from telegraph noise", Chang, S., He, J., Lin, L., Zhang, P., Liang, F., Young, M., Huang, S. & Lindsay, S. *Nanotechnology* **20**, 185102-185109 (2009).

187) "Tunneling readout of hydrogen-bonding based recognition" Chang, S., He, J., Kibel, A., Lee, M., Sankey, O. F., Zhang, P. & Lindsay, S. M. *Nature Nanotechnology* **4**, 297-301 (2009).

188) "Chromatin Stability at Low Concentration Depends on Histone Octamer Saturation Levels" Thomas A. Hagerman, Qiang Fu, Benoit Molinie, James Denvir, Stuart Lindsay and Philippe T. Georgel, Biophysical Journal, **96**, 1944–1951 (2009)

189) "Response to comment by Di Ventra on ''Molecular Junctions: Clearing Mists'" S.M. Lindsay and M.A. Ratner, Adv. Materials, **21**, 1548 (2009)

190) "Evolution of a Histone H4-K16 Acetyl-Specific DNA Aptamer**",** Berea A. R. Williams, Liyun Lin, Stuart M. Lindsay, and John C. Chaput, J. Am. Chem. Soc. **131**, 6330–6331 (2009).

191) "The Myb/SANT domain of the telomere-binding protein TRF2 alters chromatin structure" Asmaa M. Baker, Qiang Fu, William Hayward, Stuart M. Lindsay and Terace M. Fletcher, Nucleic Acids Research, **37**, 5019-31 (2009).

192) "Recognition Imaging of Acetylated Chromatin Using a DNA Aptamer" Liyun Lin, Qiang Fu, Berea A. R. Williams, Abdelhamid M. Azzaz, Michael A. Shogren-Knaak, John C. Chaput, and Stuart Lindsay, Biophysical Journal **97**, 1804-1807 (2009).

193) "Distance-dependent interactions between gold nanoparticles and fluorescent molecules with DNA as tunable spacers" Rahul Chhabra, Jaswinder Sharma, Haining Wang, Shengli Zou, Su Lin, Hao Yan, Stuart Lindsay and Yan Liu, Nanotechnology **20** 485201-485211 (2009).

194) Chang, S., S. Huang, J. He, F. Liang, P. Zhang, S. Li, X. Chen, O.F. Sankey, and S.M. Lindsay, *Electronic Signature of all four DNA Nucleosides in a Tunneling Gap.* Nano Letters, 2010. **10**: p. 1070-1075.

195) Huang, S., S. Chang, J. He, P. Zhang, F. Liang, M. Tuchband, S. Li, and S. Lindsay, *Recognition tunneling measurement of the conductance of DNA bases embedded in self-assembled monolayers.* Journal of Physical Chemistry, **114** 20443–2044 2010.

196) He, J., Liu, H., Pang, P., Cao, D., & Lindsay, S., Translocation events in a single-walled carbon nanotube. *J. Phys: Condens. Matter* **22**, 454112-454118 (2010).

197) Huang, S., He, J., Chang, S., Zhang, P., Liang, F., Li, S., Tuchband, M., Fuhrman, A., Ros, R., & Lindsay, S.M., Identifying single bases in a DNA oligomer with electron tunneling. *Nature Nanotechnology* 5, 868-873 (2010).

198) Lindsay, S., He, J., Sankey, O., Hapala, P., Jelinek, P., Zhang, P., Chang, S., & Huang, S., Recognition Tunneling. *Nanotechnology* 21, 262001-262013 (2010).

199) Liu, H., He, J., Tang, J., Liu, H., Pang, P., Cao, D., Krstic, P.S., Joseph, S., Lindsay, S., & Nuckolls, C., Translocation of single-stranded DNA through single-walled carbon nanotubes. *Science* 327, 64-67 (2010).

200) Kaur P, Qiang-Fu, Fuhrmann A, Ros R, Kutner LO, Schneeweis LA, Navoa R, Steger K, Xie L, Yonan C, Abraham R, Grace MJ, Lindsay S. Antibody-Unfolding and Metastable-State Binding in Force Spectroscopy and Recognition Imaging BIOPHYSICAL JOURNAL Volume: 100 Issue: 1 Pages: 243-250 DOI: 10.1016/j.bpj.2010.11.050 Published: JAN 5 (2011)

201) Qian Mei, Xixi Wei, Fengyu Su, Yan Liu, Cody Youngbull, Roger Johnson, Stuart Lindsay, Hao Yan and Deirdre Meldrum Stability of DNA Origami Nanoarrays in Cell Lysate
NANO LETTERS Volume: 11 Issue: 4 Pages: 1477-1482 (2011)

202) Di Cao, Pei Pang, Jin He, Tao Luo, Jae Hyun Park, Predrag Krstic, Colin Nuckolls, Jinyao Tang, and Stuart Lindsay
Electronic Sensitivity of Carbon Nanotubes to Internal Water Wetting
ACS NANO Volume: 5 Issue: 4 Pages: 3113-3119 (2011)

203) Asmaa M. Baker, Qiang Fu, William Hayward, Samuel Victoria, Ilene M. Pedroso, Stuart M. Lindsay, Terace M. Fletcher The Telomere Binding Protein TRF2 Induces Chromatin Compaction PLOS ONE Volume: 6 Issue: 4 Article Number: e19124 (2011)

204) Chang Shuai; He Jin; Zhang Peiming; Brett Gyarfas and Stuart Lindsay Gap Distance and Interactions in a Molecular Tunnel Junction JOURNAL OF THE AMERICAN CHEMICAL SOCIETY Volume: 133 Issue: 36 Pages: 14267-14269 (2011)

205) Kong T. Tsen, Shaw-Wei D. Tsen, Qiang Fu, Stuart M. Lindsay, Zhe Li, Stephanie Cope, Sara Vaiana, Juliann G. Kiang, "Studies of inactivation of encephalomyocarditis virus, M13 bacteriophage, and *Salmonella typhimurium* by using a visible femtosecond laser: insight into the possible inactivation mechanismsJournal of Biomedical Optics 16(7), 078003 (2011)

206) Shreya Battacharyya, Ashley Kibel, Gerdenis Kodis, Paul A. Liddell, Miguel Gervaldo, Devens Gust, and Stuart Lindsay. "Optical Modulation of Molecular Conductance" Nano Letters **11** 2709–2714 (2011)

207) Pei Pang, Jin He. Jae Hyun Park, Predrag S. Krstić, and Stuart Lindsay "Origin of Giant Ionic Currents in Carbon Nanotube Channels", ACS Nano **5** 7277–7283 (2011)

208) Cao, D., P. Pang, H. Liu, J. He, and S.M. Lindsay, *Electronic sensitivity of a single-walled carbon nanotube to internal electrolyte composition.* Nanotechnology, 2012. **23**: p. 085203-085209.

209) Chang, S., S. Huang, H. Liu, P. Zhang, R. Akahori, S. Li, B. Gyarfas, J. Shumway, B. Ashcroft, J. He, and S. Lindsay, *Chemical Recognition and Binding Kinetics in a Functionalized Tunnel Junction.* Nanotechnology, 2012. **23**: p. 235101-235115.

210) Chang, S., S. Sen, P. Zhang, B. Gyarfas, B. Ashcroft, S. Lefkowitz, H. Peng, and S. Lindsay, *Palladium Electrodes for Molecular Tunnel Junctions.* Nanotechnology, 2012. **23**: 425202-5.

211) Deng, Z., D. Cao, J. He, S. Lin, S.M. Lindsay, and Y. Liu, *Solution Synthesis of Ultrathin Single- Crystalline SnS Nanoribbons for Photodetectors via Phase Transition and Surface Processing.* ACS Nano, 2012. **6**: p. 6197-6297.

