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123. *"Three-dimensional phase-encoded chemical shift MRI in the presence of inhomogeneous fields,* Vasiliki Demas, Dimitris Sakellariou, Carlos Meriles, Songi Han, Jeffrey Reimer and Alexander Pines **2004** PNAS **101** 8845.

124. *"Methanol formation on Fe/Al-MFI via the oxidation of methane by nitrous oxide,*" Benjamin R. Wood, Jeffrey A. Reimer, Alexis T. Bell, Michael T. Janicke and Kevin C. Ott, **2004** Journal of Catalysis **225** 300.

125. *"Diagnostic analysis of electrodes from high-power lithium-ion cells cycled under different conditions,"* K.A. Striebel, J. Shim, E.J. Cairns, R. Kostecki, Y.J. Lee, J. Reimer, T.J. Richardson, P.N. Ross, X. Song, G.V. Zhuang **2004** Journal of the Electrochemical Society **151** A857.

126. *"Nuclear spin temperature and magnetization transport in laser-enhanced NMR of bulk GaAs,"* Anant K. Paravastu and Jeffrey A. Reimer **2005** Physical Review B **71** 45215.

127. *"High-Resolution NMR Spectroscopy with a Portable Single-Sided Sensor,"* Juan Perlo, Vasiliki Demas, Federico Casanova, Carlos A. Meriles, Jeffrey Reimer, Alexander Pines, Bernhard Blümich, **2005** Science **v308** Issue 5726 p 1279.

128. *"Layered Nickel Oxide-Based Cathodes for Lithium Cells: Analysis of Performance Loss Mechanisms ,"* **2005** Marie Kerlau, Jeffrey A. Reimer, and Elton J. Cairns, Journal of The Electrochemical Society, **152** A1629.

129. *"Investigation of Particle Isolation in Li-ion Battery Electrodes by using ^{7}Li NMR Spectroscopy,"* Marie Kerlau, Jeffrey A. Reimer, Elton J. Cairns, **2005** Electrochemistry Communications **7** 1249.

130. *"Photocurrent-Modulated Optical Nuclear Polarization in Bulk GaAs,"* Anant K. Paravastu, Patrick Coles, Thaddeus D. Ladd, Robert Maxwell, Jeffrey Reimer, **2005** Applied Physics Letters **87** 232109.

131. *"An effective stochastic excitation strategy for finding elusive NMR signals from solids,"* Sam L. Wilcke, Elton J. Cairns, Jeffrey A. Reimer, **2006** Solid State Nuclear Magnetic Resonance **29** 199.

132. *"Water Dynamics and Salt-Activation of Enzymes in Organic Media: Mechanistic Implications Revealed by NMR Spectroscopy,"* Ross K. Eppler, Joyce Huynh, Russell S. Komor, Jonathan S. Dordick, Jeffrey A. Reimer, and Douglas S. Clark, **2006** Proceedings of the National Academy of Sciences **103** 5706-5710.

133. *"Towards ex situ phase-encoded spectroscopic imaging,"* V. Demas, C. Meriles, D. Sakellariou, S.I. Han, J. Reimer, and A. Pines, **2006** Concepts in Magnetic Resonance Engineering **29B** 137-144.

134. *"Synthesis and characterization of mixed-morphology $CePO_4$ nanoparticles,"* L. Karpowich, S. Wilcke, Rong Yu, G. Harley, J.A. Reimer, L.C. De Jonghe, **2007** Journal of Solid State Chemistry **180** 840-846.

135. *"Characterizing electrocatalytic surfaces: Electrochemical and NMR studies of methanol and carbon monoxide on Pt/C,"* Patrick McGrath, Aurora Marie Fojas, Benjamin Rush, Jeffrey A. Reimer, and Elton J. Cairns, **2007** Electrochimica Acta **53** 1365.

136. *"Penetration depth model for optical alignment of nuclear spins in GaAs,"* Patrick Coles and Jeffrey A Reimer **2007** Physical Review B 76 (17): Art. No. 174440.

137. *"Portable, low-cost NMR with laser-lathe lithography produced microcoils,"* Demas V, Herberg JL, Malba V, Bernhardt A, Evans L, Harvey C, Chinn SC, Maxwell RS, Reimer J **2007** Journal of Magnetic Resonance 189 (1): 121-129.

