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Other Employment

- 1982-2005 –Princeton University, Ralph W. Dorn Professor of Chemistry (2001-2005), Professor of Chemistry (1993-2001); Associate Professor (1987-1993), Assistant Professor (1982-1987). Associated faculty, Physics, EE, Molecular Biology, Neuroscience
- 2001-2006 –Adjunct Professor, University of Pennsylvania, Dept. of Radiology
- 1989-2005 –Editor, Advances in Magnetic Resonance; Consulting Editor, Journal of Magnetic Resonance (Harcourt Academic Press)
- 2001-2005 –Director, NJ Center for Molecular and Biomolecular Imaging
- 2003 –Acting Director, Princeton Ctr. for Photonics and Optoelectronic Materials
- 1996-2001 –Director, NJ Center for Ultrafast Laser Applications
- July 1996 –Visiting Collaborator, University of California, San Diego
- July 1995 –Godfrey Visiting Professor (Physics), Univ. of New South Wales
- February 1990 –Visiting Senior Scientist, Universität Kaiserslautern, Germany
- February 1988-July 1988 –Visiting Associate Professor (Chemistry), Stanford University
- Summers 1976 and 1977 –Research Scientist, Ford Motor Company.

Education

- Postdoctoral Fellow**, California Institute of Technology, 1981-1982. Research with Prof. Ahmed Zewail on optical coherent transient spectroscopy.
- Ph.D.** Chemistry, University of California, Berkeley, 1980 (M. S. 1979; GPA 4.2/4). "*Selectivity in Multiple Quantum Nuclear Magnetic Resonance*"; advisor: Prof. Alexander Pines.
- A.B.** Chemistry and Physics, Harvard University, 1977, *summa cum laude*. G.P.A. 3.93/4. Research in microwave spectroscopy and solid state physics. Phi Beta Kappa.

Honors, Fellowships and Societies

- Elected Fellow, International Society for Magnetic Resonance, 2008
- EAS Award for Outstanding Achievements in Magnetic Resonance, 2008
- Matsen Endowed Lectureship, University of Texas; Vold Lectureship, U.C. San Diego, 2008
- Fellow, American Physical Society; Chair-Elect, Division of Laser Science (chair 2009)
- Program co-chair, *Imaging in 2020*, 2007
- National Academy of Sciences, Committee on Advanced Research Instrumentation, 2005
- Elected Fellow, American Association for the Advancement of Science, 2004
- Chairman, Experimental NMR Conference, 2004; Executive Committee, 1998-2005
- Meloche Lectureship, University of Wisconsin, 2002
- Who's Who in the World*, since the 18th edition, 2001
- Outstanding Academic Book, *Choice Magazine* (American Library Association), 2000, 1994
- Chairman, Princeton Section, American Chemical Society, 1999-2000, 1990
- McKnight Innovation Award in Neuroscience, 1999
- Closs Lectureship, University of Chicago, 1998
- Eastern Analytical Symposium NMR Presentation Award, 1996
- Philips Lecturer on Science and Technology, Haverford College, November 1995
- National Science Foundation panel member, Future of Optical Science and Engineering, 1994
- Alfred P. Sloan Fellow, 1986-1988.
- Charter member, Defense Science Study Group, Institute for Defense Analyses, 1985-1988.
- Microwave Design Award, Microwave Journal/Minicircuits Corporation, 1985.
- Dreyfus Foundation Young Faculty Grant, 1982.
- National Science Foundation, Graduate Fellow 1977-1980, Postdoctoral Fellow 1981.
- Harvard National Scholar, 1974-1977.
- Nobel Laureate Signature Award, presented by the American Chemical Society, 1982.