212) Fuhrmann, A., S. Getfert, Q. Fu, P. Reimann, S. Lindsay, and R. Ros, *Long lifetime of hydrogen-bonded DNA basepairs by force spectroscopy.* Biophysical Journal, 2012. **102** 2381-2390.

213) Liang, F., S. Li, S. Lindsay, and P. Zhang, *Synthesis, Physicochemical Properties, and Hydrogen Bonding of 4(5)-Substituted-1H-imidazole-2-carboxamide, A Potential*

Universal Reader for DNA Sequencing by Recognition Tunneling. Chemistry - a European Journal, 2012. **18**: p. 5998 – 6007.

214) Park, J.H., J. He, B. Gyarfas, S. Lindsay, and P.S. Krstić, *DNA Translocating Through a Carbon Nanotube Can Increase Ionic Current.* Nanotechnology, 2012. **23**: 455107-455113.

215) Tuchband, M., J. He, S. Huang, and S. Lindsay, *Insulated gold scanning tunneling microscopy probes for recognition tunneling in an aqueous environment.* Rev, Sci. Instrum., 2012. **83**: p. 015102.

216) Lindsay, S., *Biochemistry and semiconductor electronics-the next big hit for silicon?* Journal of Physics- Condensed Matter, 2012. **24**: p. 164201-164208.

217) Krishnakumar, P., P.B. Tiwari, S. Staples, T. Luo, Y. Darici, J. He, and S.M. Lindsay, *Mass transport through vertically aligned large diameter MWCNTs embedded in parylene.* Nanotechnology, 2012. **23**: 45101-5

218) Liang, F., S. Lindsay, Peiming Zhang. (2012). "1,8-Naphthyridine-2,7-diamine: a potential universal reader of Watson–Crick base pairs for DNA sequencing by electron tunneling." Organic & Biomolecular Chemistry: **10** 8654-9.

219) Kaur, P., B. Plochberger, P. Costa, S.M. Cope, S.M. Vaiana, and S. Lindsay, *Hydrophobicity of Methylated DNA as a Possible Mechanism for Gene Silencing.* Physical Biology, (2012) **9** 0605001-0605009

220) Optical and Electrical Detection of Single-Molecule Translocation through Carbon Nanotubes Weisi Song, Pei Pang, Jin He and Stuart Lindsay, ACS Nano **22** 689-94 (2012)

221) "On-chip isotachophoresis separation of functional DNA origami capture nanoarrays from cell lysate" Qian Mei, Roger H. Johnson, Xixi Wei, Fengyu Su, Yan Liu, Laimonas Kelbauskas, Stuart Lindsay, Deirdre R. Meldrum, and Hao Yan, Nano Research **6**, 712-719 (2013)

222) Molecular Wires" Yanan Zhao, Stuart Lindsay, Sunhwa Jeon, Hyung-Jun Kim, Liang Su, Boram Lim, and Sangho Koo, Chemistry, A European Journal, **19**, 10832 – 10835 (2013)

223) "Application of Catalyst-Free Click Reactions in Attaching Affinity Molecules to Tips of Atomic Force Microscopy for Detection of Protein Biomarkers" Subhadip Senapati, Saikat Manna, Stuart Lindsay, and Peiming Zhang, Langmuir **29**, 14622−14630 (2013)

224) "Surface modification of grapheme nanopores for protein translocation" Y P Shan, P B Tiwari, P Krishnakumar, I Vlassiouk, W Z Li, X W Wang, Y Darici, S M Lindsay, H D

Wang, S Smirnov and J He, Nanotechnology, **24**, 495102-49511 (2013)

225) "Optical and Electrical Detection of Single-Molecule Translocation through Carbon Nanotubes" Weisi Song, Pei Pang, Jin He, and Stuart Lindsay, ACS Nano **7** 689-694 (2013)

226) "Slowing DNA Translocation through a Nanopore Using a Functionalized Electrode" Padmini Krishnakumar, Brett Gyarfas, Weisi Song, Suman Sen, Peiming Zhang, Predrag Krstic and Stuart Lindsay, ACS Nano **7** 10319-10326 (2013)

227) "Single Molecule Spectroscopy of Amino Acids and Peptides by Recognition Tunneling", Yanan Zhao, Brian Ashcroft, Peiming Zhang, Hao Liu, Suman Sen, Weisi Song, JongOne Im, Brett Gyarfas, Saikat Manna, Sovan Biswas, Chad Borges and Stuart Lindsay, Nature Nanotechnology, **9**: 466-473 (2014).

228) Swygert, S.G., B.J. Manning, S. Senapati, P. Kaur, S. Lindsay, B. Demeler, and C.L. Peterson, *Solution-State Conformation and Stoichiometry of Yeast Sir3 Heterochromatin Fibres.* Nat Commun, **5,** 4751-5 (2014).

229) Pang, P., B. Ashcroft, W. Song, P. Zhang, S. Biswas, Q. Qing, J. Yang, R.J. Nemanich, J. Bai, J. Smith, K. Reuter, V.S.K. Balagurusamy, Y. Astier, G. Stolovitzky, and S. Lindsay, *Fixed Gap Tunnel Junction for Reading DNA Nucleotides.* ACS Nano, **8**, 11994–12003 (2014).

230) Krstić, P., B. Ashcroft, and S. Lindsay, *Physical Model for Recognition Tunneling.* Nanotechnology 26 2015. **26**: p. 084001.

231) Henley, R.Y., B.A. Ashcroft, I. Farrell, B.S. Cooperman, S.M. Lindsay, and M. Wanunu, *Electrophoretic Deformation of Individual Transfer Rna Molecules Reveals Their Identity.* Nano Lett, 2015.

232) Manna, S., S. Senapati, S. Lindsay, and P. Zhang, *A Three-Arm Scaffold Carrying Affinity Molecules for Multiplex Recognition Imaging by Atomic Force Microscopy: The Synthesis, Attachment to Silicon Tips, and Detection of Proteins.* J Am Chem Soc, 2015. **137**(23): p. 7415-23.

233) Schneeweis, L.A., L. Obenauer-Kutner, P. Kaur, A.P. Yamniuk, J. Tamura, N. Jaffe, B.W. O'Mara, S. Lindsay, M. Doyle, and J. Bryson, *Comparison of Ensemble and Single Molecule Methods for Particle Characterization and Binding Analysis of a Pegylated Single-Domain Antibody.* J Pharm Sci, 2015.

234) Biswas, S., W. Song, C. Borges, S. Lindsay, and P. Zhang, *Click Addition of a DNA Thread to the N-Termini of Peptides for Their Translocation through Solid-State Nanopores.* ACS Nano, 2015. **9**(10): p. 9652-64.

235) Sovan Biswas, Suman Sen, JongOne Im, Sudipta Biswas, Predrag Krstic, Brian Ashcroft, Chad Borges, Yanan Zhao, Stuart Lindsay, and Peiming Zhang *Universal Readers Based on Hydrogen Bonding or π-π Stacking for Identification of DNA Nucleotides in Electron Tunnel Junctions* ACS Nano, **2016**, *10* (12), pp 11304–11316.

236) S.M. Lindsay, *The Promise and Challenges of Solid State Sequencing* Nature Nanotechnology, 2016, **11**, 109-111.

237) Subhadip Senapati and Stuart Lindsay, *Recent Progress in Molecular Recognition Imaging Using Atomic Force Microscopy* Accounts of Chemical Research 2016 **49** 503-510.

