

CURRICULUM VITAE

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AREAS OF SPECIALIZATION

Magnetic Resonance (NMR & ESR) - imaging, spectroscopy, spin relaxation, and hardware
Imaging Science - classification, segmentation, and imaging system analysis
Physical Chemistry - quantum mechanics and kinetics
Analytical Chemistry - spectroscopy and scientific instrumentation
Scientific Publishing - web and hardcopy

EDUCATION

B.S. (Honors)	Chemistry	Utica College of Syracuse University, Utica, NY
M.S.	Physical Chemistry	Purdue University, W. Lafayette, IN
Ph.D.	Chemistry	University of Notre Dame, Notre Dame, IN
Post Doc.	ESR Spectroscopy	Cornell University, Ithaca, NY

WORK EXPERIENCE

Current Appointments:

1993-Present **Professor with Tenure**, Departments of Chemistry, Materials Science & Engineering, and Imaging Science, RIT, Rochester, NY

1992-Present **Adjunct Associate Professor**, Radiology Department, University of Rochester (UR) Medical School, Rochester, NY

2000-Present **Principal Investigator**, New York State Center for Electronic Imaging Systems, Rochester, NY

Previous Appointments:

2009 **Guest Professor**, Henan Univeristy, Kaifend, Henan, China

2005 **Guest Researcher**, Leibniz Institut für Polymerforschung, Dresden, Germany

2001 **Visiting Professor**, Consiglio Nazionale delle Ricerche (CNR) - Centro per la Medicina Nucleare, Università degli Studi di Napoli - Federico II, Naples, Italy

1999-2003 **Advisory Board**, Imaging Science Initiative, Pacific NW National Laboratory, Pasco, WA

1997-2002 **Editor-in-Chief**, Encyclopedia of Imaging Science and Technology, John Wiley & Sons, Hoboken, NJ

1991-1993 **Associate Professor** of Imaging Science and Materials Science, RIT

1990, 1992 **Visiting Professor**, Radiology Department, University of Birmingham, Birmingham, AL

1989-1991 **Wiedman Professor of Imaging Science**, RIT, Rochester, NY

1988-1993 **Associate Professor**, Chemistry Department, RIT, Rochester, NY

1985-1982 **Visiting/Adjunct Assistant Professor**, Biophysics Department, UR, Rochester, NY

1985 **Visiting Scientist**, Department of Chemistry, Cornell University, Ithaca, NY

1984-1988 **Assistant Professor**, Chemistry Department, RIT, Rochester, NY

1982-1984 **Post Doctoral Associate**, Chemistry Department, Cornell University, Ithaca, NY

1978-1982 **Graduate Research Assistant**, Chemistry Department, University of Notre Dame, South Bend, IN

Honors, Awards, and Recognitions

1. Dean's Summer Research Fellow, 1985, 1987, and 1988, RIT College of Science.
2. Wiedman Professor of Medical Imaging, 1989-1991, RIT Center for Imaging Science.
3. Member of Rochester Chapter of Sigma Xi, 1985-Present.
4. Honor Society of Phi Kappa Phi, 1990-Present.
5. Invited Keynote Speaker, Annual Meeting of The American Association for Clinical Chemistry, Anaheim, CA, July 1995.
6. Editor-in-Chief of the John Wiley & Sons, Inc. Encyclopedia of Imaging Science and Technology, New York, NY, 1997-2002.
7. Royal Society of Chemistry's Choice Award for *The Basics of NMR*, 1999.
8. Advanced Chemistry Development Labs Star Pick Educators' Award for the hypertext book *The Basics of NMR*, July 2000.
9. Association of American Publishers Professional and Scholarly Award for Multivolume Science Reference work: *The Encyclopedia of Imaging Science and Technology*, 2002.
10. Invited Plenary lecture at the GIDRM XXXVI Italian National Congress on NMR, Vietri sul Mare, Salerno, Italy, September 2006.
11. Google Rating of 2nd in 21,000,000 for Magnetic Resonance Imaging, *The Basics of MRI*, 2007.
12. Google Rating of 2nd in 25,100,100 for Nuclear Magnetic Resonance, *The Basics of NMR*, 2007.
13. Invited Keynote Speaker at the meeting of the CT/MRI Society of the American College of Veterinary Medicine, Chicago, IL, November 2007.
14. RIT Trustees Faculty Scholarship Award, 2010.

TEACHING EXPERIENCE

Courses Developed at RIT:

1. Basics of Pulsed NMR (1014-740) - A one credit hour graduate course designed to introduce the basics of pulsed or Fourier Transform NMR spectroscopy, including basic pulse sequences, experimental techniques, and physical and spectral measurements. The course provides students with an understanding of the workings and theory of a modern day NMR spectrometer when a spectrum is acquired. The course also serves as an introduction to other advanced magnetic resonance courses such as Magnetic Resonance Imaging (1014-730) and Principles of Magnetic Resonance (1014-747).
2. Magnetic Resonance Imaging (1014-730) - An introduction to the principles of magnetic resonance imaging (MRI). The course covers spin physics, Fourier transforms, basic imaging principles, Fourier imaging, imaging hardware, imaging techniques, image processing, image artifacts, safety and advanced imaging techniques.
3. Building Scientific Apparatus Lecture (1008-620) - Basic skills associated with the construction of scientific laboratory apparatus, some of which is not commercially available are covered: machine shop skills, working with glass, vacuum technology, optics and electronics. Special emphasis on function-structure relationship between an instrument and its intended use. Several references on construction techniques are provided, and information about current manufacturers and suppliers of necessary components is given.
4. Building Scientific Apparatus Laboratory (1018-621) - Basic skills associated with the construction of scientific laboratory apparatus, some of which is not commercially available, are covered: machine shop skills, working with glass, vacuum line technology, optical spectrometer design and instrument electronics.

Undergraduate Courses Taught at RIT:

1. General Chemistry Lecture and Laboratory, Department of Chemistry
2. Scientific Glassblowing, Department of Chemistry
3. Undergraduate Chemical Research, Department of Chemistry

4. Instrumental Methods of Analysis Lecture and Laboratory, Department of Chemistry
5. Spectroscopy, Department of Chemistry
6. Quantum Mechanics Laboratory, Department of Chemistry
7. Kinetics Lecture and Laboratory, Department of Chemistry
8. Chemical Separations Laboratory, Department of Chemistry
9. Technical Communication & Research Practices, Imaging Science Department
10. Senior Research, Imaging Science Department
11. Magnetic Resonance Imaging, Medical Science Department

Graduate Courses Taught at RIT:

1. Instrumental Methods of Analysis Lecture and Laboratory, Department of Chemistry
2. Magnetic Resonance Imaging, Department of Chemistry and Imaging Science
3. The Basics of Pulsed NMR, Department of Chemistry
4. Principals of Magnetic Resonance, Departments of Chemistry and Imaging Science
5. Graduate Research, Department of Chemistry
6. Graduate Research, Imaging Science Department

Other Teaching Experience:

1. General Chemistry Laboratory, Mohawk Valley Community College, Utica, NY.
2. General Chemistry Laboratory and Recitation, Purdue University, West Lafayette, IN.

CONSULTING

1. VirtuaScopics, Inc. Pittsford, NY, MRI Quality Control.
2. INVIVO Corp., Gainesville, FL, Phantom Filler Material.
3. Biophan Technologies, Inc., Henrietta, NY, MRI Compatible Devices.
4. Eastman Kodak Company, Rochester, NY, MRI of Materials.
5. ConverTec Corporation, Newtown, PA. Non destructive testing apparatus.
6. ChevronTexaco, TX, NMR Trace Analysis of Organics in Sea Water.
7. Bausch & Lomb, Rochester, NY, Magnetic Resonance Imaging of Materials.
8. Coudert Brothers, New York, NY, Technical Advice on MRI Litigation.
9. Critical Solutions International, Inc., Dallas, TX, Nuclear Quadruple Resonance.
10. Teradyne, Inc., North Reading, MA, MRI Hardware.

RESEARCH INTERESTS

1. Sub-Surface MRI
Millions of dollars are lost annually due to utility strikes during construction related excavation. Ground penetrating radar (GPR) is the most widely used geophysical imaging tool to locate buried utilities, however, its performance in high water content, high conductivity soils is limited. Magnetic resonance imaging (MRI) may hold promise as a near-surface imaging modality in those conditions where GPR fails. An MRI based technique would produce images of voids from buried anthropogenic objects in a signal rich background from water in the soil. We are experimenting with various methods for unilateral MRI. One method, called the rastered projection method, has been used to build a 1/30 scale prototype. We are also studying the NMR signal from various synthetic and natural sands to predict the magnetic resonance signal from fully hydrated soils. [See publications: 34, 35, 37, 38, 39, 41]
2. MRI Phantoms and Quality Control
Phantoms are anthropogenic objects used to test the performance of an MRI system. Phantoms are filled with an NMR signal bearing material. In phantoms used to measure the homogeneity of the B_0 and RF magnetic fields in imagers, these materials must have a controllable spin-lattice relaxation rate (R_1), spin-spin relaxation rate (R_2), dielectric constant (ϵ_r), and electrical resistivity (ρ_r). The R_1 and R_2 values must be short to acquire images rapidly. A single chemical shift component is necessary to be able to distinguish quadrature artifacts from chemical shift artifacts. A low ϵ_r is necessary to minimize the standing wave artifact found on higher field MRI systems. The moderate resistivity is necessary to load the RF coil as would the human body. Many of these

traits are not often found in one substance. The utility of AOT-water-decane reverse micelle solutions as a phantom filler material has been demonstrated. This material has the added benefit of having chemical shift components in the spectrum similar to that of fat and water in the human body. We have also proposed new polymeric materials with one chemical shift component for these filler materials. We have also developed a resolution phantoms which can be used to measure the point spread-function, linearity, and resolution of an MRI system at multiple locations in a three-dimensional space without the need to reposition the phantom. [See publications: 18, 27, 28, 40]

3. Targeted MRI Contrast Agents

Targeted contrast agents are molecules or complexes that change their relaxivity on exposure to another substance. A gadodiamide solution was determined to be a targeted contrast agent for Cu^{+2} , changing its relaxivity of 4080 in the absence of Cu^{+} to $12030 \text{ s}^{-1}\text{M}^{-1}$ in the presence of Cu^{+} . We are currently investigating the sensitivity of this contrast agent to other metal ions.