Online summary of current research at <http://www.chem.duke.edu/~wwarren>

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225. R.T. Branca, W. S. Warren, "Solvent suppression without crosspeak attenuation in *i*ZQC experiments", *Chem. Phys. Lett.*, 470(4-6), 325-331 (2009).
224. R.T. Branca, Y. M. Chen, V. Mouraviev, G. Galiana, E. Jenista, C. Kumar, C. Leuschner, W. S. Warren, "*i*DQC anisotropy map imaging for tumor tissue characterization *in vivo*", *Magn. Reson. in Med.* 61, 937-943 (2009) [PMID: 19215050](#)
223. T. Ye, D. Fu, W.S. Warren, "Nonlinear Absorption Microscopy", *Photochem Photobiol.* 85 (3), 631-45 (2009) [PMID: 19170931](#)
222. E.R Jenista, R.T. Branca, W.S. Warren, "Hyperpolarized Carbon-Carbon Intermolecular Multiple Quantum Coherence", *J. Magn. Reson.* 196(1), 74-7, (2009) [PMID: 18926750](#)
221. D. Fu, T.E. Matthews, T. Ye, I.R. Piletic, W.S. Warren, "Label-free *In Vivo* Optical Imaging of Microvasculature and Oxygenation Level", *J. Biomed. Opt.* 13(4), 040503 (2008) [PMID: 19021307](#)
220. G. Galiana, R.T. Branca, E.R. Jenista, and W.S. Warren, "Accurate Temperature Imaging Based on Intermolecular Coherences in Magnetic Resonance," *Science* 322, 421-424 (2008) [PMID: 18927389](#)
219. R.T. Branca, G. Galiana, and W.S. Warren, "Enhanced Nonlinear Magnetic Resonance Signals Via Square Wave Dipolar Fields," *J. Chem. Phys.* (2008) [PMID: 18698909](#)
218. I.R. Piletic, M.C. Fischer, P. Samineni, G. Yurtsever, and W.S. Warren, "Rapid Pulse Shaping With Homodyne Detection For Measuring Nonlinear Optical Signals," *Optics Letters* 16, 4192-4195 (2008) [PMID: 18594672](#)
217. M.C. Fischer, H.C. Liu, I.R. Piletic, and W.S. Warren, "Simultaneous Self-Phase Modulation and Two-Photon Absorption Measurement by a Spectral Homodyne Z-Scan Method," *Optics Express* 16(6), 4192-4205 (2008) [PMID: 18542515](#)
216. J. C. Davis, M. R. Fetterman, W. S. Warren and D. Goswami, "Propagation of complex shaped ultrafast pulses in highly optically dense samples" *J Chem Phys.* 128, 154312 (2008) [PMID: 18433214](#)
215. R.T. Branca, C. Leuschner, C. Kumar, B. Fubara, W. Warren, and B. Driehuys, "Hyperpolarized ^3He MRI to Detect Lung Metastases Targeted by Magnetic Nanoparticles," *Proceedings of ISMRM, Toronto* (2008).
214. D. Fu, T. Ye, T.E. Matthews, J. Grichnik, L. Hong, J.D. Simon, and W.S. Warren, "Probing Skin Pigmentation Changes with Transient Absorption Imaging of Eumelanin and Pheomelanin," *J. Biomed. Opt.* 13, 054036 (2008). [PMID: 19021416](#)
213. M.C. Fischer, H.C. Liu, I.R. Piletic, Y. Escobedo-Lozoya, R. Yasuda, and W.S. Warren, "Self-Phase Modulation Signatures of Neuronal Activity," *Optics Letters* 33(3), 219-221 (2008) [PMID: 18246134](#)
212. J.H. Cho, S. Ahn, C. Lee, K.S. Hong, K.C. Chung, S.K. Chang, C. Cheong, and W.S. Warren, "Magnetic Resonance Microscopic Imaging Based on High-Order Intermolecular Multiple-Quantum Coherences," *Magnetic Resonance Imaging* 25(5), 626-633 (2007) [PMID: 17540273](#)
211. N.V. Lisitza, W.S. Warren, and Y.Q. Song, "Study of Diffusion in Erythrocyte Suspension Using Internal Magnetic Field Inhomogeneity," *J. Magn. Reson.* 187(1), 146-154 (2007) [PMID: 17498984](#)