238) Im, J.; Biswas, S.; Liu, H.; Zhao, Y.; Sen, S.; Biswas, S.; Ashcroft, B.; Borges, C.; Wang, X.; Lindsay, S.; Zhang, P., Electronic single-molecule identification of carbohydrate isomers by recognition tunnelling. *Nature communications* **2016,** *7*, 13868.

239) Zhang, B., W. Song, P. Pang, Y. Zhao, P. Zhang, I. Csabai, G. Vattay and S. Lindsay (2017). "Observation of Giant Conductance Fluctuations in a Protein." NanoFutures **1**: 035002.

240) Senapati, S., S. Biswas, S. Manna, R. Ros, S. Lindsay, and P. Zhang, *A Y-Shaped Three-Arm Structure for Probing Bivalent Interactions between Protein Receptor-Ligand Using AFM and SPR.* Langmuir, 2018. **34**(23): p. 6930-6940.

241) Im, J., S. Sen, S. Lindsay, and P. Zhang, *Recognition Tunneling of Canonical and Modified RNA Nucleotides for Their Identification with the Aid of Machine Learning.* ACS Nano, 2018. **12**(7): p. 7067-7075.

242) Swygert, S.G., S. Senapati, M.F. Bolukbasi, S.A. Wolfe, S. Lindsay, and C.L. Peterson, *SIR proteins create compact heterochromatin fibers.* Proc Natl Acad Sci U S A, 2018. **115**(49): p. 12447-12452.

BOOK CHAPTERS AND REFEREED CONFERENCE PAPERS:

1) "Light Scattering Studies of the Lattice Vibrations of DNA" S.M. Lindsay and J. Powell in *Structure and Dynamics: Nucleic Acids and Proteins* (Eds. E. Clementi and R. Sarma) (Adenine, N.Y.,1983), pp 241-259.

2) "Lattice Modes, Soft Modes and Local Modes in Double Helical DNA" S.M. Lindsay, J.W. Powell, E.W. Prohofsky and K.V. Devi-Prasad in *Structure and Motion: Membranes, Nucleic Acids and Proteins* (Eds. E. Clementi, G. Corongiu, M.H. Sarma and R.H. Sarma) (Adenine, N.Y., 1985), pp 531-551.

3) "Crystal Packing Forces Drive the A to B Transition in DNA" S. M. Lindsay in *Computer Analysis for Life Sciences: Progress and Challenges in Biological and Synthetic Polymer Research* (Eds. C. Kawabata and A.R. Bishop) (Ohmska ,Tokyo, 1986), pp 89-98.

4) "Structural Transformations in DNA", S.M. Lindsay in *Nonlinearity in Condensed Matter* (Eds. A.R. Bishop, D.K. Campbell, P. Kumar and S.E. Trullinger) Springer Verlag series in Solid State Science (1987), pp 246-254.

5) "Low Frequency Coherent Vibrations of DNA: The Role of the Hydration Shell and Phosphate-Phosphate Interactions" , S.M. Lindsay in *Structure and Dynamics of Nucleic Acids, Proteins and Membranes* (Eds. S. Chin and E. Clementi) Plenum, NY (1987), pp 239-250.

6) "Dynamic Central Modes and Photorefractive effects at T_i and T_c in Barium Sodium Niobate" W.F. Oliver, J.F. Scott, S.A. Lee and S.M. Lindsay in *Laser Optics in Solids* (Eds. H.Z. Cummins, J.L. Birman and A.A. Kaplyanski) Plenum, NY (1988), pp. 263-266.

7) "Imaging Biopolymers Under Water by Scanning Tunneling Microscopy" S.M. Lindsay, T. Thundat and L. Nagahara in *Biological and Artificial Intelligence Systems* (Eds. E. Clementi and S. Chin) ESCOM, Leiden (1988), pp 124-142.

8) "Biological Applications of the Scanning Probe Microscope" S.M. Lindsay in *Scanning Tunneling Microscopy: Theory, Techniques and Applications* (Ed. D. Bonnell, VCH Publishers) p 335-408 (1993).

9) "Contrast and Conduction in STM Images of Biomolecules" S.M. Lindsay and O.F. Sankey in *Scanned Probe Microscopies, STM and Beyond* ed K. Wickramasinghe, American Institute of Physics, NY, 125-135 (1992).

10) "Imaging DNA molecules chemically bound to a mica surface" S.M. Lindsay, Y.L. Lyubchenko, A.A. Gall, L.S. Shlyakhtenko and R.E. Harrington, SPIE proceedings of the international symposium on laser spectroscopy, Los Angeles, January, 1992. pp 84-90.

11) "Potentiostatic deposition of Molecules for Scanning probe Microscopy" in *STM and SFM in Biology* M. Amrein and O. Marti (eds), Academic Press (1993).

12) "Role of scanning probe microscopes in the development of nanoelectronic devices" A. Majumdar and S.M. Lindsay in *The Technology of Proximal Probe Lithography* (ed. C. Marrian, SPIE, Washington) (1993) pp. 33-57.

13) "STM studies at electrochemically controlled interfaces" S.M. Lindsay, J. Pan and T.W. Jing. Proceedings of the Fall 1993 meeting of the Materials Research Society, in press (1993).

14) "Electron Tunneling in Electrochemical STM" S.M. Lindsay, T.W. Jing, J. Pan, D. Lampner, A. Vaught, J.P. Lewis and O.F. Sankey. Proceedings of the NATO ASI on Nanoscale Probes of the Solid/Liquid interface, eds. H. Seigenthaler and A.A. Gerwirth
Kluwer, Netherlands, (1994) pp 25-43.

15) "DNA, RNA and nucleoprotein complexes immobilized on AP-mica and imaged with AFM" Y.L. LKyubchenko and S.M. Lindsay, Procedures in SPM (1995).

16) "*In-situ* Morphological Study of Lithium-Electrolyte Interface" A. Garilov, G. Soloveichick, J. Broadhead, T. Skotheim, D. Lampner and S. Lindsay, Journal of the Electrochemical Society (1996).

18) "DNA Kinking as Imaged with a new high-resolution AFM" M. Dlakic, W. Han, M. Dlakic and R.E. Harrington, in *Structure, Motion, Interaction and Expression of Biological Macromolecules* Eds. R.H. Sarma and M.H. Sarma, Adenine Press, NY 1998.

19) "MacMode: A new AFM for Biological Imaging" S.M. Lindsay, in *Structure, Motion, Interaction and Expression of Biological Macromolecules* Eds. R.H. Sarma and M.H. Sarma, Adenine Press, NY 1998.

20) "The Scanning Probe Microscope in Biology", S.M. Lindsay in *Scanning Probe Microscopy, techniques and Applications- 2nd edition* (D. Bonnell, ed.) p. 289-336 John Wiley, 2000.

21) "Single Molecule Electronics" S.M. Lindsay in *Interface* (journal of the Electrochemical Society) **13**, 26-30 (2004).

22) "Making Contacts to Single Molecules: Are we there yet?" J. Tomfohr, G. Ramachandran, O.F. Sankey and S.M. Lindsay, to be published in Introducing Molecular Electronics, Fagas, G. and Richter, K. (eds.), Springer (Berlin) 2005, pp 301-312.

23) "Nanotechnology" in *Discoveries in Modern Science: Exploration, Invention, Technology.* Ed. James Trefil. Farmington Hills: Macmillan, 2015 pp 723-727

24) "Single Molecule Nanoelectronics" Chapter 6 in "Nanoelectrochemistry" eds Michael V. Mirkin, Shigeru Amemiya, CRC Press, 2015 pp 179-203.

25) Lindsay, S.M., *What Happens When Molecules Meet Nanostructures: The Convergence of Chemistry and Electronics at the Nanoscale*, in *Nanoscale Materials and Devices for Electronics, Photonics and Solar Energy*, A. Korkin, Goodnick, Stephen, Nemanich, Robert, Editor 2015, Springer. p. 217-235.