4. Multispectral tissue classification and segmentation using R_1 , R_2 , ρ , δ , and PCA

Several studies were undertaken to determine if normal tissues and pathology could be identified and segmented in magnetic resonance images using calculated spin-lattice relaxation rate (R_1), spin-spin relaxation rate (R_2), spin density (ρ), and chemical shift (δ) images. Normal tissues of the brain could easily be segmented with calculated R_1 , R_2 , and ρ images. Some breast pathology could be identified with the same images. Muscle, adipose tissue, and bone could be readily identified and segmented with chemical shift imaging (δ). Principal component analysis (PCA) proved to be another viable way for segmenting normal tissues of the brain. [See publications: 19, 21, 22, 23, 26, 29, 30]

5. High-Efficiency Transmit and Receive RF Coils for MRI of Extremities.

The single-turn solenoid (STS), a class of transmit and receive magnetic resonance imaging coil was developed for imaging extremities on clinical and specimens on research MRI systems. STS coils were developed for imaging a finger, hand, wrist, forearm, shoulder, head, breast(s), testicles, knee, ankle, and foot. The STS produces images with a very favorable signal-to-noise ratio with a fraction of the power necessary for other coils. One design called the asymmetric STS is capable of creating a 90 degree RF pulse with only 130 mW compared to hundreds of Watts needed from other coils. [See publications: 9, 10, 11, 13, 14, 15, 25]

6. Magnetic Resonance Imaging of Materials.

MRI has been used extensively in medicine but to a lesser extent for the study of materials. We are exploring new applications of MRI in Materials Science and Engineering. [See publication: 36]

FELLOWSHIPS AND GRANTS

Support Received:

1. 1.5T MRI Imaging Time, UR Medical Center and Ide Radiology, 1985-1989, 200 Hours, Value \$100,000.
2. Teaching MRI Using Computer Animation. RIT Productivity Grant, 1987-1988, \$11,690.
3. Modeling of RF Magnetic Fields in MRI Resonators. IBM RSP, 1988-1989, \$26,900.
4. Development of Low Field ESR Spectroscopy as an Analytical Technique. RIT College of Science Project Initiation Grant, 1989, \$5,300.
5. 200 MHz NMR Spectrometer. Eastman Kodak Company, 1989, valued at \$200,000.
6. Teaching NMR Using Computer Animation. RIT Productivity Grant, 1989-1990, \$17,000.
7. T_1 - ρ Correlations in MR Breast Images. University of Rochester Magnetic Resonance Center, GE Signa Magnetic Resonance Imaging Time, 1990-1991, \$5,400.
8. NMR Imaging of Gelatin. Eastman Kodak Company, 1990, \$500.
9. NMR Computer Instrumentation. Eastman Kodak Company, 1990-1991, \$30,000.

10. Volume Rendering Algorithms for the Hippocampus. University of Rochester Radiology Dept., 1990-1991, \$12,000.
11. ESR Imaging without DC Magnetic Field Gradients. NSF, 1991-1992, \$44,419.
12. The Value of MRI and the Use of Gd Contrast in Pre-Operative Evaluation of Patients with Partial Epilepsy. (M.J. Berg, P.I.) University of Rochester, 1991-1992, \$17,000.
13. Purchase of a Data System Upgrade for an NMR Spectrometer. NSF, 1991-1992, \$27,333.
14. NMR and ESR Studies of Diffusion in Gelatin. Eastman Kodak Company, 1991-1992, \$10,000.
15. Multispectral Tissue Classification of Brain Pathology. RIT COS PI Grant, 1992, \$5000.
16. Computer Based Teaching Package on MRI. RIT Productivity Grant, 1993-1994, \$15,000.
17. MRI Phantom Design. General Electric Medical Systems, 1993-1994, \$29,000.
18. Physical & Chemical Properties of Macromolecules, (T. Gennett, P.I.) NSF REU, 1995-1997, \$149,500.
19. Use of FT NMR in the Undergraduate Chemistry Laboratory, NSF, 1995-1997, \$100,000; RIT match, \$200,000.
20. Imaging of Water in Photographic Paper. Eastman Kodak Company, 1997-1999, \$4,000.
21. 1.5T MRI Imaging Time, UR Medical Center and University Medical Imaging, 1990-1999, 400 Hours, Value \$200,000.
22. Imaging the NMR Signal from Water in Topsoil, Vermeer Mfg. Co., 2000-2001, \$190,320.
23. NMR Detection of Low Concentrations of Oil-in-Water, Chevron, 2001, \$6,000.
24. Tissue Classification using R_1 , R_2 , and ρ Images, Consiglio Nazionale delle Ricerche (CNR) International Short Term Mobility Program, and Centro di Medicina Nucleare, Università degli Studi di Napoli Federico II, May-June 2001, £25,000,000.
25. Subsurface MRI for Locating Utilities, NYSTAR, 2001-2002, \$5,000.
26. US ARMY Red Team, Critical Solutions International, 2002, \$6,033.
27. NMR Detection of Low Concentrations of Oil in Flowing Water, Chevron, 2003, \$45,000.
28. Daniel Pasto Undergraduate Fellowship, RIT Chemistry, S.L. Ianapolo, 2004, \$3,000.
29. Magnetic Resonance Imaging of Materials, Bausch & Lomb, 2004, \$27,227
30. Fast Micro MRI, Leibniz Institute for Polymer Research, Dresden, Germany, 2005, €45,000
31. Lithographic RF Coil Design Study for a Sub-Surface MRI System, RIT CIS-Kodak New Collaboration Research Grant, 2005, \$6,000.
32. Penetration depth study for a Sub-Surface MRI System, RIT CIS Innovative Graduate Student Grant, 2005, \$4,200.
33. Quantitative MRI: System Performance Testing CEIS/NYSTAR CAT, 2006-2007, \$9,000
34. Quantitative MRI: System Performance Testing, VirtualScopics, 2006-2007, \$21,020
35. Magnetic Resonance Synthetic Image Generator, (M. Helguera, P.I.), CEIS/NYSTAR CAT, 2006-2007, \$11,000.
36. Magnetic Resonance Synthetic Image Generator, (M. Helguera, P.I.), VirtualScopics, 2006-2007, \$22,000.
37. MRI Phantom Filler Materials: Exploratory Phase, INVIVO Corp., 2006, \$9,600.
38. Development of MRI Phantom Filler Materials, INVIVO Corp., 2007, \$60,000.
39. A Study of the Magnetic Resonance Properties of a Gadolinium-Copper MRI Phantom, RIT College of Science Undergraduate Summer Research Grant, 2007, \$3000.
40. Quantitative MRI: A 3D Resolution Phantom, RIT CIS-Kodak Research Grants, 2007, \$5,000.
41. The Structure of the Component of a Mixture of Cu Plus Gd(DTPA-BMA), RIT College of Science Undergraduate Summer Research Grant, 2008, \$3000.
42. An NMR Study of the Interaction of Metal Ions with Gd(DTPA-BMA), RIT College of Science Undergraduate Summer Research Grant, 2008, \$3000.
43. EXAFS Study of Aqueous Gadodiamide-Copper Sulfate Solution, CHESS, Cornell University, Ithaca, NY, 2008, 48 Hrs of C1 beam time.
44. Operator Assisted 1.5T MRI Imaging Time, UR Medical Center and University Medical Imaging, 2000-2008, 20 Hours, Value \$20,000.

PUBLICATIONS

Peer-Reviewed Scientific Journal Articles:

1. R.W. Fessenden, J.P. Hornak, B. Venkataraman, Electron Spin-Lattice Relaxation Times of Transient Free Radicals, *J. Chem. Phys.* **74**:3694-3704 (1981).
2. D. Behar, R.W. Fessenden, J.P. Hornak, ESR and Pulse Radiolysis Investigation of the Radiolysis of Sodium Vinyl Sulfonate, *Radiat. Phys. Chem.* **20**:267-273 (1982).
3. J.P. Hornak, Spin Relaxation Times and Chemically Induced Dynamic Electron Spin Polarization of Transient Free Radicals, Ph.D. Thesis, University of Notre Dame, 1982, University Microfilms, Ann Arbor, MI.
4. J.P. Hornak, J.H. Freed, ELDOR Spin-Echoes and Slow Motions, *Chem. Phys. Lett.* **101**:115-119 (1983).
5. J.P. Hornak, J.H. Freed, Electron Spin Echoes with a Loop-Gap Resonator, *J. Magn. Reson.* **62**:311-313 (1985).
6. P.G. Barkley, J.P. Hornak, J.H. Freed, Surface-Suppressed Electron Spin Resonance Spectroscopies, *J. Chem. Phys.* **84**:1886-1900 (1985).
7. J.P. Hornak, J.K. Moscicki, D.J. Schneider, J.H. Freed, Diffusion Coefficients in Anisotropic Fluids by ESR Imaging of Concentration Profiles, *J. Chem. Phys.* **84**:3387-3395 (1986).
8. J.P. Hornak, J.H. Freed, Spectral Rotation in Pulsed ESR Spectroscopy, *J. Magn. Reson.* **67**:501-518 (1986).
9. J.P. Hornak, T.L. Ceckler, R.G. Bryant, Phosphorous-31 NMR Spectroscopy Using a Loop-Gap Resonator, *J. Magn. Reson.* **68**:319-322 (1986).
10. J.P. Hornak, J. Szumowski, D. Rubens, J. Janus, R.G. Bryant, Breast MR Imaging With Loop-Gap Resonators, *Radiology* **161**:832-834 (1986).
11. J.P. Hornak, J. Szumowski, R.G. Bryant, Elementary Single Turn Solenoids Used as the Transmitter and Receiver in Magnetic Resonance Imaging, *Magn. Res. Imag.* **5**:233-237 (1987).
12. T.L. Ceckler, R.G. Bryant, J.P. Hornak, Noise Reduction in Wide Bore Magnets Using a Patient Cage, *Magn. Reson. Med.* **5**:173-174 (1987).
13. J.P. Hornak, J. Szumowski, R.G. Bryant, Magnetic Field Mapping, *Magn. Reson. Med.* **6**:158-163 (1988).
14. J.P. Hornak, E. Marshall, J. Szumowski, R.G. Bryant, MRI of Extremities Using Perforated Single Turn Solenoids, *Magn. Reson. Med.* **7**:442-448 (1988).
15. E.A. Marshall, J.J. Listinsky, T.L. Ceckler, J. Szumowski, R.G. Bryant, J.P. Hornak, Magnetic Resonance Imaging Using a Ribbonator: Hand and Wrist, *Magn. Reson. Med.* **9**:369-378 (1989).
16. D.S. Browne, P.E. Ellsworth, J.P. Hornak, Teaching MRI Using Computer Animation, *J. Chem. Ed.* **66**:647-648 (1989).
17. S. Totterman, S.L. Weiss, J. Szumowski, R.W. Katzberg, J.P. Hornak, H.M. Proskin, J. Eisen, MR Fat Suppression Technique in the Evaluation Of Normal Structures Of The Knee, *J. Comput. Assist. Tomogr.* **13**:473-479 (1989).
18. J.P. Hornak, A.C. Smith, J. Szumowski, Relaxation Time Studies by CSI - Phantom Studies, *Magn. Reson. Med.* **13**:398-406 (1990).
19. J.P. Hornak, A. Blaakman, D. Rubens, S. Totterman, Multispectral Image Segmentation of Breast Pathology, *SPIE Image Processing* **1445**:523-533 (1991).
20. J.P. Hornak, M. Spacher, R.G. Bryant, A Modular Low Frequency ESR Spectrometer, *Meas. Sci. Technol.* **2**:520-522 (1991).
21. J. Gong, J.P. Hornak, A Fast T₁ Algorithm, *Magn. Reson. Imag.* **10**:623-626 (1992).
22. Y. Chen, E.R. Dougherty, S.M. Totterman, J.P. Hornak, Classification of Trabecular Structure in Magnetic Resonance Images Based on Morphological Granulometries, *Magn. Reson. Med.* **29**:358-370 (1993).
23. L.M. Fletcher, J.B. Barsotti, J.P. Hornak, A Multispectral Analysis of Brain Tissues, *Magn. Reson. Med.* **29**:623-630, (1993).
24. E. Szczepaniak, J.P. Hornak, ESR Imaging Based on the Modulation Field Phase, *J. Magn. Reson.* **104A**:315-320 (1993).
25. S.D. Szegłowski, J.P. Hornak, Asymmetric Single-Turn Solenoid for MRI of the Wrist, *Magn. Reson. Med.* **30**:750-753 (1993).
26. X. Li, J.P. Hornak, Accurate Determination of T₂ Images in MRI, *Imaging Science and Technology* **38**:154-157 (1993).