210. D. Fu, T. Ye, T.E. Matthews, G. Yurtsever, and W.S. Warren, "*Two-Color, Two-Photon, and Excited-State Absorption Microscopy*," *Journal of Biomedical Optics* 12(5), 054004 (2007) [PMID: 17994892](#)
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208. W.S. Warren, D. Fu, T. Ye, H. Liu, and M.C. Fischer, "*Tissue Imaging with Shaped Femtosecond Laser Pulses*," in *Ultrafast Phenomena XV*, 807-809 (2007).
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205. W.S. Warren, M.C. Fischer, and T. Ye, "*Novel Nonlinear Contrast Improves Deep-Tissue Microscopy*," *Laser Focus World* 43(6), 99-103 (2007).
204. C. Li, W. Wagner, M. Ciocca, and W.S. Warren, "*Multiphoton Femtosecond Phase-Coherent Two-Dimensional Electronic Spectroscopy*," *Journal of Chemical Physics* 126(16), 164307 (2007) [PMID: 17477602](#)
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200. W. S. Warren, "*Coherence, Correlation and Entanglement: Have We Learned Anything from NMR Quantum Computing?*," *Quantum Computing, Backaction 2007* (AIP Conference Proceedings, volume 864) 324-330.
199. W. S. Warren, "*Spectroscopy: Shifting Light with Spin*," *Nature* 442, 990 (2006).
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170. L-S. Bouchard, C. Chin, X. Tang, W.S. Warren and F.W. Wehrli, "Structural Characterization of Trabecular Bone Using Bulk NMR Measurements of Intermolecular Multiple-Quantum Coherences," Proc. Intl. Soc. Mag. Reson. Med. 11, 1113 (2003).
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Recent Teaching and Outreach Responsibilities:

Director, Beckman Scholars Program, Duke University (2006-2009)
Faculty Coordinator, Program in Chemical Outreach, Princeton University (1996-2005)
Freshman/Sophomore Advisor, Mathey College, Princeton University (1997-2005)
Director, Chemistry Laboratory, New Jersey State Science Olympiad (1995-2005)
Tutor, Triad House (home for abused teenagers) (1999-2003)
Undergraduate Advisor, Chemistry Class of 2000

Teaching Assignments at Duke:

Spring 2009: Molecular and Biomolecular Imaging: Magnetic Resonance*
Fall 2007: General Chemistry
Fall 2006: General Chemistry
Spring 2006: Advanced Topics in Physical Chemistry: Biomolecular Imaging*⁺

Teaching Assignments at Princeton:

Fall 2004: The Quantum World, Spring 2005: Molecular and Biomolecular Imaging
Fall 2003: The Quantum World
Fall 2002: The Quantum World and Molecular and Biomolecular Imaging
Fall 2001: Honors General Chemistry; Spring 2002: Molecular and Biomolecular Imaging
Fall 2000: Honors General Chemistry; Spring 2001: Chemistry & Physics of Molecular Imaging*⁺
Fall 1999: Honors General Chemistry; Spring 2000: Ultrafast Lasers and Applications*
Fall 1998: Honors General Chemistry; Spring 1999: Ultrafast Lasers and Applications*⁺
Fall 1997: Honors General Chemistry; Spring 1998: on leave
Fall 1996: Honors General Chemistry; Spring 1997: Molecular Spectroscopy*

* Graduate course; ⁺ Evening course

Educational Publications:

Textbook: The Physical Basis of Chemistry (176 pages). Academic Press, September 1993; second edition, February 2000. Both editions received the *Outstanding Academic Title* award from Choice Magazine (American Library Association).

Textbook article: "Lasers," in D. McQuarrie and P. Rock, General Chemistry (Prentice Hall, 1991, third edition)

Encyclopedia article: "Nuclear Magnetic Resonance (NMR)," 1995 yearbook, McGraw-Hill Encyclopedia of Science and Technology (invited article).

Journal article: W. S. Warren and M. Pickering, "Student Performance on a Procedureless Junior-Level Laboratory Examination," J. Chem. Ed. 64, 68 (1987).

Doctoral Students and Current Positions:

Francisco Loaiza-Lemos (Staff scientist, Institute for Defense Analyses)
Frank Spano (Associate Professor, Temple University)
Mark Banash (Senior Engineer Nanomaterial Applications, Zyvex Corporation)
Jennifer Bates (Merlic) (Associate Professor, Santa Monica College)
Mark McCoy (Staff scientist, Schering-Plough)
Mark Haner (Manager, Broadband Optical Components, Lucent Technologies)
Anand Hariharan (Staff scientist, IMRA America)
Wolfgang Richter (Staff scientist, Canadian National Research Council; Adjunct Professor, University of Winnipeg; Assistant Professor, Princeton University)
Jerry Tull (staff scientist, Scitec)
Debu Goswami (Professor, Tata Institute for Fundamental Research)