138. *"A Methodology for the Indirect Determination and Spatial Resolution of Shear Modulus of PDMS-Silica Elastomers,"* B.P. Mayer, J.A. Reimer, R.S. Maxwell, **2008** Macromolecules **41** 1323.

139. *"Proton Conduction and Characterization of an La(PO3)(3)-Ca(PO3)(2) glass-ceramic,"* G.J. Zhang, R. Yu, S. Vyas, J. Stettler, J.A. Reimer, G. Harley, L.C. DeJonghe, **2008** Solid State Ionics **178** 1811.

140. *"Covalency measurements via NMR in lithium metal phosphates,"* S.L. Wilcke, Y.J. Lee, E.J. Cairns, and J.A. Reimer, **2008** Applied Magnetic Resonance **32** 547.

141. *"Site-Dependent ^{13}C Chemical Shifts of CO Adsorbed on Pt Electrocatalysts,"* Patrick McGrath, Aurora Marie Fojas, Jeffrey A. Reimer, ELton J. Cairns, **2008** Journal of Physical Chemistry C 10.1021/jp806068t .

142. *"Biocatalyst Activity in Non-Aqueous Environments Correlates with Centisecond- Range Protein Motions,"* Ross K. Eppler, Elton P. Hudson, Shannon D. Chase, Jonathan S. Dordick, Jeffrey A. Reimer, and Douglas S. Clark, **2008** Proceedings of the National Academy of Sciences **105** 15672-15677.

OTHER

Provisional patent application (LBNL-IB-2185P1): *"Ex Situ NMR and MRI in inhomogeneous fields,"* Vasiliki Demas, Rachel Martin, John Franck, Jeffrey Reimer, and Alexander Pines.

INVITED TALKS

"NMR Studies of Amorphous Hydrogenated Semiconductors", 1981 March Meeting of the American Physical Society.

"Magnetic Resonance Studies of Amorphous Thin Films," **9***th* International Conference on Liquid and Amorphous Semiconductors, Grenoble, France 1981.

"Magnetic Resonance Studies of Amorphous Thin Films," Colloquium, Department of Physics, University of Utah, 1982.

"Magnetic Resonance Studies of Amorphous Semiconducting Thin Films," Colloquium, Department of Chemistry, University of California at Los Angeles, 1982.

"The Chemistry and Physics of Inorganic Thin Films," Colloquium, Department of Chemistry, University of California at San Diego, 1982.

"The Preparation of Novel Thin Films Using Homogeneous Chemical Vapor Deposition", Colloquium, Xerox Palo Alto Research Center, March 28, 1983.

"Structures and Defects in Amorphous Semiconductors by Novel Applications of Solid State NMR", IBM Instruments, Inc., November 16, 1983.

"Structure and Defects in Amorphous Semiconducting Thin Films: New Applications of Solid State Nuclear Magnetic Resonance", The Aerospace Corporation, November 28, 1983.

"Amorphous Semiconductors: New Frontiers", Colloquium, Department of Chemical Engineering, Stanford University, February 8, 1984.

"Structure and Defects in Amorphous Semiconducting Thin Films: New Applications of Solid State NMR", Eastman Kodak Research Laboratories, March 30, 1984.

"Multiple Quantum NMR Studies of a-Si:H", March Meeting of the American Physical Society, 1985.

"NMR Studies of Amorphous Semiconductors", Gordon Conference on Magnetic Resonance, June 1985.

"Hydrogen and Microstructure in Amorphous Thin Film Semiconductors", NATO Summer Institute on Hydrogen in Solids, September, 1985.

"Magnetic Resonance of Thin Film Semiconductors", March Meeting of the American Physical Society, 1986.

"Amorphous Semiconductors: Poems, Prayers, and Promises", Colloquium, Stauffer Chemical Company, March 11, 1986.

"Amorphous Hydrogenated Semiconductors", Spring Meeting of the Materials Research Society, 1986.

"Nuclear Magnetic Resonance Of Solid State Electronic Materials", Gordon Conference on The Chemistry of Electronic Materials, June 1986.

