

MATTHEW O'DONNELL

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Education

<u>School</u>	<u>Dates Attended</u>	<u>Degree</u>	<u>Major Area</u>
University of Notre Dame	1968-1972	B.S.	Physics
University of Notre Dame	1972-1976	Ph.D.	Solid State Physics

Work Experience

Frank & Julie Jungers Dean of Engineering, College of Engineering, University of Washington, Seattle, WA 98195, 2006 - present

Professor, Bioengineering Department, University of Washington, Seattle, WA 98195, 2006 - present

Adjunct Professor, Mechanical Engineering Department, University of Washington, Seattle, WA 98195, 2006 - present

Jerry W. and Carol L. Levin Professor of Engineering, University of Michigan, Ann Arbor, MI 48109-2125, 1998-2006

Chair, Biomedical Engineering Department, University of Michigan, Ann Arbor, MI 48109-2125, 1999-2006

Professor, Biomedical Engineering, University of Michigan, Ann Arbor, MI 48109-2125, 1997-2006.

Professor, Electrical Engineering & Computer Science, University of Michigan, Ann Arbor, MI 48109-2122, 1990-2006.

Physicist, Research and Development Center, General Electric Company, Schenectady, NY 12301, 1980-1990.

Research Fellow, Electrical Engineering, Yale University, New Haven, CT, 1984-1985.

Senior Research Associate in Physics and Research Instructor in Medicine, Washington University, St. Louis, MO 63130, 1978-1980.

Postdoctoral Fellow in Physics, Washington University, St. Louis, MO 63130, 1976- 1978.

Graduate Research and Teaching Fellow in Physics, University of Notre Dame, Notre Dame, IN 46556, 1972-1976.

Honors

Distinguished Alumni Award, University of Notre Dame, 2009
National Academy of Engineering, 2009
Achievement Award, IEEE Ultrasonics, Ferroelectrics & Frequency Control Society, 2007
Frank & Julie Jungers Dean of Engineering, University of Washington, 2006
Jerry W. and Carol L. Levin Professor of Engineering, University of Michigan, 1998
Research Award, BME Department, University of Michigan, 1998
Fellow - AIMBE, 1996
Teaching Award, College of Engineering, University of Michigan, 1996
Teaching Award, EECS Department, University of Michigan, 1995
Fellow - IEEE, 1993
Whitney Award, General Electric Internal Research Award, May 1991
Whitney Award, General Electric Internal Research Award, November 1990
Best Paper - Medical Physics, 1985
Best Paper - Medical Physics, 1984
Senior Member - IEEE, 1984
B.S. with Honors - University of Notre Dame, 1972

Graduate Student Mentoring

Graduated 24 Ph.D. students, mentored 14 post-docs (see attached sheets)
Currently mentor and support 1 Ph.D. candidate and 3 post-docs (see attached sheets)

Extramural Funding

\$453,924 - 2009 (current year, PI, see attached sheets)

Publications and Patents

185 Journal Articles (see attached sheets)
146 Refereed Conference Proceedings Articles (see attached sheets)
137 Presentations at International Meetings (see attached sheets)
58 Patents (55 issued)

Professional Societies

IEEE - Fellow
AIMBE - Fellow
American Physical Society
Sigma Xi

Journal and Proposal Review

Ultrasonic Imaging: Associate Editor
IEEE: UFFC, Medical Imaging, BME, ASSP
JASA
Circulation
NIH – Former Chair, Biomedical Imaging Technology (BMIT) Study Section
NSF

Industrial Consulting

General Electric, 1990-2000, 2006-present
Endosonics/Jomed, 1993-2003
Acuson/Siemens, 1995-2002
Microsound Systems, 1995-1997
Q-Dot, 1995-2000
Pangea Medical, 1998-1999
Focus Surgery, 1998-2003
Tetrad, 1999-2005
Pixel Velocity, 2001-present
Vascular Imaging, 2003-present
Sonetics, 2003-2006
Allied Minds, 2008-present
Mirabilis Medica, 2008-present