Warren S. Warren, Teaching- page 16

Jennifer Davis (staff scientist, Scitec)
Sujatha Vathyam (intellectual property manager, Lucent Technologies)
Matthew Fetterman (Electrical Engineering Ph. D.; postdoc, University of Illinois)
Weiguo Yang (Electrical Engineering Ph. D.; member of technical staff, Lucent)
Curt Hillegas (Manager, Academic Applications, OIT, Princeton University)
Dorine Keusters (Max Planck Institut, Germany)
Feng Huang
Peifang Tian (University of California, San Diego)
Natalia Lisitza (Research Associate, Dept. of Physics, University of Virginia)
Louis-Serge Bouchard (University of California, Berkeley)

M. S. students (terminal):

Suzanne Mayr, Laura Kang Ward

Undergraduate students (thesis students with at least one research publication):

Sharon Hammes-Schreiffer (Associate Professor, Penn State University)
Boyd Goodson (postdoc, Caltech)
Sean Garrett-Roe (graduate student, Berkeley)
Hans-Marcus Bitter
Jonathan Gutow (Associate Professor, Wisconsin-Oshkosh)
Patricia Bachiller (student, Harvard Medical School)
Sylvia MacDonald
Mark Navratil
Laura Huckabee
Maria Ciocca
Anthony Miller

Postdoctoral students:

Dr. Joseph Melinger (Naval Research Laboratories)
Dr. Suketu Gandhi
Dr. Qihong He (Staff member, Sloan-Kettering)
Dr. Jeff Barnes (Scitec)
Dr. Charles Lin (Mass. Gen. Hosp.)
Dr. Paul Wooldridge
Dr. Sangdoon Ahn (LG Chemicals, Korea)
Dr. Sanghyuk Lee (Professor, Ewha Women's University, Korea)
Dr. N. Murali (Varian Instruments)
Dr. Andy Hasenfeld (*deceased*)
Dr. Yung-Ya Lin (Professor, UCLA)

Warren S. Warren, Seminars and Invited Presentations, 1997-2004

216. 2nd International Conference on Coherent Multidimensional Vibrational Spectroscopy, Madison, WI, August 14, 2004
215. OSA-Nonlinear Optics, Materials, Fundamentals & Applications, Waikolo, HI, July 31, 2004
214. McKnight Conference on Neuroscience, Denver, CO, June 25, 2004
213. The MITRE Corporation, San Diego, CA, June 11, 2004
212. Erice Summer School, Roma, Italy, May 23, 2004
211. DARPA Meeting, Washington, DC, April 7, 2004
210. ACS Meeting, Anaheim, CA, March 30, 2004
209. Texas A&M University, College Station, TX, March 29, 2004
208. 34th Winter Colloquium on the Physics of Quantum Electronics, Snowbird, UT, January 5, 2004
207. Michigan State University, Lansing, MI, November 12, 2003
206. ICAM Workshop-Physics of Neural Tissue, Sante Fe, NM, November 2, 2003
205. 226th ACS National Meeting, New York City, NY, September 7, 2003
204. 2nd Annual Meeting-Society of Molecular Imaging, San Francisco, CA, Aug. 15-18, 2003
203. 45th Rocky Mountain Conference on Analytical Chemistry, Denver, CO, July 27-31, 2003
202. Gordon Conference Nonlinear Optics & Lasers, New London, NH, August 1, 2003
201. Gordon Conference Magnetic Resonance, Newport, RI, June 15-20, 2003
200. IBC – Imaging & Drug Discovery Conference, Vienna, VA, June 2-4, 2003
199. Imperial College, London/Glasgow, May 3-10, 2003
198. International School on Magnetic Resonance & Brain Function, Sicily, Italy, April 4-10, 2003
197. ENC Conference, Savannah, GA, March 29-April 4, 2003
196. AMRI Review, New Orleans, LA, February 27-28, 2003
195. ICMRBS XXth Conference, Toronto, Canada, August 26, 2002
194. University of Wisconsin, March 6, 2002
193. Workshop, Austin, TX, October 25, 2001
192. FACSS Meeting, Detroit, MI, October 7, 2001
191. Imaging in 2002, Jackson, WY, September 28, 2001
190. Optics in Computing meeting, Optical Society of America, Lake Tahoe, Jan. 9, 2001
189. American Chemical Society, Princeton Section, December 18, 2000
188. Naval Research Laboratory, December 13, 2000
187. Florida State University, Department of Chemistry, November 28, 2000
186. University of California, San Diego, School of Medicine, October 25, 2000
185. University of California, San Diego, Department of Chemistry, October 24, 2000
184. Ampere Summer School, Zakopane, Poland, June 8, 2000
183. University of Colorado, Department of Physics, May 22, 2000
182. NSF Site visit, National High Magnetic Field Laboratory, Tallahassee, FL, April 17, 2000
181. IEEE Sarnoff Symposium on Microwave Systems and Technology, March 22, 2000
180. Harvard-MIT Seminar Series, Cambridge, MA, December 2, 1999
179. Eastern Analytical Symposium, Somerset, NJ, November 16, 1999
178. Southeastern Magnetic Resonance Conference, Tallahassee, FL, November 5, 1999
177. University of Illinois, Urbana-Champaign, Department of Chemistry, Oct. 13, 1999