BOOK REVIEWS AND MISCELLANEOUS ARTICLES.

1) "Does Glass Creep?", S.M. Lindsay, Physics Today, **90** (June,1982 – refereed letter).

2) "Imaging Nucleic Acids with Scanning Probe Microscopes" S.M. Lindsay in *Biotech 1990* (CMC, Washington) pp 62-67.

3) Review of Chen, Introduction to scanning tunneling microscopy, S.M. Lindsay Biophys. J. **67**, 937-938 (1994).

2) "Biological Scanning Probe Microscopy Comes of Age" in "New and Notable", Biophys. J. **67** 2134-2135 (1994)

3) Electrochemistry, S.M. Lindsay Entry for the McMillan Encyclopedia of Physics, 1994.

4) "Atomic Force Microscope: The crystallographer's best friend?" in "New and Notable", Biophys. J. **71**, 541 (1996)

5) "Probing the liquid-solid interface with Dynamic Force Microscopy" S.M. Lindsay and J. Zhu, Microscopy Today, October 1999, 12-18.

6) "AFM emerges as essential R&D tool" R&D Magazine 41: (10) 49-49 SEP 1999 A. Raab, W. Han , D, Badt, P. Hinterdorfer and S.M. Lindsay.

7) "A High Resolution Fluid Imaging System" S.M. Lindsay, J. Zhu and J. Hudson American Laboratory November 1997 pp 16-18.

8) "Atomic Resolution Imaging at the Liquid-Solid Interface" S.M. Lindsay, Current Separations **17:1**, 1-8 (1998).

9) Review of "Biophysics, An Introduction", S.M. Lindsay, American Journal of Physics **71**, 1214 (2003)

10) "Chromatin Control of Gene Expression: The Simplest Model" Stuart Lindsay *Biophysical Journal* **92**:1113 (2007)

11) "Genetic Sequencing" Stuart Lindsay, Bulletin of the Atomic Scientists May/June 2008, 50-53.

INVITED TALKS:

1-3) Manchester University, England (1975,1976 and 1980).

4) University of Glasgow, England (1976).

5) National Bureau of Standards, Washington D.C. (1977).

6) Bell Laboratories, Murray Hill, NJ (1977).

7) University of Massachusetts, Polymer Research Institute, Amherst, MA (1977).
8) Michigan Technological University, Physics Department (1977).

9-11) Arizona State University, Physics Department (1978,1982 and 1983).

12) Philips Research Laboratories, Eindhoven, Holland (1979).

13) Max Planck Institute, Stuttgart, Germany (1979).

14) University of Arizona, Optical Sciences Center (1982).

15,16) Purdue University, Physics Colloquium and solid state seminar (1982 and 1984).

17) Structure and Dynamics Symposium, Rome, Italy (1984).

18) American Physical Society March Meeting, Detroit MI (1984).

19,20) University of Arizona, Phyics Colloquium, (1985 and 1987).

21) Hayashibara Forum, Okayama, Japan (1985).

22) International Meeting on Ferroelectrics, Kobe, Japan (1985).

23,24) University of Nevada, Las Vegas, Physics Colloquium (1985, 1986).

25) Ochanomizu University, Tokyo, Japan, Physics Colloquium (1985).

26) University of California, Santa Barbara, Phyics Colloquium (1986).

27) University of Illinois, Urbana, Physics Colloquium (1986).

28) Non-Linearity in Condensed Matter, LANL (1986).

29) Structure and Dynamics of Biomolecules, Riva del Garda (1986).

30) Boston University, Physics colloquium (1987).

31) Arizona State University, Chemistry Colloquium (1987).

32) Arizona State University, Molecular Biology seminar (1987).

33) Arizona State University, Physics Colloquium (1987).

34) Biomolecular Stereodynamics, Albany, NY (1987).

35) Massachusetts Institute of Technology, Chemistry Colloquium (1987).

36) University of Colorado, Boulder, Physics Colloquium, solid state seminar (1987).

37) "Pittsburgh'" Conference on Analytical Chemistry, New Orleans (1988).

38) American Physical Society, March Meeting, New Orleans (1988).

39) Structure and Dynamics of Biomolecules, Trento (1988).

40) Electron Microscopy Society of America, Milwaukee (1988).

41) 25th Electron Microscopy Symposium, Ames (1988).

42) Georgetown U. Medical Center (1988).

43) U of Akron, Physics Colloquium (1988).

44) U. Toledo, Physics Colloquium (1988).

45) North Eastern University, Physics Colloquium, Solid State Seminar (1988).

46) American Physical Society, March meeting, St. Louis (1989).

47) Georgia Inst. Technology, Physics Colloquium (1989).

49) NIH, Bethesda, seminar (1989).

50) EMSA meeting, San Antonio (1989).

51) University of Wisconsin Madison, Chemistry Coloquium (1989).

52) U. California, San Diego, Chemistry Colloquium (1989).

53) SPIE Symposium on automated sequencing, Los Angeles (1990).

54) Gordon conference on organic thin films, Ventura (1990).

55) American Association of Anatomists, Philadelphia (1990).

56) Human Genome Meeting, Mt. McKinley , Alaska, June 11-14 (1990).

57) American Chemical Society, Washington DC, August 29 (1990).

58) Royal Society for Chemistry Symposium, Nottingham, England, 23,24 Sept (1990).
59) Cavendish Colloquium, University of Cambridge, England, Sept. 26 (1990).

60) Electrochemical Society, Seattle, October 19 (1990).

61) Materials Science Symposium, Los Alamos National Lab, Oct 25 (1990).

62) Life Sciences Division Seminar, Los Alamos National Lab, Oct 26 (1990).

63) Biotech '90, Washington DC, November 28 (1990).

64) Engineering Foundation, Santa Barbara, Jan 9 (1991).

65) Symposium on DNA-Protein Structure, Tokyo, Japan, Jan 16 (1991).

66) Sankei Symposium on STM, Tokyo, Japan, Jan 17 (1991).

67) City College Physics Colloquium, CCNY, March 6 (1991).

68) American Physical Society, Cincinnati, March 22 (1991).

69) University of Arizona, Physics Colloquium, March 27 (1991).

70) American Institute of Chemical Engineers, Houston, April 9 (1991).

71) Society of Plastics Engineers, Montreal, May 8 (1991).

72) Electron Microscopy Society of America, San Jose, August 6 (1991).

73) American Chemical Society, New York, August 25 (1991).

74) Electrochemical Society, Phoenix, October (1991).

75) University of Nevada Reno, Physics Colloquium, Nov. 25 (1991).

76) Boston University, Physics Colloquium and Biophysics Seminar, Dec. 4,5 (1991).

77) SPIE symposium on scanning probe microscopy, Los Angelos, January (1992).

78) "Pittsburgh" Conference on Analytical Chemistry, New Orleans, March 13 (1992).

79) Washington State University, Pullman, Chemistry Seminar, April 20 (1992).

80) Washington State University, Pullman, Physics Colloquium, April 21 (1992).

81) "Scanning probe microscopy in water" University of Arizona, Biophysics Seminar, June (1992).

82) "Atomic resolution microscopy in water" Symposium on the "Future Directions in Microscopy and Imaging", Southboro, MA, August (1992).

83) "Scanning probe microscopy at the Liquid-solid interface"
Purdue University, Joint Physics-Biology seminar, Sept. 3 (1992).

84) "Biological Applications of Scanning Probe Microscopy"
University of Virginia Medical Center, Physiology Department Colloquium, Oct.22 (1992).