Matthew O'Donnell -- Trainee Mentoring

Post-Doctoral Mentoring

- 1.) Stanislav Emelianov
1991-1995 – Elasticity Imaging
- 2.) Mustafa Karaman
1994-1995 – Synthetic Aperture Imaging for Biomedical Ultrasound
- 3.) Steven Freeman
1998-1999 – Delta-Sigma Beamformers for Biomedical Ultrasound
- 4.) Kyle Hollman
1999-2001 – Phase Aberration Correction for 2-D Ultrasound Arrays
- 5.) Salavat Aglyamov
2000-2002 – Reconstruction Algorithms for Elasticity Imaging
- 6.) Kang Kim
2002-2004 – Elasticity Imaging to Detect Kidney Transplant Rejection
- 7.) Hua Xie
2002-2005 – Elasticity Imaging to Age Deep Venous Thrombosis
- 8.) Russell Witte
2002-2006 – Microwave/Optical-Induced Neural Imaging with Ultrasound
- 9.) Shai Ashkenazi
2003-2006 – High Frequency Optoacoustic Imaging
- 10.) Takashi Buma
2003-2005 – Optoacoustic Lamb-wave Transduction
- 11.) Xunchang Chen
2004-2005 – Cardiac Strain Rate Imaging
- 12.) Sheng-wen Huang
2005-2009 – Thermal Strain and Photoacoustic Imaging
- 13.) Lingyun Huang

2007-present– Cardiac Elasticity Imaging

- 14.) Yael Petrank
2007-2009– Verterbi Processing of Cardiac Elasticity Images
- 15.) Chi Seo
2009-present – Functional Imaging with Intracardiac Arrays

Ph.D. Graduates

- 1.) Yantian Zhang
Dissertation: Magnetic Resonance T_1 Imaging of the Breast Using Fat Suppressed Single Scan Technique
Department: Bioengineering
Date: 1994
- 2.) Pai-Chi Li
Dissertation: Two-Dimensional Conformal Arrays for Ultrasound Imaging
Department: Electrical Engineering & Computer Science
Date: 1994
- 3.) Joseph R. Roebuck
Dissertation: Segmentation of Proton MRS Signals Compromised by Partial Volume Contamination
Department: Bioengineering
Date: 1994
- 4.) Benjamin M. Shapo
Dissertation: Displacement and Strain Imaging of Coronary Arteries with Intraluminal Ultrasound.
Department: Electrical Engineering & Computer Science
Date: 1996
- 5.) N. Abraham Cohn
Dissertation: An Elasticity Microscope for High Resolution Imaging of Tissue Stiffness Using 50 MHz Ultrasound
Department: Biomedical Engineering
Date: 1997
- 6.) Sriram Krishnan
Dissertation: Adaptive and Nonlinear Ultrasound Imaging
Department: Electrical Engineering & Computer Science
Date: 1997
- 7.) Mark A. Lubinski
Dissertation: Speckle Tracking Techniques for Ultrasound Elasticity Imaging
Department: Biomedical Engineering
Date: 1998
- 8.) Steven Freeman
Dissertation: An Oversampled Ultrasound Beamformer for Low-power, Portable Scanners
Department: Electrical Engineering & Computer Science
Date: 1998