27. J.E. Roe, W.E. Prentice, J.P. Hornak, A Multipurpose MRI Phantom Based on a Reverse Micelle Solution, *Magn. Reson. Med.* **35**:136-141(1996).
28. J.E. Roe, D.D. Ramanan, J.P. Hornak, M. Kotlarchyk, Applications of Dense Microemulsions to Magnetic Resonance Imaging. *Physica A* **231**:359-367 (1996).
29. W. Windig, B. Antalek, J.P. Hornak, Multivariate Image Analysis of Magnetic Resonance Images with the Direct Exponential Curve Resolution Algorithm (DECRA). Part 1: Algorithm and Model Study. *J. Magn. Reson.* **132**:298-306 (1998).
30. B. Antalek, J.P. Hornak, W. Windig, Multivariate Image Analysis of Magnetic Resonance Images with the Direct Exponential Curve Resolution Algorithm (DECRA). Part 2: Application to Human Brain Images. *J. Magn. Reson.* **132**:307-315 (1998).
31. L.J. Schwartz, C.L. DeCiantis, S. Chapman, B.K. Kelley, J.P. Hornak, Motions of Water, Decane, and AOT in Reverse Micelle Solutions. *Langmuir* **15**:5461-5466 (1999).
32. J.P. Hornak, Teaching NMR Using Online Textbooks, *Molecules* **4**:353-365 (1999).
33. D.H. Chang, J.P. Hornak, Fingerprint Recognition through Circular Sampling. *Imaging Science and Technology*, **44**:560-564 (2000).
34. C.L. Bray, N.C. Schaller, S.L. Ianapolo, M.D. Bostick, G. Ferranti, A. Fleming, J.P. Hornak, A Study of the ¹H NMR Signal from Hydrated Synthetic Sands. *J. Env. & Eng. Geophys.* **11**:1-8 (2006).
35. C.L. Bray, J.P. Hornak, Unilateral MRI using a Rastered Projection. *J. Magn. Reson.* **188**:151-159 (2007).
36. J.P. Hornak, Labels Printed with Magnetic Toner, *Magn. Reson. Imaging*, **25**:1459-1460 (2007).
37. C.L. Bray, R.G. Bryant, M.J. Cox, G. Ferrante, Y. Goddard, S. Sur, J. P. Hornak, The Proton Nuclear Magnetic Resonance Spin-Lattice Relaxation Rate of Some Hydrated Synthetic and Natural Sands. *Diffusion Fundamentals* **10**:8.1-8.3 (2009).
38. C.L. Bray, R.G. Bryant, M.J. Cox, G. Ferrante, Y. Goddard, S. Sur, J. P. Hornak, The ¹H NMR Spin Lattice Relaxation Rate of Some Hydrated Sands. *J. Env. & Eng. Geophys* **14**:49-61 (2009).
39. C.L. Bray, J.P. Hornak, Underground Variations in B_{Earth}: Implications for Near-Surface MRI. *Concepts Magn. Reson.* **35B**:153–167 (2009).
40. S.Y. Moon, J.P. Hornak, A Volume Resolution Phantom for MRI. *Mag. Reson. Imag.* **28**:286-289 (2010).
41. J.P. Hornak, G. Ferrante, A. Coy, E.R. McCarney, A Possible Difference in the Surface Relaxivity of Coastal and Inland Sands. *TOMRJ* **3**:52-56 (2010).
42. B. Alfano, M. Commerci, M. Larobina, J.P. Hornak, S.E. Selvan, U. Amato, A. Prinster, M. Quarantelli, G. Tedeschi, A. Brunetti, M. Salvatore, An MRI Digital Brain Phantom for Validation of Segmentation Methods. Submitted *J Magn. Reson. Imaging* 2009.

Book Chapters:

1. R.W. Fessenden and J.P. Hornak, "The Study of Radical Reaction Kinetics by Time-Resolved ESR," 345-352, IUPAC Frontiers of Chemistry, ed. by K.J. Laidler, (Pergamon Press, NY, 1982).
2. J.P. Hornak, "Empirical Techniques in Magnetic Resonance Imaging," accepted for publication in Digital Image Analysis: A Practical Guide, K. Karcich and D. Johnson, eds., Marcel Dekker.
3. E.R. Dougherty, Y.D. Chen, S.M. Totterman, J.P. Hornak, "Detection Of Osteoporosis By Morphological Granulometries" Biomedical Image Processing and Three-Dimensional Microscopy, Pts 1 & 2 Book Series: Proceedings Of the SPIE, 1660:666-680 (1992).
4. L.M. Fletcher and J.P. Hornak, "Multispectral Image Segmentation in Magnetic Resonance Imaging," in Digital Image Processing Methods, E. Dougherty, ed., Marcel Dekker, NY 1994.
5. J.P. Hornak, "Medical Imaging Technology," Kirk-Othmer Encyclopedia of Chemical Technology, John Wiley & Sons, Inc. **16**:107-134 (1995).
6. J.P. Hornak, "Medical Imaging Technology," Kirk-Othmer Concise Encyclopedia of Chemical Technology, Fourth Edition, John Wiley & Sons, Inc., 1263-1265 (1999).
7. J.P. Hornak, "Nuclear Magnetic Resonance Imaging," Methods in Materials Research, ed. by Elton N. Kaufmann, John Wiley & Sons, Inc. (2001).
8. J.P. Hornak, "Image Formation," Encyclopedia of Imaging Science, John Wiley & Sons, Inc., 571-574 (2002).

9. J.P. Hornak, "RF Magnetic Field Mapping," Encyclopedia of Imaging Science, John Wiley & Sons, Inc., 1223-1227 (2002).
10. A.P. Bak, J.P. Hornak, N.C. Schaller, From Impractical to Practical: Solving an MRI Problem Using Parallelism, Advancing Computing and Information Sciences, RIT Cary Graphic Arts Press, 2005.
11. B.J. Antalek, W. Windig, J.P. Hornak; "Multivariate Image Analysis of Magnetic Resonance Images: component resolution with the Direct Exponential Curve Resolution Algorithm (DECRA)." *Techniques and Applications of Hyperspectral Image Analysis*, ed. by H.F. Grahn and P. Geladi, Wiley, 2007.

Hardcopy and Hypertext Books:

1. *The Basics of NMR Imaging*, A Computer Based Educational Package, RIT, 1985.
2. *The Basics of NMR Spectroscopy*, A Computer Based Educational Package, RIT, 1990.
3. *The Basics of MRI*, J.P. Hornak, (<http://www.cis.rit.edu/htbooks/mri/>), Interactive Learning Software, 1996-2009.
4. *The Basics of NMR*, J.P. Hornak, (<http://www.cis.rit.edu/htbooks/nmr/>), Interactive Learning Software, 1997-2009.
5. *The Encyclopedia of Imaging Science and Technology*, J.P. Hornak, Editor-in-Chief, John Wiley & Sons, Inc., 2002.
6. *The Encyclopedia of Imaging Science and Technology*, (Online Version), J.P. Hornak, Editor-in-Chief, <http://www.mrw.interscience.wiley.com/eist/index.html>, John Wiley & Sons, Inc., 2002.

Applications Notes (not peer-reviewed):

1. J.P. Hornak, R.G. Bryant, Radio Frequency Homogeneity, *Texas A. & M. University NMR Newsletter*, **350**:40 (Nov. 1987).
2. J.P. Hornak, Advances in technology to focus on targeted care, *Rochester Business Journal*, p23, July 14, 2006.
3. J.P. Hornak, MRI Hardware: A two decade retrospective. *Stan's Library*, Ed. S.Sykora, Vol.II. 25 July 2007, (<http://www.ebyte.it/library/hist/>).

Patents Received:

1. Resonators for Magnetic Resonance Imaging, #5,024,229 and #5,139,024, R.G. Bryant, J.P. Hornak, E.A. Marshall, and the University of Rochester, 1991.
2. Resonator for Magnetic Resonance Imaging, #5,542,424, J.P. Hornak, S.D. Szeglowski, and Rochester Institute of Technology, 1996.