176. Rutgers University, Fiber Optic Materials Research Center, October 5, 1999
175. Universite du Sherbrooke, Department of Chemistry, August 13, 1999
174. Gordon Conference on Magnetic Resonance, June 28, 1999
173. Conference on Coherent Control, Ringberg Castle, Germany, July 26, 1999
172. Stanford University, Department of Chemistry; March 31, 1999
171. University of California, Berkeley; Physical Chemistry seminar, March 30, 1999
170. University of California, Berkeley, Condensed Matter Physics seminar; March 29, 1999
169. ITAMP Workshop on NMR and Quantum Computation, February 22, 1999
168. National High Field Magnet Laboratory, Tallahassee, FL, August 10, 1998
167. European Experimental NMR Conference, Bled, Slovenia; May 11, 1998 (plenary lecture)
166. Experimental NMR Conference, Asilomar, CA, March 23, 1998
164. University of Chicago, Department of Chemistry; March 2, 1998
165. Princeton University, Department of Electrical Engineering; February 11, 1998
163. Eastern Analytical Symposium, Somerset, NJ; November 20, 1997
162. NEC Corporation, Princeton, NJ; November 7, 1997
161. Southeastern Magnetic Resonance Conference, Gainesville, Florida; Oct. 31, 1997
160. University of Florida, Quantum Theory Center; October 30, 1997
159. Fourth International Conference on Magnetic Resonance Microscopy, Sept. 22, 1997
158. University of Minnesota Medical School, Center for Magnetic Resonance Research, July 7, 1997
157. University of Wisconsin, Department of Chemistry, July 1, 1997
156. Purdue University, Department of Chemistry, June 30, 1997
155. Gordon Conference on Magnetic Resonance, June 24, 1997
154. Washington NMR Topical Group, National Institutes of Health; May 9, 1997
153. University of Pennsylvania, Department of Physics; May 2, 1997
152. American Chemical Society, North Jersey NMR Topical Group; January 21, 1997
151. Eastern Analytical Symposium, Somerset, NJ; November 18, 1996
150. Boston College, Department of Chemistry; October 10, 1996
149. Thornton Hospital, University of California San Diego Medical School; July 8, 1996
148. Gordon Conference on Multiphoton Processes, New London, NH; June 10, 1996
147. Cornell University, Department of Chemistry; February 24, 1996
146. University of Pennsylvania Medical School, Philadelphia, PA; Department of Radiology; January 23, 1996
145. Haverford College, Philips Lectures on Science and Public Policy, Nov. 2-3, 1995
144. James Cook University, Townsville, Australia; Department of Molecular Sciences; July 31, 1995
143. International Society of Magnetic Resonance, Sydney, Australia, July 18, 1995 (plenary lecture)
142. Koç Conference on Quantum Control, Antalya, Turkey, May 17, 1995
141. IMRA America, Ann Arbor, MI, April 20, 1995
140. University of Michigan, Center for Ultrafast and Optical Science, January 25, 1995
139. University of Michigan, Department of Chemistry, January 24, 1995
138. Massachusetts Institute of Technology, Department of Chemistry; Nov. 22, 1994
137. NEC Corporation, Princeton, NJ; October 13, 1994
136. Interdisciplinary Laser Science meeting; Dallas, TX; panel on Ultrafast Laser Applications, October 5, 1994, research seminar October 7, 1994
135. University of Pennsylvania, Department of Chemistry; September 15, 1994