- 9.) James D. Hamilton
Dissertation: High Frequency Ultrasound Imaging Using Optics
Department: Physics
Date: 1998
- 10.) John R. Crowe
Dissertation: Intraluminal Blood Flow Imaging
Department: Electrical Engineering & Computer Science
Date: 1999
- 11.) Takashi Buma
Dissertation: Thermoelastic Generation of Ultrasound for High Frequency Phased Arrays
Department: Applied Physics
Date: 2002
- 12.) Yao Wang
Dissertation: Forward-Viewing Ring Annular Array in Intravascular Ultrasound Imaging
Department: Biomedical Engineering
Date: 2003
- 13.) Charles D. Choi
Dissertation: Integrated Balloon Ultrasound Catheter for Strain Imaging and Stent Deployment Guidance
Department: Biomedical Engineering
Date: 2003
- 14.) Ramon Erkamp
Dissertation: Nonlinear Elasticity Imaging using Ultrasound
Department: Biomedical Engineering
Date: 2003
- 15.) Monica Spisar
Dissertation: Resonant Optical Acoustic Detectors for High Frequency Medical Imaging
Department: Biomedical Engineering
Date: 2003
- 16.) Xunchang Chen
Dissertation topic: Cardiac Strain Rate Imaging Using 2-D Speckle Tracking
Department: Biomedical Engineering
Date: 2004
- 17.) Javier DeAna
Dissertation Topic: Quantitative Real-time Blood Flow Measurements Using Intravascular Ultrasound
Department: Biomedical Engineering
Date: 2004
- 18.) Yan Shi
Dissertation Topic: Thermal Strain Imaging
Department: Biomedical Engineering
Date: 2005
- 19.) Todd Eperlding
Dissertation Topic: Bubble-based Acoustic Radiation Force for Measuring Lens Elasticity

Department: Biomedical Engineering
Date: 2006

20.) Marwa Zohdy

Dissertation Topic: Controllable Bioeffects of Laser-Generated Intracellular Microbubbles
Department: Biomedical Engineering
Date: 2006

21.) Christine Tse

Dissertation Topic: Acoustic Characterization of Geometrically and Biochemically Targeted Optical Breakdown Effects for Biomedical Applications
Department: Biomedical Engineering
Date: 2007

22.) Rebecca Booi

Dissertation Topic: 2D and 3D Breast Elastography with a Combined Ultrasound/Digital Tomosynthesis System
Department: Biomedical Engineering
Date: 2007

23.) Yang Hou

Dissertation Topic: Broadband All-Optical Ultrasound Transducers for High-Resolution Ultrasound Imaging
Department: Electrical Engineering & Computer Science
Date: 2008

24.) Ragnar Olafsson

Dissertation Topic: Cardiac Activation Mapping Using Ultrasound Current Source Density Imaging
Department: Biomedical Engineering
Date: 2008

Current Ph.D. Candidates

1.) Congxian Jia

Dissertation Topic: Reconstructive Elasticity Imaging of the Heart
Department: Biomedical Engineering

B.S./M.S. Student Mentoring

I have mentored numerous B.S. and M.S. students in the BME and EECS Departments at the University of Michigan.

Matthew O'Donnell -- External Research Funding

Current - PI:

1.) P.I.: Matthew O'Donnell (Subcontract to Yale: P.I. James Duncan)

Sponsor: NIH (HL 082640)

Title: LV Strain Quantification for 4D Echocardiography

Effort 15%

Dates and costs of entire project 6/1/06-5/31/11 \$1,500,000

Dates and costs of current year 6/1/08-5/31/09 \$356,416

2.) P.I.: Matthew O'Donnell (Subcontract to OHSU: P.I. David J. Sahn)

Sponsor: NIH (HL 067647)

Title: High Frequency Ultrasound Arrays for Cardiac Imaging

Effort 0%

Dates and costs of entire project 9/1/08-8/31/13 \$517,678

Dates and costs of current year 6/1/08-5/31/09 \$97,508

Immediate Past - Co PI:

1.) P.I.: Jonathan M. Rubin

Sponsor: NIH (HL 068658)

Title: Aging Venous Thrombi with Ultrasound Elasticity Imaging

Effort 0%

Dates and costs of entire project 7/1/02-6/30/07 \$1,346,418

Dates and costs of current year 7/1/06-6/30/07 \$327,507

2.) P.I.: Paul Krebsbach

Sponsor: NIH (T32 DE07057)

Title: Tissue Engineering and Regeneration

Effort 0 %

7/1/02-6/30/07

Dates and costs of entire project 7/1/02-6/30/07 \$2,990,354

Dates and costs of current year 7/1/06-6/30/07 \$400,852

3.) P.I.: Paul Carson

Sponsor: NIH (CA 091713)