Continuing Medical Education Articles:

1. Fundamentals of MRI, Part I: Introduction, *CE Source*, Enterprises for Continuing Education, 4(2):1-8, Spring 2004. (1 CEU)
2. Fundamentals of MRI, Part II: Spin Physics, *CE Source*, Enterprises for Continuing Education, 4(3): 23-31, Summer 2004. (1 CEU)
3. Fundamentals of MRI, Part III: NMR Spectroscopy and Fourier Transform, *CE Source*, Enterprises for Continuing Education, 5(1): 15-23, Spring 2005. (1 CEU)
4. Fundamentals of MRI, Part IV: Imaging Principles, *CE Source*, Enterprises for Continuing Education, 5(2): 9-18, Summer 2005. (1 CEU)
5. Fundamentals of MRI, Part V: Basic Imaging Techniques, *CE Source*, Enterprises for Continuing Education, 5(4):11-20, Winter 2005. (1 CEU)
6. Fundamentals of MRI, Part VI: Imaging Hardware, *CE Source*, Enterprises for Continuing Education, 6(1): 1-9, Spring 2006. (1 CEU)
7. Fundamentals of MRI, Part VII: Image Artifacts, *CE Source*, Enterprises for Continuing Education, 6(2): 29-38, Summer 2006. (1 CEU)
8. Fundamentals of MRI, Part VIII: Advanced Imaging Techniques, *CE Source*, Enterprises for Continuing Education, 7(1): 8-19, Spring 2007. (1 CEU)
9. Fundamentals of MRI, Part IX: Advanced Imaging Techniques, *CE Source*, Enterprises for Continuing Education, 7(2): 1-9, Fall 2007. (1 CEU)

CONFERENCE PROCEEDINGS

1. B. Venkataraman, J.P. Hornak, R.W. Fessenden, Electron Spin Lattice Relaxation Times of Transient Free Radicals, Joint ISMAR-AMPERE International Congress on Magnetic Resonance, Delft, The Netherlands, 1980.
2. J.P. Hornak, R.W. Fessenden, CIDEP and Heisenberg Spin Exchange in Two Mixed Radical Systems, 4th International EPR Symposium, Rocky Mountain Conference, Denver, CO, 1981.
3. R.W. Fessenden, J.P. Hornak, The Study of Radical Reaction Kinetics by Time Resolved ESR, 28th IUPAC Congress, Vancouver, B.C., Canada, 1981.
4. R.W. Fessenden, J.P. Hornak, The Study of Radical Reaction Kinetics by Time Resolved ESR, 13th Southeastern Magnetic Resonance Conference, Durham, NC, 1981.
5. J.P. Hornak, J.K. Moscicki, J.H. Freed, Translational Diffusion Coefficients by an ESR Imaging Technique, 7th International EPR Symposium, Rocky Mountain Conference, Denver, CO, 1984.
6. J.P. Hornak, J.H. Freed, Electron Spin Echoes With A Loop-Gap Resonator, 8th International EPR Symposium, Rocky Mountain Conference, Denver, CO, 1985.
7. J.P. Hornak, J. Szumowski, R.G. Bryant, Loop-Gap Resonator Pair For MRI Mamography, 4th Society for Magnetic Resonance Imaging Meeting, Philadelphia, PA, 1986.
8. J.P. Hornak, T.L. Ceckler, J. Szumowski, R.G. Bryant, Loop-Gap Resonators for Magnetic Resonance Spectroscopies, 27th Experimental NMR Conference, Baltimore, MD, 1986.
9. J.P. Hornak, J. Szumowski, R.G. Bryant, NMR Imaging Using Loop-Gap Resonators, NMR Symposium, Rocky Mountain Conference, Denver, CO, 1986.
10. J.P. Hornak, J.H. Freed, Spectral Rotation in Pulsed ESR Spectroscopy, 8th International EPR Symposium, Rocky Mountain Conference, Denver, CO, 1986.
11. J.P. Hornak, Ferromagnetic Gradient Producing Devices, 8th International EPR Symposium, Rocky Mountain Conference, Denver, CO, 1986.
12. J.P. Hornak, R.G. Bryant, J. Szumowski, D. Rubens, J. Janus, W.W. Logan, N.A. Gadziala, D.J. Millet, and D.J. Kido, Magnetic Resonance Breast Imaging with Loop-Gap Resonators, 5th Annual Meeting of the Society of Magnetic Resonance in Medicine, Montreal, Canada, 1986.
13. D.J. Rubens, S. Totterman, R. Lerner, J. Szumowski, D.B. Plewes, J.P. Hornak, Fat Suppressed Body MR Imaging, 72nd Radiological Society of North America Scientific Assembly and Annual Meeting, Chicago, IL, 1986.
14. J.P. Hornak, R.G. Bryant, J. Szumowski, Errors in Mapping RF Magnetic Fields, 28th Experimental NMR Conference, Asilomar, CA, 1987.
15. W. Murray, G. Jen, J.P. Hornak, Magnetic Resonance Images of Spin Relaxation Times, 32nd American Chemical Society Undergraduate Research Symposium, Rochester, NY, 1987.
16. G. Jen, W. Murray, J.P. Hornak, Nuclear Spin Relaxation Times of the Human Brain, 32nd American Chemical Society Undergraduate Research Symposium, Rochester, NY, 1987.
17. J.P. Hornak, J. Szumowski, R.G. Bryant, Mapping Radiofrequency Magnetic Fields, 6th Annual Meeting of the Society of Magnetic Resonance in Medicine, New York, NY, 1987.
18. J.P. Hornak, E. Marshall, J. Szumowski, R.G. Bryant, Magnetic Resonance Imaging with Perforated Single Turn Solenoids, 6th Annual Meeting of the Society of Magnetic Resonance in Medicine, New York, NY, 1987.
19. E. Marshall, J.J. Listinski, R.G. Bryant, J.P. Hornak, Magnetic Resonance Imaging Using a Ribbonator: Hand and Wrist, 6th Annual Meeting of the Society of Magnetic Resonance in Medicine, New York, NY 1987.
20. J.J. Listinski, E. Marshall, J.P. Hornak, J. Szumowski, R.G. Bryant, MRI of the Testicles Using a STS, 6th Annual Meeting of the Society of Magnetic Resonance in Medicine, New York, NY 1987.
21. J.J. Listinski, E. Marshall, R.G. Bryant, J.A. Jones, J. Lovelock, J.P. Hornak, MRI of the Wrist Using a Perforated Single Turn Solenoid, 6th Annual Meeting of the Society of Magnetic Resonance in Medicine, New York, NY 1987.
22. S. Totterman, J. Szumowski, J.P. Hornak, S. Weiss, A. Wicks, R.W. Katzberg, MR Fat Suppression Techniques in the Evaluation of Normal Structures of the Knee, 6th Annual Meeting of the Society of Magnetic Resonance in Medicine, New York, NY 1987.
23. D.A. Shrier, S. Totterman, S.L. Weiss, J. Szumowski, J.P. Hornak, R. W. Katzberg, J.E. Lovelock, J. Burke, MR Imaging Fat Suppression in the Evaluation of the Knee, 73rd Radiological Society of North America Scientific Assembly and Annual Meeting, Chicago, IL 1987.

24. J.P. Hornak, Some Aspects of Resonator Design and an Introduction to Color Imaging, North East Regional Meeting of the American Chemical Society, Rochester, NY 1987.
25. D.S. Browne, P.E. Ellsworth, J.P. Hornak, Teaching MRI Using Computer Animation, 29th Experimental NMR Conference, Rochester, NY 1988.
26. E.A. Marshall, J.J. Listinski, R.G. Bryant, J.P. Hornak, Novel Resonator Designs, 29th Experimental NMR Conference, Rochester, NY 1988.
27. J.P. Hornak, J. Szumowski, N. Johnson, B. Wood, R.G. Bryant, Relaxation Time Studies Using Chemical Shift Imaging, Gordon Research Conference on Magnetic Resonance in Medicine and Biology, Tilton, NH 1988.
28. J.P. Hornak, Teaching MRI Using Computer Animation, 1988 North East Regional Meeting of the American Chemical Society, Orono, ME 1988.
29. J.P. Hornak, J. Szumowski, Relaxation Time Measurements by Chemical Shift Imaging, 7th Annual Meeting of the Society of Magnetic Resonance in Medicine, San Francisco, CA 1988.
30. J.P. Hornak, N. Johnson, R.G. Bryant, B. Wood, C. Schwartz, T₁ Variations in Femur Marrow, 7th Annual Meeting of the Society of Magnetic Resonance in Medicine, San Francisco, CA 1988.
31. J.P. Hornak, Relaxation Time Studies Using MRI, Medical Imaging II Symposium, Rochester, NY 1988.
32. B. Antalek, A. Langner, J.P. Hornak, NMR Imaging of Counter Diffusion in Porous Media, 31st Experimental NMR Conference, Asilomar, CA 1990.
33. A. Blaakman, D. Rubens, S. Totterman, J.P. Hornak, Evaluation of Pathology Employing Multispectral Image Segmentation, Gordon Research Conference on Magnetic Resonance in Medicine and Biology, Tilton, NH 1990.
34. R.M. Agostinelli, D.S. Browne, P.E. Ellsworth, W.A. Weigert, J.P. Hornak, Teaching MRI and MRS Using Computer Animation, 13th International EPR Symposium, Rocky Mountain Conference, Denver, CO 1990.
35. M. Spacher, R.G. Bryant, J.P. Hornak, A Modular Low Frequency ESR Spectrometer, 13th International EPR Symposium, Rocky Mountain Conference, Denver, CO 1990
36. J.P. Hornak, A. Blaakman, D. Rubens, S. Totterman, Evaluation of Breast Pathology Employing Multispectral Image Segmentation, 9th Annual Meeting of the Society of Magnetic Resonance in Medicine, New York, NY 1990.
37. J.P. Hornak, A. Blaakman, D. Rubens, S. Totterman, Multispectral Image Segmentation of Breast Pathology, SPIE Medical Imaging V Conference, San Jose, CA 1991.
38. B. Antalek, A. Langner, J.P. Hornak, NMR Imaging of the H₂O-D₂O-Gelatin System, 32nd Experimental NMR Conference, St. Louis, MO 1991.
39. B. Antalek, A. Langner, J.P. Hornak, Magnetic Resonance Imaging of Materials, American Chemical Society North East Regional Meeting, Amherst, MA 1991.
40. B. Antalek, A. Langner, J.P. Hornak, H₂O Diffusion in the H₂O-D₂O-Gelatin System, 4th Chemical Congress of North America, New York, NY 1991.
41. R.M. Agostinelli, D.S. Browne, P.E. Ellsworth, W.A. Weigert, J.P. Hornak, Teaching Magnetic Resonance Using Computer Animation, 4th Chemical Congress of North America, New York, NY 1991.
42. C.L. Schwartz, J.P. Hornak, B.L. Asselin, B.P. Woods, H.J. Cohen, N. Johnson, MRI Assessment Of Marrow Response to ALL Therapy. *Pediatric Research* 29 (4): A150-A150 Part 2, Apr 1991.
43. E.R. Dougherty, Y. Chen, J.P. Hornak, S.M. Totterman, Detection of Osteoporosis by Morphological Granulometries, SPIE Biomedical Image Processing and Three Dimensional Microscopy, San Jose, CA 1992.
44. L.M. Fletcher, J.P. Hornak, Multispectral Brain Tissue Classification, 37th American Chemical Society Undergraduate Research Symposium, Rochester, NY 1992.
45. A. Martelli, C. Salvaggio, J.P. Hornak, Color Calibration of Ektar 100 and 125 Speed Color Print Film, 37th American Chemical Society Undergraduate Research Symposium, Rochester, NY, April 1992.
46. R.J. Householder, P. Mouroulis, M. Vaez-Iravani, J.P. Hornak, A New Real-Time Liquid Crystal Display for MRI, 37th American Chemical Society Undergraduate Research Symposium, Rochester, NY, April 1992.

