

Joseph P. Hornak, Ph.D.

Center for Imaging Science
54 Lomb Memorial Drive
Rochester Institute of Technology
Rochester, NY 14623-5604

Phone: 716 475-2904
Fax: 716 475-5988
E-mail: jphsch@rit.edu

<http://www.cis.rit.edu/people/faculty/hornak/>

Areas of Specialization

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

Research

- Multispectral tissue classification and segmentation using spin-lattice relaxation time, spin-spin relaxation time, spin density, and chemical shift.
- Characterization of water-AOT-decane reverse micelle solutions using NMR spin lattice relaxation times and pulsed gradient diffusion techniques.
- High-efficiency transmit and receive RF coils for magnetic resonance imaging of extremities.
- Magnetic resonance imaging of materials.

Education

B.S. (Honors)	Chemistry	Utica College, Utica, NY	1976
M.S.	Physical Chemistry	Purdue University, W. Lafayette, IN	1978
Ph.D.	Chemistry	University of Notre Dame, Notre Dame, IN	1982
Post Doc.	ESR	Cornell University, Ithaca, NY	1984

Appointments

Rochester Institute of Technology, Rochester, NY, 1984-Present.
Professor of Chemistry and Imaging Science
University of Rochester Medical School, Rochester, NY, 1985-Present.
Adjunct Associate Professor of Radiology
John Wiley & Sons, Inc., New York, NY, 1997-Present.
Editor-in Chief, Encyclopedia of Imaging Science and Technology

Honors and Professional Societies

Dean's Summer Research Fellow, 1985, 1987, and 1988, RIT College of Science
Wiedman Professor of Medical Imaging, 1989-1991
Member of Rochester Chapter of Sigma Xi
Honor Society of Phi Kappa Phi
American Chemical Society
International Society of Magnetic Resonance in Medicine
Aircraft Owners and Pilots Association

Joseph P. Hornak, Ph.D.

Courses Taught

Undergraduate:

General Chemistry Lecture, Laboratory, and Recitation
Scientific Glassblowing
Analytical Chemistry - Instrumental Methods of Analysis Lecture and Laboratory
Analytical Chemistry - Spectroscopy
Physical Chemistry Laboratory - Quantum Mechanics, and Kinetics
Undergraduate Chemical Research
Imaging Science - Technical Communication & Research Practices
Imaging Science - Senior Research

Graduate:

Analytical Chemistry - Instrumental Methods of Analysis Lecture and Laboratory
Magnetic Resonance Imaging
The Basics of Pulsed NMR
Principles of Magnetic Resonance
Graduate Research

Professional Administrative Assignments

Chemistry Department, RIT

Library Committee	1984-1985
Awards Committee, Chair	1984-1989
Equipment Committee	1984- Present
Computer Committee	1984-1989
Space Committee	1985-Present
Community and Industrial Relations	1985-1987
NMR Committee, Chair	1988- Present
Faculty Search Committee	1988- Present
Graduate Committee	1994-1996

College of Science, RIT

Strategic Planning Committee	1994-1995
Space Committee	1999
Eisenhart Teaching Award Committee	1999-2000

Center for Imaging Science, RIT

Ph.D. Exam Committee	1990-1996
Tenure Committee, Chair	1992-1996
Computer Committee	1996- Present

College of Graphic Arts and Photography, RIT

Wiedman Chair Search Committee	1989
Tenure Committee	1992-1993

American Chemical Society, Rochester Section

Undergraduate Awards Committee, Chair	1989-1997
---------------------------------------	-----------

Joseph P. Hornak, Ph.D.

Grant Support

1. Teaching MRI Using Computer Animation. RIT Productivity Grant, 1987-1988, \$11,690.
2. Modeling of RF Magnetic Fields in MRI Resonators. IBM RSP, 1988-1989, \$26,900.
3. Development of Low Field ESR Spectroscopy as an Analytical Technique. RIT College of Science Project Initiation Grant, 1989, \$5,300.
4. 200 MHz NMR Spectrometer. Eastman Kodak Company, 1989, \$200,000.
5. Teaching NMR Using Computer Animation. RIT Productivity Grant, 1989-1990, \$17,000.
6. T_1 - ρ Correlations in MR Breast Images. University of Rochester Magnetic Resonance Center, GE Signa magnetic resonance imaging time, 1990-1991, \$5,400.
7. NMR Imaging of Gelatin. Eastman Kodak Company, 1990, \$500.
8. NMR Computer Instrumentation. Eastman Kodak Company, 1990-1991, \$30,000.
9. Volume Rendering Algorithms. University of Rochester Radiology Dept., 1990-1991, \$12,000.
10. ESR imaging without DC magnetic field gradients. National Science Foundation, 1991-1992, \$44,419.
11. 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.
12. Purchase of a Data System Upgrade for an NMR Spectrometer. National Science Foundation, 1991-1992, \$27,333.
13. NMR and ESR Studies of Diffusion in Gelatin. Eastman Kodak Company, 1991-1992, \$10,000.
14. Multispectral Tissue Classification of Brain Pathology. RIT College of Science Project Initiation Grant, 1992, \$5000.
15. Computer based teaching package on MRI. RIT Productivity Grant, 1993-1994, \$15,000.
16. MRI Phantom Design. General Electric Medical Systems, 1993-1994, \$29,000.
17. Physical and Chemical Properties of Macromolecules, (T. Gennett, P.I.) National Science Foundation - Research Experience for Undergraduates, 1995-1997, \$149,500.
18. Use of FT NMR in the Undergraduate Chemistry Laboratory. National Science Foundation, 1995-1997, \$100,000; RIT match, \$201,000.
19. Imaging of Water in Photographic Paper. Eastman Kodak Company, 1997-1999, \$4,000.