Title: Combined Digital X-Ray and Ultrasound

Effort 0%

9/1/02-8/31/07

Dates and costs of entire project 9/1/02-8/31/07 \$3,330,718

Dates and costs of current year 9/1/06-8/31/07 \$670,000

4.) P.I.: Kyle W. Hollman

Sponsor: NIH (EY 015876)

Title: Bubble Based Acoustic Force Elasticity for Presbyopia

Effort 0%

Dates and costs of entire project 4/1/05-3/31/07 \$404,025

Dates and costs of current year 4/1/06-3/31/07 \$220,377

5.) P.I.: Lingjie J. Guo
 Sponsor: NIH (EB 004933)
 Title: Ultrasound Imaging Using Photonic Microring Resonators
 Effort 0%
 Dates and costs of entire project 4/1/05-3/31/07 \$420,750
 Dates and costs of current year 4/1/06-3/31/07 \$229,500

Past - PI:

1.) P.I.: Matthew O'Donnell (Subcontract to OHSU: P.I. David Sahn)
 Sponsor: NIH (HL 67647) – Transferred to UM on 9/1/06
 Title: High Frequency Ultrasound Arrays: Intracardiac Imaging
 Effort 15%
 Dates and costs of entire project 2/15/02-2/14/07 \$1,115,000

2.) P.I.: Matthew O'Donnell
 Sponsor: NIH (EB 003455) – Transferred to UM on 9/1/06
 Title: Optoacoustic Transduction for High-Frequency Ultrasound
 Effort: 15%
 Dates and costs of entire project 7/1/05-6/30/09 \$ 1,328,848

3.) P.I.: Matthew O'Donnell
 Sponsor: NIH (EB 003449) – Transferred to UM on 9/1/06
 Title: Ultrasonic Imaging of LIOB in Dendrimer Nanocomposites
 Effort 10%
 Dates and costs of entire project 4/1/05-3/31/07 \$419,813

4.) P.I.: Matthew O'Donnell
 Sponsor: NIH (EB 003451)
 Title: Microwave Induced Thermal Imaging – Transferred to UM on 9/1/06
 Effort 10%
 Dates and costs of entire project 8/1/05-7/31/07 \$407,745

5.) P.I.: Matthew O'Donnell
 Sponsor: NIH (HL 47401)
 Title: Can IVUS Help Manage Coronary Artery Disease
 Effort 25%
 Dates and costs of entire project 7/1/00-6/30/05 \$1,359,424

6.) P.I.: Matthew O'Donnell (Subcontract, P.I. Daryl Kipke)
 Sponsor: DARPA (N66001-02-8059)
 Title: Neural Imaging for Brain Machine Interfaces
 Effort: 5%
 Dates and costs of entire project 6/28/02-6/27/04 \$360,000

7.) P.I.: Matthew O'Donnell
 Sponsor: ONR (N00014-98-1-0012)
 Title: Resonant Optical Detector (ROUT) for Ultrasound Imaging
 Effort 15%
 Dates and costs of entire project 10/1/00-12/31/03 \$499,566