85) "Atomic resolution studies of processes at the liquid-solid interface"
University of Sussex, England, Physics Seminar, Nov. 5 (1992).

86) "Scanning probe microscopy of hydrated bioploymers: Applications in genetic analysis"
Nordic Genome Initiative Meeting, Oslo, Norway, Nov. 8 (1992).

87) "STM and AFM studies of biomaterials at a liquid-solid interface"
American Vacuum Society, Chicago, Nov. 13 (1992).

88) "Scanning probe microscopy at the liquid-solid interface"
American Physical Society, SE Section Meeting, Oak Ridge, TN, Nov. 14 (1992).

89) "Imaging biopolymers under water" Physics Colloquium, Northern Arizona University, Flagstaff, Feb. 17 (1993)

90) "High resolution imaging of DNA under water" SPIE symposium on novel methods for sequencing, Los Angelos, Jan 19 (1993)

91) "Imaging Biopolymers under water" American Physical Society, March Meeting, Seattle, March 22 (1993)

92) "Fundamentals of Scanning Probe Microscopy" Introductory lecture, ASU STM IAP Workshop, Feb. 24 (1993)

93) "Scanning Probe Microsopy at the Liquid-Solid Interface" Opening Address UK SPM'93, University of Bristol, England March 29 (1993)

94) "Identification of DNA-drug adducts by in-situ Scanning Tunneling Microscopy" Biochemistry Seminar, Univeristy of Nevada, Reno April 25 (1993)

95) University of New Mexico, Albuquerque, Physics Colloquium, October 1, 1993 : "Scanning Tunneling Microscopy At the Liquid-Solid Interface"

96) H. Willard Davis Lectureship in Chemistry, University of South Carolina, February 4, 1994. "Electron Tunneling in water - Imaging wet biomolecules".

97) Center for Biomolecular Structure, University of Utah, Utah. April 21, 1994. "Structural studies of biomolecules under water by scanning probe microscopy"

98) Department of Materials Science, University of Oxford, England, June 2, 1994: "Electron Tunneling in Electrochemical STM"

99) Nato Advanced Study Institute lecturer, NATO ASI on NanoScale Probes of the Solid/Liquid Interface, July 10-July 20, 1993, Sophia Antipolis, France.
Lecture 1: "Electronic and Chemical Aspects of Imaging Adsorbates in Liquids"
Lectures 2&3: "Scanning Probe Microscopy of Biological Molecules: Why and How."

100) Plenary Lecturer, Nano II, Moscow August 2, 1993 "High Resolution Imaging of DNA-Drug complexes under water by STM"

101) XXXII International Congress of Physiological Sciences, Glasgow, Scotland, August 4, 1993: "Scanning Probe Microscopy: Imaging Biomolecules under water"

102) Keynote Lecture, 2nd International Conference on Scanning Probe Microscopy of Biomolecules and Biomaterials, University of Nottingham, England, Sept. 2, 1993. "Scanning Probe microscopy of Biomolecules: Current Status and Future Trends"

103) Institute of Molecular Biology/ Materials Science Institute, University of Oregon, Joint seminar, October 15 1994 " Imaging at electrochemical interfaces under potential control"

104) von Klitzing Workshop, Schloss-Ringberg, Germany, Nov. 17, 1993 "Single-electron effects in organic molecules"

105) 1993 Fall meeting of the Materials research Society, Boston, December 2, 1993: "STM Studies at Electrochemically controlled interfaces"

106) SPIE Symposium on Advances in DNA Sequencing Technology, Los Angeles, Jan. 21, 1994: "Applications of Scanning Probe Microscopy in Genetic Analysis"

107) 207th American Chemical Society National Meeting, San Diego, March 17, 1994: "Scanning probe Microscopy of Biomolecular Adsorbates"

108) CAM-94 (Canada, America-Mexico Physics Meeting), Cancun, Mexico, 26-29 September, 1994: "Atomic Resolution Microscopy in Water" Invited Talk.

109) International Workshop on STM-AFM and Molecular Biology November 9,10,11, 1994, Noisy Le Grand, France

110) Joint Research Center for Atom Technology, Feb. 20, 1995 Tskuba, Japan "Electron transport in organic adlayers"

111) Max Planck Institute for Experimental Medicine, Goetingen, Germany, June 16, 1994 "STM studies of small RNA structures"

112) University of Vermont, Physics Department, April 12, 1995 "Electron tunneling in organic Molecules"

113) Ohio University, Physics Department, June 2, 1995 "Electron Transport in molecular solids and liquids: STM images of 'insulators'".

114) Scanning '95 Monterrey, March 28-31, 1995 "The STM in biology and Biochemistry"

115) Workshop and conference on "Quantitative biophysics at the molecular and macromolecular scales" International Center for Theoretical Physics, Trieste, June 29-July 5, 1995

116) Scanning Micrsoccopy, 1995, Houston, May 8-11, 1995: "AFM Imaging of DNA, nucleoprotein complexes and small circular organelles: Use of functionalized substrates"

117) Western Region AVS, Denver, CO, August 24, 1995: "Biological Applications of Scanning Probe Microscopy"

118) Electrochemical Society, Chicago October 9-14, 1996: "Electron Tunneling in Water"

119) Toyo Symposium on SPM, Tokyo, Nov. 14-16, 1996: Applications of SPM with environmental and electrochemical control"

120) Electrochemical Society, Los Angeles, May 6, 1996: "Measuring Electron Transfer Reactions on Single Molecules"

121) EPS Workshop on Bioelectrochemistry, May 9-11, 1996, Copenhagen, Denmark: "Probing Electron Transfer in Single Molecules by STM"

122) Seminar, Moletech Corp. Tuscon, Feb. 7, 1996: Electrochemical Applications of SPM

123) APS Tutorial T8 "Physical Techniques in Biological Science: An Intersection between Physics and Biology" St. Louis, March 17, 1996: STM and AFM in Biology".

124) Electrochemical Society Meeting, San Antonio, Oct 6-10, 1996: "The Scanning Probe Microscope in Electrochemistry"

125) Foundation Fourmentin-Guilbert, Royaumont Abbey, France, April 16-18, 1997 "MacMode AFM for Imaging Biological Molecules"

126) Scanning 97, Monterrey, April 20, 1997 "Kinked DNA imaged in Quasi-Physiological Conditions"

127) Surface Canada'97, Sherbrooke, Quebec, May 21, 1997 "STM contrast and Redox Chemistry"

128) Tenth Conversation in Biomolecular Stereodynamics, Albany, NY, June 18 1997 "A New High Resolution Atomic Force Microscope for Imaging Biomolecules in Fluids"

129) American Chemical Society, Dallas, April 1, 1998 "Scanning probe microscope studies of the liquid-solid interface"

130) American Chemical Society, Boston, Aug. 28, 1998, "Magnetic probe microscope for imaging and manipulation of molecules"

131) Int. Meeting "Towards Atomic Resolution and Analysis", Port Ludlow, Washington, Sept. 6, 1998 "Biological Scanning Probe Microscopy – How high can resolution go?"

132) 1st International meeting on Atomic Scale Processing and Novel Properties in Nanoscopic Materials, Osaka, Japan, Nov 9, 1998 "Scanning Probe Microscopy of Biological Materials"

133) Int. Symposium Joint Research Center for Atom Technology, Tskuba, Japan, Jan 12, 1999 "Mechanism of Dynamic Force Microscopy in Fluid"

134) Int. Symposium on Single Molecule measurements, Linz, Austria, Feb. 1, 1999. "Dynamic force microscopy of biological molecules"

135) Scanning Microscopy International Symposium, Seattle, June 1, 1999.