Joseph P. Hornak, Ph.D.

Research Supervised

B.S. Non-Thesis Research (selected)

Sarah Chapman - Diffusion and Relaxation Time Studies of Microemulsions, 1997-1999
Garland Gen - Calculated T_1 , T_2 , and Spin Density Images, 1986-1988
Aric Smith - RF Coil Design for MRI of Teeth, 1989-1990

B.S. Thesis Research

Andre Blaakman - MRI of Breast Pathology, May 1991
Jennifer Cerniglia - Examination of Alternative Segmentation Spaces, May 1995
David Chang - Fingerprint Matching Algorithm, May 1999
James Dickman - Clustering Algorithms, May 1991
Alexander Barelka - NMR Microscopy, May 1992
Andrew Benfield - MRI Angiography, May 1992
Rebecca Bogdan - Multispectral Tissue Classification of Breast Pathology, May 1994
Keith Bourgeois - MRI Coil Development, May 1992
Presley Ellsworth - Noise Reduction in MRI, May 1989
Tiffany Fetzner - CSI Based on VBW MRI, May 1998
Lynn Fletcher - Multispectral Brain Tissue Classification, May 1992
Jordan Guinn - Analysis of T_1 Environments Using DECRA, May 1998
Joyce Haberman - Optimization of Bandwidth in MRI of the Knee, May 1997
Mark Holly - Motion Artifact Reduction in MRI, May 1989
John Householder - Optical Fourier Transformer, May 1992
Blake Jabielski - Detection of Pathology Based on Asymmetry, May 1993
Cindy Jacobs - Spin Trapping for Low Frequency ESR, May 1991
Lada Jawny - Cyclic Changes in T_1 , T_2 and ρ of Breast Tissue, May 1993
Michelle Kelly - T_1 Determination with Gradient Refocused MRI, May 1992
Daisei Konno - Ultrasound Detection of Windshere, May 1995
John Lacognina - Image Processing of Endoscopic Images, May 1991
Andrew Martelli - Color Calibration of a Matrix Camera, May 1992
Thomas O'Brien - Digital Archival Techniques, May 1993
Scott Szeglowksi - MRI Wrist Coil, May 1992
Stefanie VanGorden - NMR Microscope, May 1999

M.S. Thesis

Brian Antalek - MRI of Materials, February 1991
Xing Li - T_1 & T_2 Measurements in the Presence of B_1 Inhomogeneities, March 1995
Nagesh Narendranath - Multispectral Tissue Classification, May 1996
Wayne Prentice - Segmentation of Motion from System Instabilities, May 1997
Dimitri Psarros - Graphical 3D Image Segmentation, May 1993
Jo E. Roe - A Multipurpose MRI Phantom, July 1996
William Ryan - LFESR of Ultrasound Generated Free Radicals, February 1996

Ph.D. Thesis

Thomas Servoss - Chemical Shift Imaging, 2001 (anticipated)

Post-Doctoral Associates & Visiting Scholars

Leslie Schwartz (1990-1991) - Low Field ESR, (1997-1998) - Reverse Micelle Characterization
Edward Szczepaniak (1990-1992) - ESR Imaging
Karl Helmer (1992-1993) - Diffusion of Ions in Gelatin

Joseph P. Hornak, Ph.D.

Book Chapters

1. R.W. Fessenden and J.P. Hornak, "The Study of Radical Reaction Kinetics by Time-Resolved ESR," p. 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. L.M. Fletcher and J.P. Hornak, "Multispectral Image Segmentation in Magnetic Resonance Imaging," in Digital Image Processing Methods, E. Dougherts, ed., Marcel Dekker, NY 1994.
4. J.P. Hornak, "Medical Imaging Technology," Kirk-Othmer Encyclopedia of Chemical Technology, John Wiley & Sons, Inc. 16:107-134 (1995).
5. J.P. Hornak, "Medical Imaging Technology," Kirk-Othmer Concise Encyclopedia of Chemical Technology, Fourth Edition, John Wiley & Sons, Inc. pages 1263-1265 (1999).
6. J.P. Hornak, "Nuclear Magnetic Resonance Imaging," accepted for publication in Methods in Materials Research, ed. by Elton N. Kaufmann, John Wiley & Sons, Inc.