"Magnetic Resonance Studies of Solids, Thin Films, and Surfaces", Colloquium, Department of Chemical Engineering, Colorado School of Mines, November, 1986.

"NMR Studies of Polymers, Semiconductors, and Surfaces", Colloquium, Raychem Corporation, February 1987.

"Identification of Chemical Growth Mechanisms in Amorphous Semiconductors", Spring Meeting of the Materials Research Society, April 1987.

"NMR Studies of Structure and Defects in Amorphous Semiconductors", Colloquium, Xerox Palo Alto Research Center, July 1987.

"NMR Studies of Solids, Thin Films, and Surfaces", Colloquium, Department of Chemical Engineering, University of California at San Diego, October 1987.

"Magnetic Resonance Studies of Thin Film Semiconductors", Colloquium, Department of Chemistry, University of California at Santa Barbara, January, 1988.

"NMR Studies of Solids, Thin Films, and Surfaces", Colloquium, Department of Chemical Engineering, Iowa State University, September 1988.

"On NMR and Chemical Engineering Research", Colloquium, Department of Chemical Engineering, University of California at Berkeley, October 1988.

"NMR Studies of the Structure of Plasma-Deposited Silicon-Carbide, Silicon-Nitride, and Diamond-Like Carbon", IBM Almaden Research Center, February 1989.

"NMR Studies of Solids, Thin Films, and Surfaces", Colloquium, Department of Chemical Engineering, Purdue University, February 1989.

"Nuclear Magnetic Resonance in Chemical Engineering Research: The History, The Promise, and The Practice", Colloquium, Department of Chemical Engineering, University of Wisconsin, March, 1989.

"NMR Studies of Model Hydrodenitrogenation Catalysis", Plenary Lecture, *X* National Meeting on Catalysis, INTEVEP, Caracas, Venezuela, May, 1989.

"Magnetic Resonance Studies of Polymers and Catalytic Surfaces", Colloquium, Department of Chemical Engineering, University of California at Santa Barbara, September, 1989.

"On the Application of Solid-State NMR to the Study of Polymers", Invited Lecture, 1989 Annual Meeting of the American Institute of Chemical Engineers, November, 1989.

"NMR Studies of Molecules Reacting on Catalytic Surfaces", Colloquium, Department of Chemical Engineering, MIT, November, 1989.

"NMR Studies of Small Molecules Adsorbed on Bulk Metals", Invited Lecture, 177th Meeting of the Electrochemical Society, Montreal, May, 1990.

"Solid State NMR and Materials Chemistry", Colloquium, Raychem Corporation, July 1990.

"Application and Development of NMR Spectroscopy Towards the Study of Materials and Materials Processing", Physical Chemistry Colloquium, Stanford University, November, 1990.

"Magnetic Resonance Studies of Issues in Electronic Materials Processing," Colloquium, Department of Chemical Engineering, Cornell University, September, 1991.

"Gas Phase Magnetic Resonance Studies of Plasma Processes," XVIII Meeting of the Federation of Analytical Chemistry and Spectroscopy Societies, Anaheim, October 1991.

"NMR of Ceramics," Materials Science and Engineering Department, Cornell University, April 1993.

"NMR Studies of Polymer Interfaces and Surfaces," Exxon Research, October 1993.

"Innovative Studies with Solid-State Nuclear Magnetic Resonance Spectroscopy," Colloquium, Chemistry Department, University of Delaware, December 1993.

"Is NMR a Useful Tool in Surface Science and Catalysis?," Colloquium, Chemistry Department, Texas A&M University, April, 1994.

"Designing Ceramics for Atomic Conductivity: Theory, Simulation, and NMR Experiments," Colloquium, Raychem Corporation, Menlo Park, Ca, September 1994.

"Atomic Motion in Solids: Theory, Simulation and Experiments," Colloquium, Department of Chemistry, University of Illinois Chicago Circle, November 1994.

"The Battle for Meaningful NMR Signals in Materials Chemistry," Experimental NMR Conference, Boston, MA April 1995.

"The Application of Solid State NMR Towards Issues in Materials Chemistry," Invited Lecture, 31st Annual ACS Western Regional Meeting and 4th Annual San Diego Biotech Symposium, October, 1995.