"Mechanism of Dynamic Force Microscopy in Fluid"

136) American Chemical Society, North West Regional meeting, Portland, June 21, 1999.
137) "Single Molecule Electronic Measurements with the Atomic Force Microscope"

138) "Single Molecule Mechanical Measurements" EMBO Workshop on Single Molecule Biophysics, Tours, France July 8, 1999.

139) Microscopy Society of America, Portland, August 4, 1999.
"Dynamic force microscopy for single molecule imaging and manipulation"

140) Duke University Microscopy Symposium, Wilmington, NC Sept. 30, 1999.
"Atomic Force Microscopy in Biology"

141) Linz International Workshop on Single Molecule Biophysics, University of Linz, Austria, Jan 29, 2000. "Single molecule mechanics by AFM"

142) Canadian Chemical Society, Alberta, May 31 2000,
"Conducting Atomic Force Microscopy Study of Electron Transfer"

143) Symposium on Nanostructures, U. California, Berkeley, Aug. 5 2000
"Making Electrical Contacts to Molecules"

144) MSA Meeting, Philadelphia (Workshop on AFM in Polymers) Aug 12 2000
"Measurement of Interfacial forces with Dynamic Force Microscopy"

145) Electrochemical Society, Phoenix (pre-meeting workshop on AFM, Oct 22 2000)
Electrochemical Applications of Scanning Probe Microscopy

146) Single Molecule Biophysics Workshop, University of Linz, Austria Feb 4 2001
"Conformation and Rigidity of DNA Microcircles Containing waf1 Response Element for p53 Regulatory Protein"

147) Biophysical Society, Boston (pre meeting workshop on AFM) Feb 18 2001
"Biophysical applications of the scanning probe microscope"

148) Sandia National Labs, Seminar, May 17 2001 "Making electrical contacts to organic monolayers"

149) University of Bristol, Physics Seminar, August 6, 2001
"Single Molecule Electrical Contacts"

150) American Chemical Society, Chicago, August 27, 2001
"Making contacts to organic monolayers"

151) 9th International Colloquium on SPM, Atagawa, Japan, Dec. 4-9 2001
"Metal contacts to single molecules"

152) Electron Transfer at the Nanoscale, DOE workshop, Santa Fe, Jan 10-13, 2002.

153) Molecular electronics with single molecules, Linz, Austria, 2/2/02

154) Single Molecule Electronics, US-Japan Workshop on Molecular Eelctronics, Chandler, AZ, 3/7/02

155) Single Molecule Electronics, Solid State Seminar, Michigan State U., 4/9/02

156) Biophysics with the scanning probe microscope, Physics Colloquium, Michigan State U. 4/10/02

157) Probing Single Molecules, Scanning Probe Microscopy, Las Vegas, 5/29/02

158) Single Molecule Molecular Electronics, GRC on electron transfer, RI, 8/12/2002

159) Biological applications of scanning probe microscopy, Protein Society, San Diego, 8/18/02

160) Single Molecule Electronics , Trends in NanoTechnology, 2002, Santiago de Compostella, Spain, 9/13/02

161) Single Molecule Electronics, Nicholas Cabrera Summer School, Madrid, 9/17/02

162) Chromatin remdoling studied by SPM, Hager Lab Symposium, NIH, Bethesda, 10/12/02

163) Single Molecule Electronics, Princeton University, 12/12/02

164) Nanoscale Molecular Optoelectronics, NSF, Arlington, 12/13/02

165) NIRT on Nanoscale Molecular Optoelectronics Nano Centers meeting NSF, Arlington, VA 12/16/2003 Poster presentation required of NIRT centers

166) In-situ studies of chromatin remodeling LRBGE Seminar NIH, Bethesda, MD 12/15/2003 Invited

167) Single Molecule Electronics Chemistry Colloquium Emory University, Atlanta, GA 10/13/2003 Invited

168) Single Molecule Electronics Nano Center Colloquium Columbia University 9/3/2003 Invited

169) Single Molecule Electronics Sig Lundqvist Conference International Center for Theoretical Physics, Triests, Italy 8/18/2003 Invited

170) Molecular Electronics Physical Chemistry at the Nanoscale Washington State University 7/29/2003 8 hours of lectures at summer school (Invited)

171) Single Molecule Measurements with scanning probe microscopes Center for Interfacial Technology University of Minnesota, St. Paul, MN 6/28/2003 Invited

172) Single Molecule Electronics Dept. Physics Colloquium University of Maryland, College Park, MD 6/7/2003 Invited

173) Single Molecule Electronics Dept. Chemistry Colloquium New Mexico State University, Las Cruces. NM 6/1/2003 Invited

174) Biological Applications of SPM Protein Society San Diego, CA 4/30/2003 Invited by industrial sponsor

175) Single Molecule Electronics W.E. Heureus Symposium Bonn Germany 3/21/2003

176) Single Molcule Electronics Microscopy Society of America Tucson, AZ 3/13/2003 Invited (AZ section meeting)

177) Single Molecule Electronics Nanotech San Francisco 2/25/2003 talk given by G. Ramachandran in my place

178) In-situ study of processes in promoter chromatin fibers using flow-through AFM Linz Meeting on Single Molecule Biophysics University of Linz 2/1/2003 Invited

179) Biophysical Applications of SPM UK AFM users group Birmingham, UK

1/29/2003 Invited (industrial sponsor)

180) AFM in pharma research BITC advisory council Palo Alto, CA 1/15/2003 Invited (this is an NSF sponsored industrial advisory group)

181) Jan 6, 2004 "Single Molecule Biophysics" Barrow Neurological Institute Colloquium, Phoenix

182) Jan 13, 2004 "Single Molecule Measurements with the AFM" Dept. Materials Science Colloquium, Northwestern University.

183) Jan 31, 2004 "New Recognition Imaging Mode applied to Chromatin" Linz, Winter Workshop on Single Molecule Biopphysics, Linz, Austria.

184) Feb 17, 2004 "Imaging in controlled conditions" Molecular Imaging Workshop at the Biophysical Society Annual meeting, Baltimore

185) Feb. 26, 2004 "Single Molecule Electronics" International Meeting on Advances in Molecular Electronics, Dresden, Germany.

186) April 27, 2004 "The Physics of Life" University Club Colloquium, Arizona State University.

187) May 4, 2004 "Great unpublished results of the Hager-Lindsay Labs" LRBGE symposium, NIH, Bethesda MD.

188) May 25, 2004 "Single Molecule Biophysics" Nankai University Department of Physics seminar, China

189) May 26, 2004 "New Recognition Imaging Mode applied to Chromatin" International Conference on Scanning Probe Microscopy, Tianjing, China

199) June 4, 2004 "Single Molecule Nanotechnology" Department of Chemistry Seminar, University of Tokyo, Japan

200) June 7, 2004 "Single Molecule Nanotechnology" Joint Chemistry/Physics Colloquium, Curtin University, WA, Australia

201) June 8, 2004 "Single Molecule Electronics" Australian Microscopy and Microanalysis Society, University of Technology, Sydney, Australia

202) June 10, 2004 "Single Molecule Biophysics" Nano Centre Symposium, University of Sydney, Australia

203) July 10, 2004 "What can we learn about interfaces from electrical measurements on single molecules?" Workshop on molecular conduction, Northwestern University, IL.

204) Nov. 15, 2004 "Interfacing Molecules to Electronic Materials" Center for Molecular electronics Symposium, University of Missouri, St. Louis, MO.

205) Feb. 3-7, 2005 "Single Molecule Transfer: What Happens in Charges Molecules?" University of Linz, Linz Winter Workshop, Linz, Austria.