- 8.) P.I.: Matthew O'Donnell
Sponsor: NIH (2R01DK47324)
Title: Elasticity Imaging for Detection of Renal Pathology
Effort 20%
Dates and costs of entire project 6/1/98-5/31/03 \$1,227,003
- 9.) P.I.: Matthew O'Donnell
Sponsor: Acuson (Siemens) Corp.
Title: Ultrasound Imaging
Effort 0%
Dates and costs of entire project 5/1/92-4/30/02 \$60,000
- 10.) P.I.: Matthew O'Donnell
Sponsor: Warner-Lambert Company
Title: Elasticity Imaging in Rapid Evaluation of Atherosclerotic Plaque Vulnerability
Effort 0%
Dates and costs of entire project 5/15/99-10/14/00 \$87,672
- 11.) P.I.: Matthew O'Donnell
Sponsor: ONR (N00014-98-1-0012)
Title: Active Optical Detectors for Ultrasound Imaging
Effort 15%
Dates and costs of entire project 10/1/97-9/30/00 \$455,064
- 12.) P.I.: Matthew O'Donnell
Sponsor: DARPA - Subcontract to Q-Dot, Inc. (DAPRA Program BAA 95-27)
Title: Technology for Hand-Held Ultrasound Scanners
Effort 12%
Dates and costs of entire project 9/13/96-9/12/00 \$391,330
- 13.) P.I.: Matthew O'Donnell
Sponsor: NIH (1R01HL47401)
Title: Catheter Arrays for Mechanical Imaging of Coronary Arteries
Effort 25%
Dates and costs of entire project 2/1/96-6/30/00 \$1,063,080
- 14.) P.I.: Matthew O'Donnell
Sponsor: DARPA - Subcontract to GE-CRD (DARPA Program BAA 95-27)
Title: Improved Ultrasound Image Quality Using Adaptive Acoustics
Effort 25%
Dates and costs of entire project 9/13/96-9/12/99 \$362,855
- 15.) P.I.: Matthew O'Donnell
Sponsor: NIH (1R01DK47324)
Title: Elasticity Imaging for Detection of Renal Pathology
Effort 20%
Dates and costs of entire project 1/1/95-12/31/97 \$604,757
- 16.) P.I.: Matthew O'Donnell
Sponsor: DARPA-TRP - Subcontract to Q-Dot, Inc. (Contract DAMD 17-96-C-6037)

Title: A Low Power, Low Cost, High-Performance Beamformer for Medical Ultrasound Scanners

Effort 10%

Dates and costs of entire project 4/1/96-9/30/96 \$21,112

17.) P.I.: Matthew O'Donnell

Sponsor: General Electric

Title: Phased Array Ultrasound Imaging

Effort 0%

Dates and costs of entire project 1/1/91-6/30/95 \$235,000

18.) P.I.: Matthew O'Donnell

Sponsor: NIH(5R01 CA54896)

Title: Conformal Arrays for Ultrasound Imaging

Effort 20%

Dates and costs of entire project 7/1/92-6/30/95 \$656,198

19.) P.I.: Matthew O'Donnell & Charles Cain

Sponsor: Universitat Ulm

Title: Focused Ultrasound Myocardial Ablation

Effort 0%

Dates and costs of entire project 1/1/94-6/30/94 \$22,000

Matthew O'Donnell -- Internal Research Funding

Past - PI:

1.) P.I.: Matthew O'Donnell

Sponsor: Office of the Vice President for Research - University of Michigan

Title: Medical Image Processing and Design of VLSI Devices for Medical Imaging

Effort 0%

Dates and costs of entire project 11/21/90-3/31/91 \$38,100

2.) P.I.: Matthew O'Donnell

Sponsor: Office of the Vice President for Research - University of Michigan

Title: Elasticity Imaging for Quantitative Internal Palpation

Effort 0%

Dates and costs of entire project 1/1/93-3/31/94 \$37,000

3.) P.I.: Matthew O'Donnell

Sponsor: Rackham Graduate School - University of Michigan

Title: Real-time Young's modulus imaging of coronary arteries

Effort 0%

Dates and costs of entire project 2/1/92-8/31/93 \$5,000

Matthew O'Donnell -- External Program Funding

Past - PI:

1.) P.I.: Matthew O'Donnell, Charles Cain, Steven Goldstein, John Faulkner, and James Groberg
Sponsor: Whitaker Foundation – Transferred to UM on 9/1/06
Title: Establishing Leadership in Biomedical Engineering at the University of Michigan
Effort 0%

Dates and costs of entire project 7/1/02-12/31/06 \$10,000,000

2.) P.I.: Matthew O'Donnell

Sponsor: Wallace H. Coulter Foundation – Transferred to UM on 9/1/06

Title: Wallace H. Coulter Translational Research Partnership

Effort 0%

Dates and costs of entire project 1/1/06-12/31/10 \$2,900,000

3.) P.I.: Matthew O'Donnell, Mary-Ann Mycek, and John Michael Mayer

Sponsor: Department of Education (GAANN) – Transferred to UM on 9/1/06

Title: GAANN Fellowship Program in Biomedical Engineering at the University of Michigan