47. S. Szeglowski, J.P. Hornak, Development of a High Efficiency Coil For MRI of the Human Hand and Wrist, 37th American Chemical Society Undergraduate Research Symposium, Rochester, NY, April 1992.
48. G. Kuhne, A. Blaakman, J.P. Hornak, L.X. Tiefenauer, R.Y. Andres, Superparamagnetic Contrast Agent Visualization with Image Segmentation, 1992 Society of Magnetic Resonance Imaging Conference, New York, NY, April 1992.
49. B.J. Antalek, A. Langner, J.P. Hornak, Water Diffusion in Gelatin, 3rd Annual Workshop on Magnetic Resonance Microscopy and Materials Imaging, Boston, MA, April 1992.
50. Y. Chen, E.R. Dougherty, S.M. Totterman, J.P. Hornak, Morphological Analysis of Magnetic Resonance Images, 11th Annual Meeting of The Society of Magnetic Resonance in Medicine, Berlin, Germany, August 1992.
51. L.M. Fletcher, J.B. Barsotti, J.P. Hornak, Multispectral Brain Tissue Classification, 11th Annual Meeting of The Society of Magnetic Resonance in Medicine, Berlin, Germany, August 1992.
52. L.M. Jawny, A. Wicks, S.M. Totterman, J.P. Hornak, Breast Tissue T_1 , T_2 , and ρ Values During the Menstrual Cycle, 12th Annual Meeting of the Society of Magnetic Resonance in Medicine, New York, NY 1993.
53. E. Szczepaniak, J.P. Hornak, Continuous Wave ESR Imaging Without Magnetic Field Gradients, 12th Annual Meeting of the Society of Magnetic Resonance in Medicine, New York, NY, August, 1993.
54. S.M. Totterman, R.J. Miller, E.W-C. Kwok, G.M. Spencer, J.P. Hornak, High Resolution MR of Intrinsic Ligaments of the Wrist, 12th Annual Meeting of the Society of Magnetic Resonance in Medicine, New York, NY, August 1993.
55. D.J. Roach, S.M. Totterman, M.G. Spencer, J.P. Hornak, Hand MR Anogeography with a Designated Transmitter/Receiver Coil, 1st Meeting of the Society of Magnetic Resonance, Texas, 1994.
56. D.D. Ramanan, J.P. Hornak, Diffusion of Ni^{+2} Ions in a Water-Gealtin Matrix, 39th American Chemical Society Undergraduate Research Symposium, Rochester, NY, April 1994.
57. J.E. Roe, D.D. Ramanan, J.P. Hornak, Temperature Dependence of T_1 and T_2 for a Reverse Micelle Solution, 36th Experimental Nuclear Magnetic Resonance Conference, Boston, MA, March 1995.
58. J.E. Roe, D.D. Ramanan, J.P. Hornak, M. Kotlarchyk, Applications of Dense Microemulsions to Magnetic Resonance Imaging. Colloidal & Interface Science: Trends & Applications, Grenica, Puerto Rico, May 1995.
59. J.P. Hornak, Signals from Within: Magnetic Resonance Imaging of Disease, Invited Talk, Annual Meeting of The American Association for Clinical Chemistry, Anaheim, CA, July 1995.
60. X. Li, J.P. Hornak, Calculating T_1 , T_2 , and ρ Images in the Presence of Imperfect RF Pulses. 3rd Annual Meeting and Exhibition of the Society of Magnetic Resonance, Nice, France, August, 1995.
61. J.P. Hornak, J.E. Roe, W.E. Prentice, A Reverse Micelle Solution Phantom For System Performance Testing. 3rd Annual Meeting and Exhibition of the Society of Magnetic Resonance, Nice, France, August, 1995.
62. J.P. Hornak, MRI: An Overview and Recent Advances. 25th North East Regional Meeting of the American Chemical Society, Rochester, NY, October 1995.
63. J.P. Hornak, J.E. Roe, W.E. Prentice, A Multipurpose MRI Phantom Based on a Reverse Micelle Solution. 1995 ACS North East Regional Meeting of the American Chemical Society, Rochester, NY, October 1995.
64. J.D. Cappuccio, D.R. Rubens, J. Strang, J.P. Hornak, K. Dunnigan, R.L. Sham, P.D. Phatak, Quantifying hepatic iron using magnetic resonance imaging in a primary care screening program for hereditary hemochromatosis. *Hepatology* 24 (4): 1465-1465 Part 2 Suppl. S, OCT 1996.
65. D.C. Robitelle, L.J. Schwartz, and J.P. Hornak, Proton $T_1(\phi, T)$ Studies of a Reverse Micelle Solution. 27th North East Regional Meeting of the American Chemical Society, Saratoga Springs, NY, June 1997.
66. L.J. Schwartz, C.L. DeCiantis, S. Chapman, J.P. Hornak, Rotational Motions of Water and Decane in Reverse Micelle Solutions. 1998 Experimental NMR Conference, Asilomar, CA, March 1998.
67. B. Antalek, W. Windig, J.P. Hornak, Mixture Analysis of Magnetic Resonance Images Using the Direct Curve Resolution Algorithm (DECRA). 1998 Experimental NMR Conference, Asilomar, CA, March 1998.

68. J.P. Hornak, B.J. Antalek, W. Windig, Multivariate Image Analysis of Magnetic Resonance Images with the Direct Exponential Curve Resolution Algorithm, 6th Annual scientific meeting of the International Society for Magnetic Resonance in Medicine, Sydney, Australia, April 1998.
69. J.P. Hornak, The Basics of NMR: A Web Resource on NMR Spectroscopy. North East Regional Meeting of the American Chemical Society, Potsdam, NY 1999.
70. J.P. Hornak, Teaching NMR Using Online Textbooks. Winter 1999 CONFICHEM: Teaching Spectroscopy, On-line Conference (<http://www.ched-ccce.org/confchem/1999/d/index.html>).
71. T.G. Servoss, K.M. Brodeur, J.P. Hornak, Spatial-Spatial-Spectral Images using a Clinical MRI System. 41st Experimental NMR Conference, Asilomar, CA, 2000.
72. J.P. Hornak, MRI Studies of the Proton T_1 , T_2 and Spin Densities of the Brain. Invited Talk, Free Radicals: Perspectives and Future. A symposium honoring Professor Richard W. Fessenden, Notre Dame, IN 2001.
73. M. Larobina, A. Prinster, M. Quarantelli, A. Carmiello, J.P. Hornak, B. Alfano, Use of the Dicom file format for quantitative analysis of brain images. European Congress of Radiology, Vienna, Austria, 2002.
74. D.Y. Lee, J.P. Hornak, NMR Spectroscopy of Soil, 2002 ACS North East Regional Meeting of the American Chemical Society, Rochester, NY, October 2002.
75. C.L. Bray, D.Y. Lee, J.P. Hornak, V. Satheesh, S. Sykora, G. Ferrante, A Fast Field Cycling Study of Soil, 6th International Conference on Magnetic Resonance in Porous Media, Ulm, Germany, 2002.
76. C.L. Bray, S. Iannopollo, G. Ferrante, N.C. Schaller, D.Y. Lee, J.P. Hornak, An R_1 Distribution Study of Hydrated Randomly Close Packed Synthetic Soils. 45th Experimental NMR conference, Asilomar, CA April 2004.
77. M. Bostick, C.L. Bray, A. Fleming, S. Iannopollo, N.C. Schaller, G. Ferrante, J.P. Hornak, An R_1 & R_2 Distribution Study of Hydrated Randomly Close Packed Synthetic Soils. Upstate NY NMR Symposium, Albany, NY, October 2004.
78. C.L. Bray, S. Iannopollo, J.P. Hornak, Design and Characterization of a Sub-Surface MRI System. 15th Triennial Conference for the International Society for Magnetic Resonance. Ponte Verda Beach, FL, October 2004.
79. C.L. Bray, M. Bostick, A. Fleming, S. Iannopollo, N.C. Schaller, J.P. Hornak, An R_1 & R_2 Distribution Study of Hydrated Randomly Close Packed Synthetic Soils. 15th Triennial Conference for the International Society for Magnetic Resonance. Ponte Verda Beach, FL, October 2004.
80. J.P. Hornak, Reflections on Developing and Hosting Magnetic Resonance Educational Web Sites. Invited Talk, 32nd Northeast Regional Meeting of the American Chemical Society. Rochester, NY, November 2004.
81. M. Bostick, C.L. Bray, A. Fleming, S. Iannopollo, N.C. Schaller, G. Ferrante, J.P. Hornak, An NMR Relaxation Rate Study of Hydrated Randomly Close Packed Synthetic Soils. 32nd Northeast Regional Meeting of the American Chemical Society. Rochester, NY, November 2004.
82. J.P. Hornak, A.P. Bak, N.C. Schaller, From Impractical to Practical: Solving an MRI problem using parallelism. Conference on Computing & Information Science, Rochester, NY, January 2005.
83. J.P. Hornak, Development and utilization of NMR web sites. Invited Talk, Analytical Sciences Digital Library Workshop. San Diego, CA, March 2005.
84. C.L. Bray, J.P. Hornak, Design Iterations and Performance Enhancement for a Sub-Surface MRI System. 46th Experimental NMR Conference, Providence, RI April 2005.
85. J.P. Hornak, Reflections on Developing and Hosting Magnetic Resonance Educational Web Sites. 46th Experimental NMR Conference, Providence, RI April 2005.
86. J.P. Hornak, Reflections on Developing and Hosting Magnetic Resonance Educational Web Sites. Invited Talk, Conference on NMR in Undergraduate Education, Bucknell University, PA, September 2005.
87. C.L. Bray, J.P. Hornak, An Inhomogeneous Field Surface MRI System, 30th International Congress on Imaging Science, Rochester, NY May 2006.
88. J.P. Hornak, C.L. Bray, T. Lucero, A. Bright, Surface MRI Using a Rastered Backprojection, International Society for Magnetic Resonance in Medicine 14th Scientific Meeting, Seattle, WA, May 2006.
89. J.P. Hornak, Recent Advances in MRI with a focus on Near Surface MRI. Invited Talk, GIDRM XXXVI National Congress on NMR, Vietri sul Mare, Salerno, Italy, 23 September 2006.