206) Feb. 10-11, 2005 "Recognition Imaging Studies of Chromatin Remodeling" Georgia Tech, Nano-medicine Grant Planning, Atlanta, GA.

207) Feb. 15-16, 2005 "Molecular Recognition Imaging applies to Chromatin Remodeling" Biophysical Society, Annual Meeting, Long Beach, CA.

208) Feb. 17-19, 2005 "Frontiers in Bioinspired Materials and Nanosystems" AAAS Meeting, Biology Meets Physics: Consummating the Marriage, Washington, DC.

209) Mar. 21-25, 2005 "Single Molecule Biophysics, APS Annual Meeting, Methods in Nanobiotechnology, Los Angeles, CA.

210) Apr. 24-28, 2005 "Bringing together solution chemistry and molecular electronics: a single molecule switch" FNANO Conference, Snowbird, Utah.

211) Jun. 5-8, 2005 "The nuts and bolts of recognition imaging: validating antibodies" Scanning Probe Microscopy, Annual Conference, Cancun, Mexico.

212) Jun. 30-Jul. 3, 2005 "Putting the Chemistry into Molecular Electronics – Single Molecule Measurements Under Potential Control" Electrochemistry in Nanosciences, ECHEMS Meeting, Venice, Italy.

213) Jul. 17-23, 2005 "Making the Link Between Solution Chemistry and Molecular Electronics" Gordon Conference of Electronic Materials, Conference on the Chemistry of Electronic Materials, New London, CT.

214) Aug. 28-29, 2005 "Putting the Chemistry into Molecular Electronics" American Chemical Society, Annual Meeting, Washington, DC.

215) Aug. 31-Sep.2, 2005 "Measuring Single Molecule Conductance with Break Junctions" Faraday Discussion, Colloquia, University of Manchester, UK.

216) Sep. 17-22, 2005 "Electrochemistry in Molecular Junction: Linking Chemistry and Transport Physics" Bat Sheva Seminar, Electron Transport in Molecular Junctions, Tel Aviv, Israel.

217) Nov. 9, 2005 "Single Molecule Biophysics" University of Houston, Chemistry Colloquium, Houston, TX.

218) Nov. 10, 2005 "Single Molecule Biophysics" Rice University, Biophysics Seminar, Houston, TX.

219) Nov. 15-16, 2005 "Single Molecule Methods in Nanotechnlogy" Japan Society for the Promotions of Science, Biophysics Seminar, Internation Symposium on Molecular Nanotechnology, Kyoto, Japan.

220) Nov. 21-22, 2005 "Nanoelectronics for Energy Conversion" National Science Foundation, Opportunities of Nanoscience to Energy Conversion and Storage, Arlington, VA.

221) Dec. 8-11, 2005 "Recognition Imaging of Chromatin Remodeling" Asilomar Chromatin & Chromosomes Conference, San Jose, CA.

222) Jan. 3-5, 2006 "Recognition Imaging with a DNA aptamer" University of Linz, Linz Winter Workshop, Linz, Austria.

223) Apr. 2, 2006 "Nanomedicine and what it means to you" Physiology in Focus, San Francisco, CA

224) Apr. 30-May 1, 2006 "Single-molecule biophysics" Oak Ridge National Labs, Knoxville, TN

225) Jun. 28-Jul. 3, 2006 "What Single Molecule Measurements can teach us about Molecular Electronics" Institute Organic Chem & Biochem Prague, Czeckloslovakia

227) Jul. 29-Aug. 1, 2006 "Molecular Electronics – Electrochemistry by any other name" Gordon Research Conference

228) Aug. 2-6, 2006 "Single Molecule Measurements with Scanning Probe Microscopes" ICN & T Conference, Basel, Switzerland

229) September 9, 2006 "Nanotechnology and the future of medicine" MEPTEC Medical Electronics Symposium, ASU.

230) "Darwinian Nanoscience" Ehrenfest Colloquium, University of Leiden, Holland

February 1, 2007. Invited Talk

231) "New Ligands for Recognition Imaging" Single Molecule Biophysics Workshop,

University of Linz, Austria, February 3 2007, Invited Talk

232) “Sequencing by Recognition” NHGRI grantees meeting, San Marcos, FL Feb. 6, 2007, Invited Talk.

233) “Developing Ligands for Recognition Imaging” Biophysical Society, Baltimore, March 2 2007, Invited Talk

234) “Single Molecule Measurements on Biomolecular Complexes using Scanning Probe Microscopy” Biochemistry Seminar, Colorado State University, Fort Collins, Colorado, March 4 2007, Invited Talk.

235) “What are molecular wires and how might we use them?” American Physical Society March meeting, Denver. March 8 2007, Invited Talk.

236) “Can Molecules be “Wires”? Nano and Giga Challenges in Electronics and Photonics, Phoenix, AZ March 16, 2007. Invited Talk

237) “Nanotechnology: from fundamental Science to medicine?” Arizona Nanotechnology Cluster meeting, Scottsdale Community College, March 23 2007. Invited Talk.

238) “Single Molecule Recognition” Agilent Labs, Santa Clara, CA April 26, 2007. Invited Talk

239) “Single Molecules as Electronic Components” Electronic Materials Society meeting, Santa Clara, April 27, 2007. Invited Talk.

240) “Is there a future for Single Molecule Electronics” Engineering Faculty Colloquium, Univ Georgia, Athens, September 2007, Invited Talk.

241) “Is there a future for Single Molecule Electronics” American Physical Society, Four Corners Meeting, Flagstaff, AZ. October 19, 2007. Invited Talk.

242) "Darwinian Nanoscience" University of Massachusetts, Physics Colloquium, Jan 3, 2008

243) "Identification of DNA bases by hydrogen-bond mediated tunnel decay" Linz Workshop on Single Molecule Biophysics, Linz Austria, February 16, 2008.

245) "Routes to Single Molecule Recognition" Electrochemical Society Phoenix, May 21, 2008

246) “Can Individual DNA bases be identified by electron tunneling?” Nanoscience and Engineering Seminar, University of California, Berkeley, January 9, 2009.

247) "Can Quantum Mechanics be used to Read Genomes?" Center for Biological Physics Seminar, Arizona State University, January 28, 2009.

248) "Can Quantum Mechanics be used to Sequence DNA?" Linz Single Molecule Biophysics Winter Workshop, Feb 6-9, 2009 (Invited Talk).

249) "Nanoscale Recognition Topography and Chemical Recognition with the Atomic Force Microscope" Bristol-Meyers-Squibb corporate seminar, Princeton NJ, March 11, 2009.

250) "Sequencing by Recognition with transbase tunneling and a CNT nanopore" National Human Genome Research Initiative Sequencing Technology Meeting, San Diego, March 31, 2009 (invited talk in open part of the meeting).

251) "Single molecule conductance of DNA bases and sequencing by tunneling" Agilent Technologies E-seminar, April 8, 2009.

252) "Electronic signatures of molecular identity: combining tunneling with molecular recognition" Department of Chemistry Colloquium, Washington State University, Pullman, September 14, 2009.

253) "Electron tunneling as a probe of chemical bonding – a new approach to DNA sequencing" Physics Colloquium, Arizona State University, October 8, 2009.

254) "Quantum Mechanical Gene Sequencing?" Electrical engineering colloquium, UC Davis, November 20, 2009.

255) "Can we exploit quantum mechanics to read genes?" Center for Nanostructured Materials seminar, December 14, 2009.

256) "High discrimination tunneling signals from all four DNA Nucleosides" Colloquium. Institute of Physics of the Czech Academy of Science, Feb 4, 2010

257) "High discrimination tunneling signals from all four DNA Nucleosides" Winter Workshop on Single Molecule Biophysics, University of Linz, Austria, Feb 7, 2010.