Warren S. Warren, Seminars/Presentations- page 19

134. Sixteenth International Conference on Magnetic Resonance in Biological Systems (opening and plenary lecture); Veldhoven, the Netherlands; August 15, 1994
133. University of Groningen, the Netherlands; Department of Chemical Physics; August 12, 1994
132. University of Michigan, Ann Arbor, MI; CUOS/ITAMP Conference on Coherence, Correlation and Control; July 28, 1994
131. IEEE/LEOS meeting, Princeton, NJ; June 21, 1994
130. European Experimental NMR Conference, Oulu, Finland; June 7, 1994
129. Ultrafast Phenomena IX, Dana Point, CA; panel on "Coherent Control;" May 4, 1994
128. Lehigh University, Department of Chemistry; April 27, 1994
127. Experimental NMR Conference, Asilomar, CA; April 12, 1994
126. Harvard University, Department of Physics and ITAMP; March 30, 1994
125. American Physical Society meeting, Division of Chemical Physics; Pittsburg, PA; March 25, 1994
124. National Academy of Sciences, Washington, DC; Panel on Advanced Laser Sources; March 6, 1994
123. California Institute of Technology, Pasadena, CA; Department of Chemistry; January 29, 1994
122. O-E Lase 94, Los Angeles; January 27, 1994
121. University of California, San Diego, Department of Chemistry; Jan. 25, 1994
120. Princeton University, Department of Physics; December 14, 1993
119. Princeton Plasma Physics Laboratory; October 13, 1993
118. University of Michigan, Center for Ultrafast Optical Science; Ann Arbor, MI; September 2, 1993
117. Telluride Workshop on Pulse Shaping and Quantum Control in External Fields; Telluride, CO; August 9, August 11, 1993
116. Magnetic Resonance Gordon Conference; Wolfeboro, NH; July 12, 1993
115. Université Libre de Bruxelles, Belgium; Department of Physics; May 21, 1993
114. Femtosecond Reaction Dynamics symposium, Royal Netherlands Academy of Sciences; May 19, 1993
113. Quantum Electronics and Laser Science Conference (QELS), featured invited speaker; May 4, 1993
112. Sanibel Sumposium on Quantum Chemistry; San Augustine, FL; March 18, 1993
111. Brookhaven National Laboratory, Department of Chemistry; Brookhaven, NY; February 24, 1993
110. Harvard University, Department of Chemistry; Cambridge, MA; February 18, 1993
109. University of Pennsylvania, Department of Chemistry; Philadelphia, PA; Dec. 3, 1992
108. Yale University, Department of Chemistry, October 27, 1992
107. International Society of Magnetic Resonance meeting; Vancouver, BC; July 22, 1992
106. Fields Institute for Mathematical Science; Waterloo, Ontario, Canada; June 3, 1992
106. University of Illinois, Chicago, Department of Chemistry; May 22, 1992
105. American Physical Society, Division of Atomic Molecular, and Optical Physics; Chicago, IL; May 21, 1992
104. University of North Carolina, Chapel Hill; Department of Chemistry; April 21, 1992
103. Duke University, Durham, NC; Department of Chemistry; April 20, 1992