90. K. Baum, M. Helguera, J. Hornak, J. Kerekes, E. Montag, M. Unlu, D. Feiglin, A. Krol, Techniques for Fusion of Multimodal Images: Application to Breast Imaging, International Conference on Image Processing, Atlanta, GA, October 2006.
91. C.L. Bray, J.P. Hornak, Surface Variations in B_{Earth} : Implications for Near Surface MRI, 20th SAGEEP, Denver, CO, April 2007.
92. C.L. Bray, J.P. Hornak, Underground Variations in B_{Earth} : Implications for Near Surface MRI, 48th Experimental NMR Conference, Daytona Beach, FL, April 2007.
93. J.P. Hornak, B.C. Lipchick, The relaxivity of Gd-(DTPA-BMA) / Cu^{+2} mixtures and evidence for a Gd-(DTPA-BMA)-Cu complex, Upstate NMR Symposium, Syracuse, NY, October 2007.
94. J.P. Hornak, MRI: Where we are at and where we are going, Invited Talk, American College of Veterinary Radiology Annual Scientific Meeting, Chicago, IL, November 2007.
95. C.L. Bray, M.J. Cox, J.P. Hornak, G. Ferrante, R.G. Bryant, Y. Goddard, and S. Sur, R_1 of Hydrated Sands as a Function of Magnetic Field, 49th Experimental NMR Conference, Asilomar, CA March 2008.
96. B.C. Lipchick, M. Monahan, J.P. Hornak, An Interaction of Gadodiamide with Cu^{+2} , Rochester ACS Harrison Howe Poster Session, Rochester, NY, March 2008.
97. J.P. Hornak, C.L. Bray, R.G. Bryant, M.J. Cox, G. Ferrante, Y. Goddard, S. Sur, The NMR Spin Lattice Relaxation Rate of Hydrated Sands as a Function of Magnetic Field, SAGEEP, Philadelphia, PA, April, 2008.
98. B.C. Lipchick, M. Monahan, J.P. Hornak, An Interaction of Gadodiamide with Cu^{+2} , Rochester ACS Undergraduate Research Symposium, Geneseo, NY, April, 2008.
99. J.P. Hornak, B.C. Lipchick, M. Monahan, An Interaction of Gadodiamide with Cu^{+2} and Zn^{+2} , 16th ISMRM, Toronto, CA, May, 2008.
100. C.L. Bray, R.G. Bryant, M.J. Cox, G. Ferrante, Y. Goddard, S. Sur, and J.P. Hornak, The ^1H NMR R_1 of Some Hydrated Synthetic and Natural Sands, 9th International Conference on Magnetic Resonance in Porous Media, Cambridge, MA July 2008.
101. S-Y. Moon, J.P. Hornak, A 3D Volume Resolution Phantom for MRI, 10th Upstate NY NMR Symposium, Rochester, NY, October 2008.
102. B. Lipchick, J. Swartzenberg, N. Conway, G. Smith, J.P. Hornak, Evidence for and Against Transmetallation between Cu and Omniscan[®], 10th Upstate NY NMR Symposium, Rochester, NY, October 2008.
103. M. Cheung, R. Boswell, B. Lipchick, T.W. Smith, C.L. Bray, J.P. Hornak, A Low Dielectric Constant High-Conductivity Filler Material for MRI Phantoms, 10th Upstate NY NMR Symposium, Rochester, NY, October 2008.
104. C.L. Bray, R.G. Bryant, M.J. Cox, G. Ferrante, Y. Goddard, S. Sur, J.P. Hornak, The ^1H NMR R_1 of Some Hydrated Synthetic and Natural Sands, 2008 NY State Complex Matter Workshop, Cornell University, Ithaca, NY, December 2008.
105. J.P. Hornak, G. Ferrante, A. Coy, E. McCarney, A ^1H NMR Spin-Lattice Relaxation Time Study of Asilomar Sands, 50th Experimental NMR Conference, Asilomar, CA March 2009.
106. R.Q. Boswell, M. Cheung, B.C. Lipchick, T.W. Smith, S. Coons, P.E. Steen, C.L. Bray, J.P. Hornak, A search for a homogeneity phantom filler material for high-frequency MRI systems, 51st Experimental NMR Conference, Daytona Beach, FL, April 2010.
107. R. Smith, J.P. Hornak, Are copper mineral supplements a contraindication for MRI contrast agents? Rochester Section of the American Chemical Society 2010 Undergraduate Research Symposium, Hobart & William Smith Colleges, Geneva, NY, April 2010.

INVITED LECTURES

Single-Turn Solenoids in MRI (Various Titles):

1. Roswell Park Memorial Institute, Buffalo, NY, 8/5/1985.
2. Radiology Research Seminar, University of Rochester Medical Center, Rochester, NY 2/1987.
3. RIT Imaging Science Industrial Associates Meeting, Rochester, NY, 10/24/1988.
4. Department of Radiology, University of Alabama School of Medicine, Birmingham, AL, 10/11/1990.
5. Department of Diagnostic Radiology, University of Maryland, Baltimore, MD, 7/28/1986.
6. Department of Biological Chemistry, Wright State University, Dayton, OH, 8/26/1986.

7. General Electric Medical Systems Group, Milwaukee, WI, 9/11/1986.

Microwave waveguides and cavity resonators:

1. System Technology Division, IBM, Endicott, NY, 11/14/1986.

Diffusion coefficients in anisotropic fluids by ESR imaging of concentration profiles

1. Radiation Research Lab, University of Notre Dame, Notre Dame, IN 10/13/1986.

Nuclear Magnetic Resonance Imaging:

1. Department of Chemistry, SUNY Geneseo, Geneseo, NY 10/21/1986.
2. Department of Chemistry, Utica College of Syracuse University, Utica, NY 12/1/1986.
3. Department of Chemistry, Colgate University, Hamilton, NY 2/26/1987.
4. Rochester Area Alpha Chi Sigma Dinner Meeting, 6/23/1987.
5. Nazareth College, Rochester, NY 3/25/1988.

Magnetic Resonance Imaging:

1. RIT Parents Weekend, RIT, Rochester, NY, 10/24/1988.
2. St. John Fisher College, Rochester, NY, 10/21/1988.
3. Potsdam College of SUNY, Potsdam, NY, 11/1/1988.
4. St. Lawrence University, Canton, NY, 11/1/1988.
5. Trinity College, Hartford, CT, 12/4/1989.
6. University of Massachusetts at Amherst, Amherst, MA, 12/5/1989.
7. Magnetic Resonance Center, Univ. of Alabama School of Med., Birmingham, AL, 10/11/1990.
8. Chemistry/Physics Seminar, Trent University, Peterborough, Ontario, CA, 10/17/1990.
9. Chemistry Seminar, Niagara University, Niagara Falls, NY, 3/11/1991.
10. Chemistry Seminar, Hobart and William Smith Colleges, NY, 4/19/1991.
11. College Seminar, Merrimack College, North Andover, MA, 3/24/1990.
12. Slippery Rock University, Slippery Rock, PA, 11/21/1991.
13. Magnetic Resonance Imaging, Department of Chemistry, SUNY Brockport, 10/6/1992.
14. Physics Department, RIT, 10/8/1992.
15. Department of Chemistry, Alfred University, 2/11/1992.
16. Chemistry Department, Canisius College, 2/25/1993.
17. Department of Chemistry, Hamilton College, Clinton, NY, 10/1/1994.
18. RIT Student Chapter of Imaging Science and Technology, Rochester, NY, 3/28/1994.
19. Department of Chemistry, LeMoyne College, Syracuse, NY, 12/21/1995.
20. IEEE Seminar, RIT Chapter, Rochester, NY, 7/25/1995.
21. Keynote Speaker, Rochester Section ACS Undergraduate Research Symposium, 4/27/1996.
22. ENI, Inc, Highpower Road, Rochester, NY, 6/20-21/1990.
23. Teradyne, Inc., North Reading, MA, 11/24/2008.
24. Teradyne, Inc., North Reading, MA, 6/18/2009.

MRI: An overview and recent advances:

1. ACS North East Regional Meeting, Rochester, NY, 10/24/1995.

MRI Simulation:

1. RIT Center for Digital Media, 1995 Summer Faculty Workshops, 5/31/1995.

Relaxation Time Studies Using MRI:

1. Medical Imaging II Symposium, Rochester, NY, 9/30/1989.

Multispectral Tissue Classification – Brain or Breast (Various Titles):

1. John P. Roberts Research Institute, University of Western Ontario, London, Ontario, 6/18/1992.
2. Radiology Department, University of Rochester Medical School, Rochester, NY, 7/23/1992.
3. Department of Radiology, University of Alabama School of Med., Birmingham, AL, 10/120/1990.
4. Radiology Department, University of Rochester, 5/12/1989.
5. Center for Imaging Science Industrial Associates Meeting, RIT, 4/23/1990.

6. Center for Imaging Science Seminar, RIT, 5/9/1991.
7. Electrical and Computer Engineering, University of West Virginia, Morgantown, WV, 11/20/1991.
8. American Association of Physicists in Medicine, Upstate NY Chapter, Rochester, NY 3/30/1994.