258) "Mapping Epigenetic Changes One Molecule at a Time" American Physical Society annual meeting, Portland, March 19, 2010

259) "Electron tunneling as a probe of chemical bonding – a new approach to DNA sequencing" Physics Colloquium, McGill University, April 8, 2010

260) "Electron Tunneling for Label-free Sequencing?" Genomics Automation Congress, Boston, May 6, 2010.

261) “Recognition Tunneling – a new approach to DNA sequencing” Physics Colloquium, UC Irvine, May 27, 2010

262) “Recognition Tunneling – a new approach to DNA sequencing” Physics Colloquium, IBM TJ Watson Research Center, Sept 3, 2010

263) “Nanoprobes for nanoscale charge transfer: Better molecular photovoltaics” Nano Energy Workshop, Lehigh University, Sept. 14, 2010

267) “Recognition Tunneling – a new approach to DNA sequencing” American Association of Physics Teachers meeting, Tempe, Sept 25, 2010

268) “Recognition Tunneling – a new approach to DNA sequencing” Physics Colloquium, University of Southern California, Nov 8 2010.

269) “Recognition Imaging - Tracking Nanoscale Biochemistry” California Nanosystems Institute, UCLA, Nov 17, 2010

270) “Single Molecule Biophysics” Advanced Chemistry, Nanotechnology, Research Management and Innovations Workshop, ASU, December 7, 2010

271) “New Nanoscale tools for Reading and Mapping Epigenetic Markings” American Society for Cell Biology Annual Meeting, Philadelphia, Dec 11, 2010

272) “Sequential Reads of DNA sequence by electron tunneling” Linz Winter workshop on Single Molecule Biophysics, Feb 6, 2011.

273) “Recognition Tunneling for DNA Sequencing” Kyoto Workshop on physical approaches to sequencing DNA, Jan 24, 2011.

274) “Recognition Tunneling for DNA Sequencing” NNIN conference, ASU , Jan 14, 2011.

275) “Recognition Tunneling for DNA Sequencing”, X-Gen Sequencing Congress, San Diego, March 17, 2011.

276) “New physical approach to DNA sequencing” GCC community College, March 23, 2011.

277) “Recognition Tunneling” BERN, Departement für Chemie und Biochemie, June 20, 2011.

278) “Charge Transport in Single Molecules” BERN, Departement für Chemie und Biochemie, June 20, 2011.

279) “Single Molecule DNA Sequencing” GENEVE, Département de Chimie Physique, June 21, 2011.

280) “Nanofluidics with Carbon Nanotubes” BASEL, Department Chemie, June 22, 2011.

281) “Translocation of single molecules- a nanofluidics approach” BERN, Departement für Chemie und Biochemie, June 23, 2011.

282) “New physical approaches to single molecule DNA sequencing” Ohio University, Department of Physics, October 14, 2011.

283) “Surfactant action of Methylated DNA as a force for Gene Silencing” Winter Workshop on Single Molecule Biophysics, Linz, Austria, Feb 5, 2012

284) “Nanopores with electronic readout – the next-next generation sequencing”, Molecular Med Tri-Con, San Francisco, Feb. 20, 2012

285) “Recognition Tunneling – an interface between chemistry and electronics”, Stanford Center for Probing the Nanoscale, 8th Annual Workshop, Stanford, CA May 18, 2012

286) “Chemical Analysis on a Nanochip”, Nanomeasure 2012, Stanford CA, June 19, 2012

287) “Carbon Nanotubes as Nanofluidic Devices”, TechConnect World 2012 Conference and Expo, Santa Clara, CA, June 21, 2012

288) “Epigenetics – Physics or Magic?” Physical Sciences in Oncology Seminar, ASU, September 20, 2012.

289) “Nano-Chip Medicine”, Arizona Science Circle, Biodesign Institute, AZ, October 8, 2012.

290) “Nano-Chip Medicine”, Arizona Science Center, Phoenix, October 26, 2012.

291) “Quantum Mechanics, Biology and Noise”, Wiseguise, Scottsdale, December 7, 2012

292) “Quantum Mechanics, Biology and Noise” Spirit of the Senses Salon, Biodesign Institute, Jan 9 2013

293) “Single Molecule Analysis of Amino Acids by Recognition Tunneling” Linz Winter Workshop on Single Molecule Biophysics, Feb 18, 2013

294) “Quantum Mechanics, Biology and Noise” Physics Colloquium, UT San Antonio, April 5, 2013

295) “Recognition Tunneling of Amino Acids and Peptides for Single Molecule Sequencing” Director’s Colloquium, Lawrence Livermore National Lab, April 11, 2013

296) “Next Next Generation Sequencing” Genome Canada, Toronto, May 10, 2013

297) “Recognition Tunneling” LAVAS First Look LA 2013, Los Angeles June 12, 2013

298) “Single Molecule Spectroscopy of Amino Acids and Peptides by Recognition Tunneling” Intel, Santa Clara, Sept. 12 2013

299) “Single Molecule Spectroscopy of Amino Acids and Peptides by Recognition Tunneling” Physics Colloquium, Northeastern University, Sept 26, 2013

300) “Single Molecule Spectroscopy of Amino Acids and Peptides by Recognition Tunneling” Stanford Genome Technology Center, Nov 6, 2013

301) “Single Molecule Spectroscopy of Amino Acids and Peptides by Recognition Tunneling” Physics Colloquium, Florida International University, Miami, Nov 14 2013

302) “Solid State Tunnel Junction Devices for Reading DNA Bases” CECAM Worksop on Nanofluidics, Lausanne, Switzerland Oct 29-31, 2014

303) “Single Molecule Protein Sequencing – why does it matter and can it be done?” ASU Physics Colloquium, Sept 11, 2014.

304) “Single Molecule Protein Sequencing – why does it matter and can it be done?” H.H. King Lecture in Chemistry, Kansas State University, October 9, 2014.

305) “Electron Tunneling in a Noisy Environment and How this Might Impact Human Health” Physics Colloquium, Ohio State University, April 14, 2015.

306) “Single Molecule Protein Sequencing – Why Does It Matter and Can It Be Done?” 5th Next Generation Sequencing Conference, Boston May 21 2015 Keynote opening address.

306) “The future of Omics: Single Molecule Technologies” Induchem Symposium, NYC, June 2, 2015.

307) “Commercial Impact and the Academic Lab” APS Four Corners Meeting, ASU Oct 17, 2015.

308) “Single Molecule Protein Sequencing – Why Does It Matter and Can It Be Done?” Plenary Opening Talk, Research Review Day Baskin School of Engineering UC Santa Cruz October 14, 2015.

309) “Recognition Tunneling: A New Tool For Single Molecule Chemical Analysis” University of Wisconsin, Madison, Chemistry Colloquium, April 28, 2016.

309) “Can Proteins Conduct Electricity?” Quantum Effects in NanoElectronic Devices Workshop, University of Oxford, UK, December 20, 2016.

310) “How microelectronic advances have enabled the new revolution in genetic and medical technology” Lawrence Symposium, Arizona State University, February 23, 2017.

311) “Recognition Tunneling – a Super-sensitive Readout for Sequencing DNA and other Heteropolymers”, Revolutionizing Next Generation Sequencing, Antwerp, Belgium, 20 March 2017.

312) “Recognition Tunneling for identification of amino acids and Proteins (and more)” Single Molecule Protein Sequencing Conference, Delft, Holland, Dec 12-14 2017

313) "Are Proteins Conductors or Insulators?" (Plenary Talk) CECAM meeting on Biomolecular Electronics, Madrid, August 27, 2018.