Warren S. Warren, Seminars/Presentations- page 20

102. Cornell University Theory Center; Ithaca, NY; February 10, 1992
101. Batelle Pacific Northwest Laboratory, Molecular Science Research Center; Pasco, WA, January 30, 1992
100. University of Washington, Department of Chemistry; Seattle; January 28, 1992.
99. Princeton University, Department of Chemistry; October 17, 1991
98. American Chemical Society, Division of Physical Chemistry; New York, Aug. 26, 1991
97. Telluride Workshop on Pulse Shapes and Quantum Control in External Fields; Telluride, CO, July 22, 1991
96. Gordon Conference on Magnetic Resonance; Wolfeboro, NH, July 15, 1991
95. NATO Workshop on Coherence Effects in Intense Laser Fields, Hamilton, Ontario, May 7, 1991
94. Stevens Institute of Technology, Department of Physics, February 27, 1991
93. University of Pittsburg, Department of Chemistry; February 20, 1991
92. Columbia University, Materials Research Laboratory; December 17, 1990
91. Temple University, Department of Chemistry; Philadelphia, PA; December 13, 1990
90. Princeton/Coherent Workshop on Lasers and Applications; Princeton, NJ; Dec. 6, 1990
89. Purdue University, Department of Chemistry; West Lafayette, IN; November 28, 1990
88. Notre Dame University, Department of Chemistry; South Bend, IN; Nov. 27, 1990
87. Eastern Analytical Symposium; Somerville, NJ; November 15, 1990
86. Experimental NMR Conference; Asilomar, CA; April 4, 1990
85. American Physical Society, Division of Chemical Physics; Anaheim, CA; March 12, 1990
84. Freie Universität Berlin, West Germany, Department of Physics; February 26, 1990
83. Universität Kaiserslautern, West Germany, Department of Physics; February 22, 1990
82. Universität Stuttgart, West Germany, Department of Physics; February 19, 1990
81. University of Illinois, Urbana-Champaign; Department of Chemistry; Nov. 29, 1989
80. Michigan State University, East Lansing; Department of Chemistry; Nov. 28, 1989
79. S. U. N. Y. (Stony Brook), Department of Chemistry; September 14, 1989
78. Coherent, Inc.; Palo Alto, CA; August 30, 1989
77. Interdisciplinary Laser Science Conference; Stanford, CA; August 28, 1989
76. Gordon Conference on Laser Diagnostics and Combustion; Plymouth, NH; July 19, 1989
75. Telluride Conference on Molecular Spectroscopy; Telluride, CO; July 2, 1989
74. Conference on Lasers and Electro-Optics/Quantum Electronics and Laser Science 89; Baltimore, MD; April 26, 1989 (joint session)
73. Materials Science Colloquium, Princeton University; April 17, 1989
72. Université de Sherbrooke, Department of Chemistry; April 5, 1989
71. University of California, Riverside, Department of Chemistry; March 1, 1989
70. High Resolution NMR in Solids (symposium in honor of J. S. Waugh), M. I. T.; Cambridge, MA; January 19, 1989
69. University of Texas, Austin, Department of Chemistry; September 15, 1988
68. Gordon Conference on Atomic and Molecular Interactions; August 4, 1988
67. JILA/University of Colorado, Boulder; June 24, 1988
66. Third Chemical Congress of North America (American Chemical Society), Toronto, June 6, 1988

Warren S. Warren, Seminars/Presentations- page 21

65. Stanford University, Department of Applied Physics; June 2 and June 9, 1988
64. IBM Research Laboratories, Physical Sciences Division; San Jose, CA; May 4, 1988
63. University of California, Berkeley, Department of Chemistry; April 22, 1988
62. R.P.I., Department of Chemistry; Troy, NY; March 17, 1988
61. M. I. T., Department of Chemistry; Cambridge, MA; March 15, 1988
60. University of New Mexico, Albuquerque, Department of Physics; February 19, 1988
59. Washington University, Department of Chemistry; St. Louis, MO; February 16, 1988.
58. Western Spectroscopy Association; Asilomar, CA; January 21, 1988.
57. Coherent Inc.; Palo Alto, CA; December 11, 1987.
56. Hughes Research Laboratory; Malibu, CA; December 10, 1987.
55. Seton Hall University; E. Orange, NJ; November 10, 1987.
54. NATO Workshop on Atomic and Molecular Processes with Short Intense Laser Pulses; Lennoxville, Quebec; July 20, 1987.
53. Gordon Conference on Magnetic Resonance, Wolfeboro, NH; June 17, 1987.
52. Ninth Conference on Recent Advances in Laser Spectroscopy, Brooklyn Polytechnic Institute; May 15, 1987.
51. Experimental NMR Conference; Asilomar, California; April 9, 1987.
50. General Electric, Molecular/Optical Physics Seminar; Schenectady, NY; March 26, 1987.
49. University of Toronto, Chemical Physics Symposium; March 17, 1987.
48. California Institute of Technology; January 14, 1987.
47. O-E Lase '87; Anaheim, CA; January 13, 1987.
46. University of California, Los Angeles, Department of Chemistry; January 12, 1987.
45. Princeton/Coherent Symposium on Applications of Ultrafast Lasers in Chemistry; Princeton, NJ; December 12, 1986.
44. University of Rochester, Department of Chemistry; November 25, 1986.
43. Princeton University, Department of Chemistry; November 11, 1986.
42. University of Pennsylvania, Department of Chemistry; October 16, 1986.
41. Lawrence Livermore National Laboratory; October 3, 1986.
40. Stanford University, Department of Chemistry; October 2, 1986.
39. University of California, Berkeley, Department of Chemistry; October 1, 1986.
38. University of Colorado, Boulder, Department of Chemistry; September 26, 1986.
37. Gordon Conference on Vibrational Spectroscopy; Wolfeboro, NH; August 12, 1986.
36. University of Toronto, Department of Chemistry; July 25, 1986.
35. Siemens Medical Systems; Iselin, NJ; May 15, 1986.
34. Cornell University, Department of Chemistry; May 8, 1986.
33. Experimental NMR Conference, Baltimore, Maryland; April 14, 1986.
32. Yale University, Materials Science Seminar; March 30, 1986.
31. O-E Lase '86; Anaheim, CA; January 24, 1986.
30. University of California, San Diego, Department of Chemistry; January 23, 1986.
29. International Laser Science Conference; Dallas, TX; November 19, 1985.
28. Massachusetts Institute of Technology; Department of Chemistry, October 8, 1985.
27. Columbia University, Department of Physics; September 13, 1985.
26. Exxon Research Laboratories; Clinton, NJ; August 6, 1985.