Effort 0%

Dates and costs of entire project 8/14/06-8/13/09 \$507,000

4.) P.I.: Charles Cain, Matthew O'Donnell, Steven Goldstein, and John Faulkner

Sponsor: Whitaker Foundation

Title: Reorganization of Biomedical Engineering at the University of Michigan

Effort 0%

Dates and costs of entire project 7/1/96-6/30/99 \$3,000,000

5.) P.I.: Charles Cain & Matthew O'Donnell

Sponsor: Department of Education (GAANN)

Title: GAANN Fellowship Program in Bioengineering at the University of Michigan

Effort 0%

Dates and costs of entire project 9/1/94-8/31/97 \$960,000

Matthew O'Donnell -- Internal Program Funding

Past - PI:

1.) P.I.: Matthew O'Donnell

Sponsor: Gilbert Whitaker Fund at the University of Michigan

Title: Pilot Grant on Integrative 2nd Year Biomedical Engineering Course

Effort 0%

Dates and costs of entire project 7/1/01-6/30/03 \$5,000

2.) P.I.: Matthew O'Donnell

Sponsor: Provost Office at the University of Michigan – Life Sciences Initiative

Title: Biotechnology and Human Values Freshman Course

Effort 0%

Dates and costs of entire project 7/1/02-6/30/04 \$316,050

Matthew O'Donnell -- Journal Articles

1. M. T. Elliott, M. O'Donnell, and H. A. Blackstead, "Standing Magnetoelastic Waves in Rare-Earth Ferromagnetic Films", *Phys. Rev. Letters* 32, 734-737 (1974).
2. J. T. Wang, M. O'Donnell and H. A. Blackstead, "Excitation of Gigahertz Magnetoelastic Waves in Dysprosium Films: Frequency Dependence", *Phys. Rev. B* 13, 2044-2053 (1976).
3. M. O'Donnell, J. T. Wang, and H. A. Blackstead, "Magnetoelastic Excitations in Single Crystal Gadolinium", *Phys. Rev. Letters* 36, 606-609 (1976).
4. M. O'Donnell, S. C. Hart, J. G. Sylvester, and H. A. Blackstead, "Dynamic Magnetoelastic Coupling in Ni", *Solid State Communications* 18, 1141-1143 (1976).
5. M. O'Donnell, J. W. Mimbs, B. E. Sobel, and J. G. Miller, "Ultrasonic Attenuation on Myocardial Tissue: Dependence on Time After Excision and on Temperature", *J. Acoust. Soc. Am.* 62, 1054-1057 (1977).
6. M. O'Donnell, J. W. Mimbs, B. E. Sobel, and J. G. Miller, "Collagen as a Determinant of Ultrasonic Attenuation in Myocardial Infarcts", in *Ultrasound in Medicine*, Vol. 4, 503-513 (1978).
7. M. O'Donnell, E. T. Jaynes, and J. G. Miller, "General Relationships Between Ultrasonic Attenuation and Dispersion", *J. Acoust. Soc. Am.* 63, 1935-1937 (1978).
8. J. W. Mimbs, M. O'Donnell, J. G. Miller, and B. E. Sobel, "Changes in Ultrasonic Attenuation Indicative of Early Myocardial Ischemic Injury", *Am. J. of Physiology* 236, H340-344 (1979).
9. M. O'Donnell, J. W. Mimbs, and J. G. Miller, "The Relationship Between Collagen and Ultrasonic Attenuation in Myocardial Tissue", *J. Acoust. Soc. Am.* 65, 512-517 (1979).
10. M. O'Donnell, J. W. Mimbs, and J. G. Miller, "The Relationship Between Collagen and Ultrasonic Backscatter in Myocardial Tissue", *J. Acoust. Soc. Am.* 69, (2), 580-588 (1981).
11. J. W. Mimbs, M. O'Donnell, D. Bauwens, J. G. Miller, and B. E. Sobel, "The Dependence of Ultrasonic Attenuation and Backscatter on Collagen Content in Dog and Rabbit Hearts", *Circulation Research* 47, 49-58 (1980).
12. M. O'Donnell, L. J. Busse, and J. G. Miller, "Piezoelectric Transducers", in *Methods of Experimental Physics: Ultrasonics* (Vol. 19), L. Marton, treatise editor, P. D. Edmunds, volume editor (Academic Press, New York), Chapter 1, 29-65 (1981).
13. M. O'Donnell and J. G. Miller, "Quantitative Broadband Ultrasonic Backscatter: An Approach to Non-Destructive Evaluation in Acoustically Inhomogeneous Materials", *J. Appl. Phys.* 52, 1056-1065 (1981).
14. J. W. Mimbs, D. B. Bauwens, R. D. Cohen, M. O'Donnell, J. G. Miller, and B. E. Sobel, "Effects of Myocardial Ischemia on Quantitative Ultrasonic Backscatter and Identification of Responsible Determinants", *Circulation Research* 49, 89-96 (1981).
15. M. O'Donnell, E.T. Jaynes, and J.G. Miller, "Kramers-Kronig Relationship Between Ultrasonic Attenuation and Phase Velocity", *J. Acoust. Soc. Am.* 69, (3), 696-701 (1981).
16. J. W. Mimbs, M. O'Donnell, J. G. Miller, and B. E. Sobel, "Detection of Cardiomyopathic Changes Induced by Doxorubicin Based on Quantitative Analysis of Ultrasonic