A Fast T_1 Algorithm:

1. CIS Industrial Associates Meeting, Fall 1991

Water Diffusion in Gelatin:

1. Eastman Kodak Company Research Labs, Rochester, NY, 3/6/1992.

Magnetic Resonance Imaging of Materials:

1. Chemistry Department, SUNY Binghamton, NY, 4/22/1994.

An Overview of MRI Research at RIT:

1. MRI Center 10th Birthday Celebration, University of Rochester Medical Center 13/10/1995.
2. Rochester Section of IEEE-Signal Processing, University of Rochester, Rochester, NY, 4/11/1998.
3. Henan University, Kaifeng, China, 8/23/2009.

Signals from Within: Magnetic Resonance Imaging of Disease:

1. Annual Meeting of the American Association for Clinical Chemistry, Anaheim, CA, 7/17/1995.

MRI Studies of the Proton T_1 , T_2 and Spin Densities of the Brain:

1. Free Radicals: Perspectives and Future. A symposium honoring R.W. Fessenden, Notre Dame, IN, 2001.

Reflections on Developing and Hosting Magnetic Resonance Educational Web Sites:

1. 32nd Northeast Regional Meeting of the American Chemical Society, Rochester, NY, 11/2004.
2. Conference on NMR in Undergraduate Education, Bucknell University, PA, 9/17/2005.

Development and Utilization of NMR Web Sites

1. Analytical Sciences Digital Library Workshop, San Diego, CA, 3/12/2005.

Motion of Water and Decane in Reverse Micelle Solutions

1. Leibniz Institut für Polymerforschung, Dresden, Germany 8/25/2005.

Studies of the ^1H NMR Relaxation Rate of Hydrated Sands

1. Angewandte Geophysik, Institut für Angewandte Geowissenschaften, Technische Universität Berlin, 7/5/2005.
2. NY State Complex Matter Workshop, Cornell University, Ithaca, NY, 12/8/2008.
3. Zengzhou University and Henan University of Technology, 8/25/2009.
4. Henan University, Kaifeng, China, 8/27/2009.
5. Chemistry Department, University of Nevada at Las Vegas, Las Vegas, NV, 10/9/2009.

Recent Advances in MRI with a Focus on Near Surface MRI:

1. GIDRM XXXVI National Congress on NMR, Vietri sul Mare, Salerno, Italy, 9/23/2006.
2. Consiglio Nazionale delle Ricerche, Centro per la Medicina Nucleare, Università degli Studi di Napoli - Federico II, Naples, Italy, 9/20/2006.

MRI: Where we are at and where we are going:

1. American College of Veterinary Radiology Annual Scientific Meeting, Chicago, IL, 11/30/2007.

Phase Transitions with Liquid Nitrogen and Dry Ice

1. Monica B. Leary Elementary School, Henrietta, NY, 11/16/2007.

An Overview of RIT:

1. Henan University, Kaifeng, China, 8/23/2009.

2. Henan Normal University and President of Henan University of Science & Technology, 8/25/09.

Transforming the Chemical Shift Artifact into a Spectral Image:

1. Henan University, Kaifeng, China, 8/23/2009

A Tutorial on NMR Spectroscopy:

1. Henan University, Kaifeng, China, 8/17-19/2009

Measuring T_1 , T_2 , and D on a Bruker NMR Spectrometer

1. Henan University, Kaifeng, China, 8/20-22/2009

UC Made Possible...

1. The Utica College Chemistry Reunion Symposium, Utica College, Utica, NY 9/12/2009

MEMBERSHIPS IN PROFESSIONAL SOCIETIES

1. Member of Rochester Chapter of Sigma Xi
2. Honor Society of Phi Kappa Phi
3. American Chemical Society
4. International Society of Magnetic Resonance in Medicine
5. International Society for Magnetic Resonance
6. Environmental and Engineering Geophysical Society
7. Groupement Atomes et Molécules Par Études Radio-Électriques
8. Aircraft Owners and Pilots Association

EDITORIAL AND REFEREE SERVICES

Peer-Reviewed Journals:

1. Reviewer, *Journal of Magnetic Resonance*, 1989-Present
2. Reviewer, *Magnetic Resonance in Medicine*, 1990-Present
3. Reviewer, *Magnetic Resonance Imaging*, 2009
4. Reviewer, *Journal of Electronic Imaging*, 1991-1994
5. Reviewer, *IEEE Transactions on Biomedical Engineering*, 1993-1995, 2002
6. Reviewer, *Journal of Imaging Science & Technology*, 1993-1994
7. Reviewer, *Current Medical Imaging Reviews*, 2004
8. Reviewer, *Journal of Solution Chemistry*, 2005
9. Reviewer, *Journal of Environmental & Engineering Geophysics*, 2006-Present
10. Reviewer, *Journal Of Neuroscience Methods*, 2003
11. Reviewer, *Langmuir*, 2004-Present
12. Reviewer, *IEEE Journal of Solid-State Circuits*, 2008
13. Reviewer, *Open Magnetic Resonance Journal*, 2009
14. Reviewer, *Physica Medica: European Journal of Medical Physics*, 2009
15. Reviewer, *Vadose Zone Journal*, 2009

Abstracts:

1. Reviewer, International Society for Magnetic Resonance in Medicine Meeting, 2002, 2004, 2007, 2008
2. Reviewer, Society for Magnetic Resonance Imaging Meeting, 1991
3. Reviewer, Society for Magnetic Resonance in Medicine Meeting, 1994

Research Proposals:

1. Site Visit Reviewer, National Institutes of Health, 1995-1998
2. Reviewer, Petroleum Research Fund, 1993-94, 2002
3. Reviewer, Department of Energy, 1993-94
4. Reviewer, National Science Foundation (NSF), 1994-95, 1995-96

5. Reviewer, The Research Council of Norway, 2004-2005
6. Reviewer, National Institutes of Health (NIH), 2003-2007
7. Reviewer, The Cottrell College Science Awards, 2001-2002
8. Reviewer, US Army Prostate Cancer Research Program, 2008, 2009
9. Reviewer, Japan Society for the Promotion of Science (JSPS), 2009

Other:

1. Reviewer, UK Biobank, 2007
2. External Tenure Reviewer, Ithaca College, Ithaca, NY, 2007
3. External Tenure Reviewer, Department of Biomedical Engineering, University of Miami, FL, 2006
4. External Promotion Reviewer, Worcester Polytechnic Institute, Worcester, MA, 1997
5. External Promotion Reviewer, St. John Fisher College, Rochester, NY, 2000
6. External Promotion Reviewer, University of Rochester Medical School. Rochester, NY, 1997, 2002

Book Reviews and Commentaries:

1. J.P. Hornak, *CHOICE*, (<http://www.ala.org/ala/acrl/acrlpubs/choice/Home.htm>) December 2004. Functional Magnetic Resonance Imaging. S.A. Huettel, A.W. Song, G. McCarthy. Sinauer Associates, 2004.
2. R.B. Pearce, New Surface Coil Designs Enhance MRI Performance. *Diagnostic Imaging* **10**(1), 117-129 (1988).
3. P. Singer, An RIT Professor Translates Techno-Speak to Put Patient's Fears to Rest. *Rochester D. & C.*, 23 March 1998, 1,6-C.
4. J. Loenhirth, MRI Scans Made Faster and More Versatile. *Biophotonics Research*, p55, 1999.

RIT COMMITTEE SERVICE

Departmental:

1. Department of Chemistry, Library Committee, 1984-1985
2. Department of Chemistry, Awards Committee, Chair, 1984-1989
3. Department of Chemistry, Equipment Committee, 1984- 2002
4. Department of Chemistry, Computer Committee, 1984-1989
5. Department of Chemistry, Space Committee, 1985-2001
6. Department of Chemistry, Community and Industrial Relations, 1985-87
7. Department of Chemistry, NMR Committee, Chair, 1988-Present
8. Department of Chemistry, Faculty Search Committee, 1988-Present
9. Department of Chemistry, Graduate Committee, 1994-1996, 2005-Present
10. Department of Chemistry, Undergraduate Research Committee, 2004-2006
11. Department of Chemistry, Web Development Committee, 1999-2000, 2004-Present
12. Department of Chemistry, Graduate Committee, 2006-Present
13. Center for Imaging Science, Ph.D. Exam Committee, 1990-1996, 2007
14. Center for Imaging Science, Tenure Committee, Chair, 1992-96
15. Center for Imaging Science, Computer Committee, 1996-1999
16. Center for Imaging Science, Biomedical Imaging Committee, 2005-2007
17. Center for Imaging Science, Nano Imaging Committee, 2006-2007

College:

1. College of Science, Strategic Planning Committee, 1992-1995
2. College of Science, Space Committee, 1999
3. College of Science, New Building Planning Committee, 1994.
4. College of Science, Undergraduate Research Committee, 2004-Present
5. College of Science, Dean's Faculty Advisory Committee, 2005-Present
6. College of Science, Faculty Enhancement and Development, 2007-Present
7. College of Science, Trustees Scholarship Award Committee, 2006-Present
8. College of Graphic Arts and Photography, Wiedman Chair Search Committee, 1989
9. College of Graphic Arts and Photography, Tenure Committee, 1992-1993

Institute:

1. RIT, Eisenhart Teaching Award Committee, 1999-2000, 2002-2003, 2005-2006
2. RIT, Trustee's Scholarship Award, 2006-Present

External:

1. American Chemical Society, Rochester Section, Undergraduate Awards Committee, Chair, 1989-1997.
2. 10th Annual Upstate NY NMR Symposium Organizing Committee, Chair, 2008.

RESEARCH SUPERVISED

Summer High School Interns:

1. Raliek Boswell - MRI Phantoms, Edison Technical High School, Rochester, NY, 2007.
2. Nicole Conway – MRI Contrast Agents, Canandaigua Academy, Canandaigua, NY, 2008.
3. Allison Fleming - Packing Studies of Monodispersed Beads, Aquinas Institute of Rochester, Rochester, NY, 2004.
4. Allison Bright - Near Surface MRI, Victor High School, Victor, NY, 2005.
5. May Cheung - MRI Phantoms, Webster High School, Webster, NY, 2007
6. Marcus Cox - Packing Studies of Polydispersed Beads, Lima Christian School, Lima, NY, 2006.
7. Tyler Lucero - Near Surface MRI, Rush-Henrietta High School, Henrietta, NY, 2005.
8. Gretchen Smith – MRI Contrast Agents, Nazareth Academy, Rochester, NY, 2008.