"Magnetic Resonance in Catalysis," Invited Lecture, 1995 Annual Meeting of the American Institute of Chemical Engineers, Miami Beach, FL November 1995.

"The Scholarship of Teaching," Keynote Address, 1995 Fall Orientation Conference for Graduate Student Instructors, Berkeley, CA.

"Atomic, Molecular, and Fluid Motion via Magnetic Resonance," Colloquium, Department of Chemical Engineering, Stanford University, May 1996.

"Atomic, Molecular, and Fluid Motion via Magnetic Resonance," Colloquium, Department of Chemical Engineering, University of California at Davis, May 1996.

"NMR Studies of Catalytic Surfaces and Reactions," Invited Lecture, 29*th* ACS Great Lakes Regional Meeting, May, 1996.

"Examination of the Mobility of Oxygen in Metal Oxides by ^{17}O *NMR,"* Invited Lecture, National American Chemical Society Meeting, Orlando FL August 1996.

"MRI Studies of Polymer Rheology in Contraction Flow," Golden Gate Polymer Forum, Asilomar, CA, April 1997.

"NMR of CO Adsorbed from Aqueous Solution Onto a Commercial Fuel Cell Electrode,", Invited Lecture, 39*th* Rocky Mountain Conference on Analytical Chemistry and Applied Spectroscopy, August, 1997.

"NMR Studies of Catalysis and Electrocatalysis," Colloquium, Department of Chemistry, University of California at Davis, October 1997.

"NMR Imaging of Axisymmetric Contraction Flows of Liquid Crystalline Polymer Solutions," XXIV Meeting of the Federation of Analytical Chemistry and Spectroscopy Societies, Providence, October 1997.

"Pedagogoical Mentorship: The Role of Faculty in Preparing Graduate Students to Teach," 6th American Association for Higher Education Conference on Faculty Roles and Rewards, Orlando, FL January, 1998.

"NMR Studies of Commercial Fuel Cell Electrodes," 215th National Meeting of the American Chemical Society, Dallas, TX, April 1998.

"NMR and Chemical Engineering: A Hammer Looking for Nails?", Colloquium, Department of Chemical Engineering, University of Delaware, March 1999.

"NMR and voltammetric investigation of carbon monoxide adsorption and oxidation on carbon-supported platinum-based electrocatalysts," 217th National Meeting of the American Chemical Society, Anaheim CA, March 1999.

"Magnetic Resonance Studies of Electrochemical Systems", Colloquium, Department of Chemical Engineering, Case Western University, April 1999.

"Magnetic Resonance Studies of Surfaces: Structure, Dynamics, and Reaction", Colloquium, Department of Chemistry, University of Washington, May 1999.

"Batteries, Membranes and Fuel Cells: An Atomistic Perspective via NMR", Colloquium, DuPont Central Research, Wilmington, DE July 1999.

"Materials for Electrochemical Devices: An Atomistic Perspective via NMR", Colloquium, Department of Chemistry, University of Iowa, October 1999.

"NMR Studies of Electrochemical Systems", Colloquium, Department of Chemistry, University of Minnesota, January 2000.

"NMR Velocity Imaging of a Liquid Crystalline Polymer Flowing Through an Abrupt Contraction,", Invited Lecture, 219*th* Annual Meeting of the American Chemical Society, San Francisco, CA March 2000.

"NMR Imaging of a Liquid Crystalline Polymer Flowing Through an Abrupt Contraction,", Invited Lecture, 42*nd* Rocky Mountain Conference on Analytical Chemistry and Applied Spectroscopy, August, 2000.

"Real-time Wood Chip Moisture Content by Magnetics," Invited Lecture, DOE/Office of Industrial Technologies Sensors and Controls Meeting, New Orleans, LA June 2001.

"Optical Pumping in Semiconductors," Colloquium, Institute for Physical and Theoretical Chemistry, University of Bonn, Germany, August 2001.

"Optical Pumping in GaAs Materials: Unexplained Phenomenology," Invited Lecture, 14th Conference of the International Society of Magnetic Resonance, Rhodes, Greece August 2001.