- Backscatter", *Am. J. Cardiology* 47,1056-1060 (1981).
17. M. O'Donnell, "Phase-Insensitive Pulse-Echo Imaging", *Ultrasonic Imaging* 4, 321-335 (1982).
 18. M. O'Donnell, "Quantitative Ultrasonic Backscatter Measurements in the Presence of Phase Distortion", *J. Acoust. Soc. Am.* 72, 1719-1725 (1982).
 19. M. O'Donnell, "A Proposed Annual Array Imaging System for Contact B-Scan Applications", *IEEE Trans. on Sonics and Ultrasonics* SU-29, 331-338 (1982).
 20. M. O'Donnell, "Quantitative Volume Backscatter Imaging," *IEEE Trans. on Sonics and Ultrasonics* SU-30, 26-36 (1982).
 21. M. O'Donnell, "Effects of Diffraction on Measurements of the Frequency Dependent Ultrasonic Attenuation", *IEEE Trans. on Biomedical Eng.* BME-30, 320-326 (1983).
 22. M. O'Donnell and W.A. Edelstein, "NMR Imaging in the Presence of Magnetic Field Inhomogeneities and Gradient Field Nonlinearities", *Med. Physics* 12, 20-26 (1985).
 23. P. M. Joseph, L. Axel, and M. O'Donnell, "Potential Problems with Selective Pulses in NMR Imaging Systems", *Med. Phys.* 11, 772-777 (1984). (Best paper award – Medical Imaging, 1984).
 24. M. O'Donnell, "NMR Blood Flow Imaging Using Multi-Echo, Phase Contrast Sequences", *Med. Phys.* 12 59-64 (1985). (Best paper award – Medical Imaging, 1985).
 25. M. O'Donnell, and H. F. Reilly, "Clinical Evaluation of the B'-Scan", *IEEE Trans. on Sonics and Ultrasonics* SU-32, 450-457 (1985).
 26. G. H. Glover, C. E. Hayes, N. J. Pelc, W. A. Edelstein, O. M. Mueller, H. R. Hart, C. J. Hardy, M. O'Donnell, and W. D. Barber, "Comparison of Linear and Circular Polarization for Magnetic Resonance Imaging," *J. Magn. Reson.* 64, 255-270 (1985).
 27. M. O'Donnell and W. J. Adams, "Selective Time Reversal Pulses for NMR Imaging", *Magn. Reson. Imag.* 3, 377-382 (1985).
 28. M. O'Donnell, J. C. Gore, and W. J. Adams, "Toward an Automated Analysis System for NMR Imaging I: Efficient Pulse Sequences for Simultaneous T_1 - T_2 Imaging", *Med Phys.* 13 182-190 (1986).
 29. M. O'Donnell, J. C. Gore, and W. J. Adams, "Toward an Automated Analysis System for NMR Imaging II: Initial Segmentation Algorithm", *Med. Phys.* 13, 293 -297 (1986).
 30. S. Majumdar, S. C. Orphanoudakis, A. Gimitro, M. O'Donnell, and J. C. Gore, "Errors in Measurement of T_2 Using Multi-Echo MRI Techniques: I. Effects of RF Pulse Imperfections, *Magn. Reson. in Med.* 3, 397-405 (1986).
 31. S. Majumdar, S. C. Orphanoudakis, A. Gimitro, M. O'Donnell, and J. C. Gore, "Errors in Measurement of T_2 Using Multi-Echo MRI Techniques: II. Effects of Static Field Inhomogeneity, *Magn. Reson. in Med.* 3, 562-570 (1986).
 32. J.C. Gore, M. O'Donnell, C.F. Pope, S. Majumdar, and W.J. Adams, "Quantitative NMR Tissue Characterization using Calculated Images and Automated Image Segmentation", in *Magnetic Resonance Imaging (2nd Edition)*, C.L. Partain et al editor, (W.B. Saunders and Co., Philadelphia), Chapter 9, 117-131 (1987).