Educational Software & 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, Joseph P. Hornak, Rochester, NY 1996.
<http://www.cis.rit.edu/htbooks/mri/>, © J.P. Hornak, 1996-2000.
4. The Basics of NMR, Joseph P. Hornak, Rochester, NY 1997.
<http://www.cis.rit.edu/htbooks/nmr/> © J.P. Hornak, 1997-2000.

Research Features

1. R.B. Pearce, New Surface Coil Designs Enhance MRI Performance. *Diagnostic Imaging* **10**(1), 117-129 (1988).
2. P. Singer, An RIT Professor Translates Techno-Speak to Put Patient's Fears to Rest. *Rochester D. & C.* 23 March 1998, 1,6-C.

United States Patents

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. Szeglowksi, and Rochester Institute of Technology, 1996.

Joseph P. Hornak, Ph.D.

Papers Published

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, *J. 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. J.P. Hornak, R.G. Bryant, Radio Frequency Homogeneity, *Texas A. & M. University NMR Newsletter*, **350**:40 (Nov. 1987).
16. 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).

Joseph P. Hornak, Ph.D.

Papers Published (continued)

17. D.S. Browne, P.E. Ellsworth, J.P. Hornak, Teaching MRI Using Computer Animation, *J. Chem. Ed.* **66**:647-648 (1989).
18. 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).
19. J.P. Hornak, A.C. Smith, J. Szumowski, Relaxation Time Studies by CSI - Phantom Studies, *Magn. Reson. Med.* **13**:398-406 (1990).
20. J.P. Hornak, A. Blaakman, D. Rubens, S. Totterman, Multispectral Image Segmentation of Breast Pathology, *SPIE Image Processing* **1445**:523-533 (1991).
21. J.P. Hornak, M. Spacher, R.G. Bryant, A Modular Low Frequency ESR Spectrometer, *Meas. Sci. Technol.* **2**:520-522 (1991).
22. J. Gong, J.P. Hornak, A Fast T_1 Algorithm, *J. Magn. Reson. Imag.* **10**:623-626 (1992).
23. 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).
24. L.M. Fletcher, J.B. Barsotti, J.P. Hornak, A Multispectral Analysis of Brain Tissues, *Magn. Reson. Med.* **29**:623-630, (1993).
25. E. Szczepaniak, J.P. Hornak, ESR Imaging Based on the Modulation Field Phase, *J. Magn. Reson.* **104A**:315-320 (1993).
26. S.D. Szegłowski, J.P. Hornak, Asymmetric Single-Turn Solenoid for MRI of the Wrist, *Magn. Reson. Med.* **30**:750-753 (1993).
27. X. Li, J.P. Hornak, Accurate Determination of T_2 Images in MRI, *Imaging Science and Technology* **38**:154-157 (1993).
28. 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).
29. 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).
30. 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. Submitted *J. Magn. Reson.* **132**:298-306 (1998).
31. 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. Submitted *J. Magn. Reson.* **132**:307-315 (1998).
32. 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).

Joseph P. Hornak, Ph.D.

Papers Published (continued)

33. J.P. Hornak, Teaching NMR Using Online Textbooks, *Molecules* 4:353-365 (1999).
34. D.H. Chang, J.P. Hornak, Fingerprint Recognition through Circular Sampling. Submitted *Imaging Science and Technology*, 2000.

Papers Presented

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.

Joseph P. Hornak, Ph.D.

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.

Joseph P. Hornak, Ph.D.

Papers Presented (continued)

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. 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.
43. L.M. Fletcher, J.P. Hornak, Multispectral Brain Tissue Classification, 37th American Chemical Society Undergraduate Research Symposium, Rochester, NY 1992.

Joseph P. Hornak, Ph.D.

Papers Presented (continued)

44. 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.
45. 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.
46. 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.
47. 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.
48. 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.
49. 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.
50. 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.
51. 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.
52. 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.
53. 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.
54. D.J. Roach, S.M. Totterman, M.G. Spencer, J.P. Hornak, Hand MR Anceography with a Designated Transmitter/Receiver Coil, 1st Meeting of the Society of Magnetic Resonance, Texas, 1994.
55. D.D. Ramanan, J.P. Hornak, Diffusion of Ni^{+2} Ions in a Water-Gelatin Matrix, 39th American Chemical Society Undergraduate Research Symposium, Rochester, NY, April 1994.
56. 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.

Joseph P. Hornak, Ph.D.

Papers Presented (continued)

57. 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.
58. J.P. Hornak, Signals from Within: Magnetic Resonance Imaging of Disease, 1995 Annual Meeting of The American Association for Clinical Chemistry, Anaheim, CA, July 1995.
59. 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.
60. 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.
61. J.P. Hornak, MRI: An Overview and Recent Advances. 25th North East Regional Meeting of the American Chemical Society, Rochester, NY, October 1995.
62. 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.
63. 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.
64. 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.
65. 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.
66. 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.
67. 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.
68. J.P. Hornak, Teaching NMR Using Online Textbooks. Winter 1999 CONFCHEM: Teaching Spectroscopy, On-line Conference (<http://www.ched-ccce.org/confchem/1999/d/index.html>).
69. 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.