"Spectroscopic Studies of Electrode Materials: Analyzing the Lithium Superhighway," Colloquium, Department of Chemistry, Georgetown University, March 2002.

"Through the electrons, darkly," 2002 Vaughan Lecture, 44^{th} Annual Rocky Mountain Conference on Analytical Chemistry, July 2002.

"The Existential Joy of the Unpaired Electron," Colloquium, North Carolina State University, March 28, 2003.

"Exploiting the Electron-Nuclear Hyperfine Interaction," Invited Lecture, Experimental NMR Conference (ENC), April 3, 2003.

"The Long Distance Love Affair between Electrons and Nuclei." Colloquium, University of Minnesota, April 22, 2003.

"The Existential Joy of the Unpaired Electron," Colloquium, Washington-Area NMR Group, May 16, 2003.

"Energy from Batteries and Fuel Cells: Traffic and Parking Problems in the Atomic Commute," Colloquium, St. Louis Area NMR Discussion Group, St. Louis Section of the American Chemical Society, February, 2004.

"Energy from Batteries and Fuel Cells: Traffic and Parking Problems in the Atomic Commute," Colloquium, IBM Almaden Research Center, February, 2004.

"Energy from Batteries: Parking Problems in the Atomic Commute," Colloquium, Department of Chemical Engineering, Stanford University May 2004.

"Optical pumping in bulk GaAs," Invited Talk, 229th National American Chemical Society Meeting, San Diego, CA March 2005.

*"SQUID-Detected MR Elastography in Microtesla Fields,"*Invited Lecture, 4th Annual Colloquium on Mobile NMR, Perugia, Italy, September 2005.

"NMR in Chemical Engineering," Invited Colloquium, Macromolecular Chemistry Institute, RWTH Aachen, Germany, October 2005.

"Magnetic Resonance and the design and Analysis of Macromolecular Systems Governed by Physical and Chemical Rates," Colloquium, Max Plank Institute for Polymer Research, Mainz, Germany, January 2006.

"The Quest for Cold NMR in Hot Applications: Optical Pumping for Sensitivity Enhancement," Colloquium, Max Plank Institute for Polymer Research, January, 2006.

"Magnetic Resonance and Studies of Systems Governed by Physical and Chemical Rates," Institut für Technische und Makromolekulare Chemie RWTH-Aachen, April 2006.

"NMR Studies of Electrochemical Systems," Colloquium, Department of Chemistry, University of Delaware, April 19, 2006.

"Solid State NMR Studies of Electrochemical Systems," Colloquium, Universität Leipzig, Fakultät für Physik und Geowissenschaften Institut für Experimentelle Physik I, May 30, 2006.

"NMR Studies of Materials," Invited Talk, 2006 Fall MRS Meeting, Boston, MA

"NMR of Electrochemical Systems" Colloquium, Department of Chemical Engineering, City College of New York, Feb 5, 2007

"Nuclear Spintronics," Invited Talk, 40th Canadian Society of Chemistry National Meeting, Winnipeg, CA May 2007

"NMR Assessment of Polymer Mechanical Properties: Portable NMR and elastomeric moduli?," Invited Talk, 7th International Conference on Magnetic Resonance Resonance Microscopy, Aachen, Germany September 2007.

"Physical and Chemical Rates from NMR Spectroscopy and Imaging," Colloquium, University of Texas, Austin, January 2008.

"NMR Relaxation Phenomena: From Enzyme Activity to Nuclear Spintronics," Otto M. Smith Lectureship, Oklahoma State University, April 2008.

"Characterizing Electrocatalysts and Electrocatalysis: 13C and 195Pt NMR Studies of PEM Fuel Cell Materials," St. Louis Area NMR Users Group, Washington University, April 2008.

"Do Protein Dynamics Govern Biocatalysis?" Invited Speaker, 50th Rocky Mountain Conference on Analytical Chemistry, Breckeneridge, CO July 2008.

"Spin is at the Core of Chemical Engineering," Colloquium, School of Chemical and Biomolecular Engineering, Georgia Tech University, October 2008.

"Putting the Right Spin on Chemical Engineering," Colloquium, Chemical and Environmental Engineering, UC Riverside, October 2008.