33. R. Kuc, K. Haghkerdar, and M. O'Donnell, "Presence of Cepstral Peak in Random Reflected Ultrasound Signals", *Ultrasonic Imaging* 8, 196-212 (1986).
34. M. O'Donnell and S.D. Silverstein, "Optimum Displacement for Compound Image Generation in Medical Ultrasound", *IEEE Transactions on Ultrasonics, Ferroelectrics and Frequency Control* UFFC-35, 470-476 (1988).
35. S.D. Silverstein and M. O'Donnell, "Theory of Frequency and Temporal Compounding in Coherent Imaging: Speckle Suppression and Image Resolution", *Journal of the Optical Society of America* A 5, 104-113 (1988).
36. C.J. Hardy, P.A. Bottomley, M. O'Donnell, and P. Roemer, "Optimization of Two Dimensional Spatially Selective NMR Pulses by Simulated Annealing", *J. Mag. Res.* 77, 223-250 (1988).
37. S.W. Flax and M. O'Donnell, "Phase Aberration Correction in Medical Ultrasound: Basic Principles", *IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control* UFFC-35, 758-767 (1988).
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EXPERIENCE: Following his graduate work, Dr. O'Donnell moved to Washington University in St. Louis, MO as a postdoctoral fellow in the Physics Department working on applications of ultrasonics to medicine and non-destructive testing. He subsequently held a joint appointment as a Senior Research Associate in the Physics Department and a Research Instructor of Medicine in the Department of Medicine at Washington University. In 1980 he moved to General Electric Corporate Research and Development Center in Schenectady, NY, where he continued to work on medical electronics, including MRI and ultrasound imaging systems. During the 1984-1985 academic year, he was a visiting fellow in the Department of Electrical Engineering at Yale University in New Haven, CT investigating automated image analysis systems. In 1990, Dr. O'Donnell became a Professor of Electrical Engineering & Computer Science at the University of Michigan in Ann Arbor, MI. Starting in 1997, he held a joint appointment as Professor of Biomedical Engineering. In 1998, he was named the Jerry W. and Carol L. Levin Professor of Engineering. From 1999-2006, he also served as Chair of the Biomedical Engineering Department. During 2006, he moved to the University of Washington in Seattle, WA where he is now the Frank and Julie Jungers Dean of Engineering and also a Professor of Bioengineering. His most recent research has explored new imaging modalities in biomedicine, including elasticity imaging, *in vivo* microscopy, optoacoustic arrays, optoacoustic contrast agents for molecular imaging and therapy, thermal strain imaging, and catheter based devices.

Dr. O'Donnell has over 325 archival publications and 55 patents. He has won numerous awards, including the Achievement Award from the IEEE Ultrasonics, Ferroelectrics & Frequency Control Society. He is a fellow of the IEEE and AIMBE and is a member of the National Academy of Engineering.