B.S. Non-Thesis Research:

1. Alicja Bajorska - Particle Diameter Histograms of Polydispersed Sands, Imaging Science, 2006.
2. Marcia Bero - Triboluminescence of Wintergreen Lifesaver Candies, and Pulsed NMR Spectroscopy, Chemistry, 1987.
3. Michael Bostick – T_2 of Water in Synthetic Soils, Imaging Science, 2005.
4. David Cesarz - Low frequency ESR spectroscopy, Chemistry, 1989.
5. Sarah Chapman - Diffusion and Relaxation Time Studies of Microemulsions, Chemistry, 1997-99.
6. Steven Christopher – Earth's Field NMR, Physics, 2008-09.
7. Raymond Courtney - Transient Acoustic Cavitation During Ultrasound Imaging and Detection of Subsequent Free Radicals, Chemistry, 1991.
8. Jeremy Cusimano - Low frequency ESR, Chemistry, 1998.
9. Paul DeMuth - ESR Spectrometer Design and Mapping B_1 Magnetic Fields From Two Resonators, Chemistry, 1985-87
10. David Fetzer - MRI Compatibility Issues with Tattoo Inks, Imaging Science, 2002.
11. Pat Fleckenstein – Development of a Volume Calculation Package for MR Images, Math, 1991-92.
12. Garland Gen - Calculated T_1 , T_2 , and Spin Density Images, Chemistry, 1986-88.
13. Rick Gruzca - FT NMR and Computation and Mapping of B_1 Fields in Magnetic Resonators, Chemistry, 1988.
14. Andrew Hoerner - NMR T_1 of Hydrated Sands, Imaging Science, 2006.
15. David Hetzer -NMR Microscopy, Chemistry, 1998.
16. Steve Iannopollo - NMR Studies of Structured and Bulk Water in Pores, Chemistry, 2003-04.
17. Harold Jones - Pulsed NMR Spectroscopy, Chemistry, 1987.
18. Marilyn Jukiewicz - T_1 of Reverse Micelle Solutions, Chemistry Student, Baldwin-Wallace College, Berea, OH, 1991.
19. Brian Kelley - NMR Spin Relaxation Time Studies of Microemulsions, Chemistry, 1997.
20. Pam Knight - Measurement of T_1 of Water in Soils, Chemistry, 2002
21. Edward LaChanse - B_1 Fields From Nonuniform Current Densities, Chemistry, 1988.
22. Brittany Lipchick – Nonlinear NMR Relaxation Agents, Chemistry, 2007-08.
23. Scott Lee - ESR of Coal and Triboluminescence, Chemistry, 1988-89.
24. Alfred Marchese – Low Frequency ESR, Chemistry, 1991-92.
25. William Murray - MRI of Nuclear Spin Relaxation Times, Chemistry, 1987
26. Walter Oneschuk - GE Signa to Vax Image Transfer, Biomedical Computing, 1986

27. Jeremy Pasatta - NMR Studies of the T_1 and T_2 of Water in Soil, Chemistry, 2000.
28. Jonathan Purington – Mapping RF Magnetic Fields from a Surface Resonator, 2006.
29. Durga Ramanan – MRI of the Diffusion of Ions In Gelatin, Chemistry, 1991-92.
30. Jonathan Sam - Calibration of an ESR Spectrometer, & NMR Spectroscopy, Chemistry, 1988-89.
31. Robert Sherlock - Pulse FT NMR Spectroscopy, Chemistry, 1987.
32. Jody Sigismondi - The Properties of a Microwave Klystron Source, Physics, 1986.
33. Aric Smith - RF Coil Design for MRI of Teeth, Chemistry, 1989-90
34. Mike Solomon - Optical Determination of Translational Diffusion Coefficients. 1985
35. Jeffrey StPierre - An IBM PC Based Data Collection System for a Perkin-Elmer 552A UV/Vis Spectrometer, Chemistry, 1985.
36. Ryan Susa - T_1 of Porous Sands, Chemistry, 2002
37. Jennifer Swartzenberg - Nonlinear NMR Relaxation Agents, Chemistry, 2007-08.
38. ZiWie Tang – Oxygen Monitoring Using Low Frequency ESR, 1991-92.
39. James Trainer - NMR Spectroscopy Techniques, Chemistry, 1987.

B.S. Thesis Research in Imaging Science:

1. Alexander Barelka - NMR Microscopy, May 1992.
2. Andrew Benfield - MRI Angiography, May 1992.
3. Andre Blaakman - MRI of Breast Pathology, May 1991.
4. Rebecca Bogdan - Multispectral Tissue Classification of Breast Pathology, May 1994.
5. Bobbie Bosse – Digital Image Processing of Magnetic Resonance Images, May 1992.
6. Marvin Boonmee -Comparison of Tissue Classification Using Spin Echo and Fast Spin Echo MRI, May 2001.
7. Keith Bourgeois - MRI Coil Development, May 1992.
8. Ken Brodeur - Characterizing Spatial-Spatial-Spectral MRI, May 1998.
9. Jennifer Cerniglia - Examination of Alternative Segmentation Spaces, May 1995.
10. David Chang - Fingerprint Matching Algorithm, May 1999.
11. James Dickman - Clustering Algorithms, May 1991.
12. Presley Ellsworth - Noise Reduction in MRI, May 1989.
13. Tiffany Fetzner - CSI Based on Variable Bandwidth MRI, May 1998.
14. Lynn Fletcher - Multispectral Brain Tissue Classification, May 1992.
15. Rachael Gold – Erythema in Intradermal Pigments During MRI Exams, May 2005
16. Jordan Guinn - Analysis of T_1 Environments Using DECRA, May 1998.
17. Joyce Haberman - Optimization of Bandwidth in MRI of the Knee, May 1997.
18. Mark Holly - Motion Artifact Reduction in MRI, May 1989.
19. John Householder - Optical Fourier Ttransformer, May 1992.
20. Blake Jabielski - Detection of Pathology Based on Asymmetry, May 1993.
21. Cindy Jacobs - Spin Trapping for Low-Frequency ESR, May 1991.
22. Lada Jawny - Cyclic Changes in T_1 , T_2 and Spin Density of Breast Tissue, May 1993.
23. Michelle Kelly - T_1 Determination With Gradient Refocused MRI, May 1992.
24. Timothy Looney - Registration of MR Images to Improve Multispectral Image Segmentation of Brain Tissues, May 1993.
25. Daisei Konno - Ultrasound Detection of Windsheer, May 1995.
26. John Lacognina - Image Processing of Endoscopic Images, May 1991.
27. Andrew Martelli - Color Calibration of a Matrix Camera, May 1992.
28. Sang-Yun Moon - MRI Synthetic Image Generator, May 2006.
29. Thomas O'Brien - Digital Archival Techniques, May 1993.
30. Michael Platt - Homogenization of RF Magnetic Fields in Single Turn Solenoids, May 1994.
31. Scott Szeglowski - MRI Wrist Coil, May 1992.
32. Eric Thomsin - Parameter Optimization for MRI Diagnosis of Multiple Sclerosis, May 1988.
33. Stefanie VanGorden - NMR Microscope, May 1999.

M.S. Project and Non-Thesis Research

1. Dmitriy Beryoza - A PC Based NMR Educational Package, Computer Science, 1992-94.
2. Ann Cecchi - A PC Based NMR Educational Package, Computer Science, 1994.
3. Katrien Daels - Segmentation With Clustering Algorithms, Imaging Science, 1991.

4. Marat Gitman - NMRI of Solutions Utilizing Pulse Sequence Programs Based on 1D Gradients, Chemistry, 1997.
5. Jian Gong - A fast T_1 algorithm, Imaging Science, 1991.
6. Manish Kadakia – A Windows Based Teaching package on MRI, Computer Science, 1991-92.
7. Terrie Levy – A Graphical 3D Histogram Package, Computer Science, 1991-92.
8. Christopher McCarthy – Encapsulation of Nitroxide Spin Probes in Polymer Spheres, Chemistry, 1991-92.
9. Tom Maszerowski - A Graphical 3D Histogram Package, Computer Science, 1991-92.
10. Melissa Monahan - Nonlinear NMR Relaxation Agents, Mechanical Engineering, 2007.
11. Dimitrios Psarros – A 2D Image Segmentation Tool, Computer Science, 1991-94.
12. Yue Qiao – Multispectral Analysis of Brain Tissues Using MRI, Imaging Science, 1992-93.
13. Samson Tsoi – An NMR Simulator, Computer Science, 1991-92.
14. Wendy Weigert – Development of a computer based teaching package on MRI, Computer Science, 1991-92.

M.S. Thesis

1. Brian Antalek - MRI of Materials. Materials Science & Engineering, February 1991.
2. Xing Li - T_1 & T_2 Measurements in the Presence of B_1 Inhomogeneities. Imaging Science, March 1995.
3. Sang-Yun Moon - Quantitative MRI: System Performance Testing. Imaging Science, May 2008.
4. Nagesh Narendranath - Multispectral Tissue Classification. Imaging Science, May 1996.
5. Harshe Narne – Modeling of B_0 and B_1 Fields in Unilateral MRI. Computer Science, May 2007.
6. Wayne Prentice - Segmentation of Motion From System Instabilities. Imaging Science, May 1997.
7. Dimitri Psarros - Graphical 3D Image Segmentation. Computer Science, May 1993.
8. Jo E. Roe - A Multipurpose MRI Phantom. Chemistry, July 1996.
9. William Ryan - Interface & Characterization of an LFESR Spectrometer. Chemistry, February 1996.
10. Hongmei Yuan – Pulsed Field Gradient NMR Spectroscopy, Chemistry, 2010.

Ph.D. Thesis

1. Thomas Servoss, Imaging Science – Collection & Analysis of Multispectral MRI Data Using a Clinical Imaging System, Imaging Science, May 2002.
2. Christina Bray, Imaging Science – Magnetic Resonance Surface Imaging. Imaging Science, May 2006.

Post-Doctoral Associates

1. Dr. Christina L. Bray – NMR Phantom Filler Material, 2007.
2. Dr. Karl Helmer - Diffusion of Ions in Gelatin, 1992-93.
3. Dr. Edward Szczepaniak – CW ESR Imaging With Phases Modulation Coils, 1990-92.

Visiting Scholars

1. Prof. Liu Xiuhua, Chemistry Department, Henan University, Kaifeng, China – NMR Spectroscopy. 2006.
2. Prof. Leslie Schwartz, St. John Fisher College, Rochester, NY – Low-Field ESR of Free Radicals, 1990-1991.
3. Prof. Leslie Schwartz, St. John Fisher College, Rochester, NY – Reverse Micelle Solution Characterization, 1997-1998.