Warren S. Warren, Seminars/Presentations- page 22

25. Technicare Corporation; Solon, OH; July 29, 1985.
24. Gordon Conference on Magnetic Resonance; Wolfeboro, NH; June 19, 1985.
23. ETH; Zurich, Switzerland; June 6, 1985.
22. AT&T Bell Laboratories; Murray Hill, NJ; May 14, 1985.
21. Lasers '84 Conference; San Francisco, CA; November 18, 1984.
20. Siemens Medical Systems; Iselin, NJ; November 11, 1984.
19. SmithKline Beckman; Philadelphia, PA; October 10, 1984.
18. Photochemical Research Associates; London, Ontario; June 25, 1984.
17. IBM Research Laboratories; San Jose, CA; June 11, 1984.
16. American Chemical Society, NMR Topical Group; Woodbridge, NJ; March 15, 1984.
15. Exxon Research Laboratories; Linden, NJ; April 25, 1983.
14. Columbia University, Department of Chemistry; February 24, 1983.
13. International Conference on Photochemistry and Photobiology; Alexandria, Egypt; Jan. 6, 1983.
12. J. T. Baker Chemical Company; Phillipsburg, NJ; September 1, 1982.
11. University of California, San Diego, Department of Chemistry; May 6, 1982.
10. California Institute of Technology, Department of Chemistry; May 4, 1982.
9. American Chemical Society, 183rd National Meeting; Las Vegas, NV (Nobel Laureate Signature Award Symposium); March 29, 1982.
8. University of Illinois, Champaign-Urbana, Department of Chemistry; February 9, 1982.
7. University of California, Los Angeles, Department of Chemistry; February 4, 1982.
6. University of California, Berkeley, Department of Chemistry; February 1, 1982.
5. University of Pennsylvania, Department of Chemistry; January 22, 1982.
4. Brown University, Department of Chemistry; January 20, 1982.
3. University of Chicago, Department of Chemistry; January 18, 1982.
2. Yale University, Department of Chemistry; December 2, 1981.
1. Princeton University, Department of Chemistry; November 30, 1981.

Research Support

Current Support:

Source: NIH

Title: Imaging Nonlinear Absorption of Biomarkers for Improved Detection of Melanoma (1RC1CA145105-01)

Total Period: 09/30/09-09/29/11

Role: Principal Investigator

Source: NIH

Title: Integrated Center for In-Vivo Microscopy (T41 RR005959)

Total Period: 07/01/08-06/30/13

Role: Co-Investigator

Source: NIH

Title: Intermolecular Multiple-Quantum Coherence Effects in MRI (R01 EB002122)

Total Period: 04/01/05-03/31/10

Role: Principal Investigator

Past Support:

Source: North Carolina Biotechnology Center

Title: Acquisition of a Spin Hyperpolarizer for Advanced Molecular Imaging

Funding Period: July 2006 - January 2008

Role: Principal Investigator

Source: Defense Advanced Research Project Agency

Title: FAST CARS method for anthrax detection

Funding Period: 04/01/05-09/30/06

Role: Co-Investigator

Source: (at Princeton) New Jersey Commission on Science and Technology

Title: Center for Molecular and Bimolecular Imaging

Total Period: 01/1/02-12/31/06

Role: Principal Investigator

Source: (At the University of Pennsylvania) NIH (R21 RR19770)

Title: Two-Photon absorption imaging with shaped femtosecond pulses

Total Period: 09/01/03-08/31/06

Role: Co-Investigator

Source: NIH

Title: Feasibility of Assessing Bone Architecture by i-DQC MRI (subcontract)

Total Period: 12/01/04-11/30/06

Role: Principal Investigator