

MICHALAKIS (MIKE) AVERKIOU

Curriculum Vitae

Bioengineering
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EDUCATIONAL HISTORY

The University of Texas at Austin, Austin, TX
Ph.D., Mechanical Engineering, May 1994
"Experimental investigation of propagation and reflection phenomena in finite amplitude sound beams"

The University of Texas at Austin, Austin, TX
M.S., Mechanical Engineering, August 1989
"Reflection of Focused Sound from Curved Rigid Surfaces"

The University of Texas at Austin, Austin, TX
B.S., Mechanical Engineering, August 1987

EMPLOYMENT HISTORY

University of Washington, Seattle, WA, USA
Professor, Department of Bioengineering, 2023-
Associate Professor (tenured), Department of Bioengineering, 2019-2022
Associate Professor (tenure track), Department of Bioengineering, 2015-2019
Ultrasound-based Washington Molecular Imaging and Therapy Center (uWAMIT), 2015-
Affiliate Associate Professor, CIMU/APL, 2015-

University of Cyprus, Nicosia, Cyprus
Associate Professor (tenured), Dept. of Mechanical and Manufacturing Engineering, 2010-2014
Assistant Professor (tenure track), Dept. of Mechanical and Manuf. Engineering, 2005-2010
Director of Biomedical Ultrasound Lab, 2005-2014

Philips Medical Systems, Bothell, Washington, USA
Corporate Technical Staff, Oncology Investigations Lead, Research and Development, 1999-2005

ATL Ultrasound (acquired by Philips in 1999), Bothell, Washington, USA
Principal Engineer/Systems Design Engineer, 1996-1999

University of Washington, Seattle, Washington, USA
Postdoctoral Research Scientist, Applied Physics Laboratory, Department of Acoustics and Electromagnetics, 1994-1996

Cyprus National Guard
Second Lieutenant, 1981-1983

AWARDS AND HONORS

Faculty Appreciation for Career Education & Training (FACET, UW) Award, 2019
Institute of Electrical and Electronics Engineers (IEEE) Senior Member, since 2011
Acoustical Society of America, Fellow, since October 2009
European Commission, Marie Curie Chair of Excellence (highest award level), 2006-2009
Philips Medical Systems, Engineering Excellence Award, 1997, 1999, 2000
ATL Ultrasound, Technical Fellow Award, for developing Tissue Harmonic Imaging, 1998
Fulbright/AMIDEAST Scholarship, University of Texas at Austin, 1985-1987
Engineering Scholar, University of Texas at Austin, 1985, 1986, 1987
Dean's List, University of Texas at Austin, 1983-1987
National Deans List 1984 & 1987
Tau Beta Pi Engineering Honor Fraternity
Pi Tau Sigma Honorary Mechanical Engineering Fraternity
Beta Alpha Phi International Honor Society

AFFILIATIONS AND OTHER APPOINTMENTS

Affiliate Associate Professor, Applied Physics Laboratory, Center for Industrial and Medical Ultrasound, University of Washington, Seattle, WA, USA, 2007-

Visiting Professor, Experimental Medicine, Hammersmith Hospital, Imperial College London, London, UK 2011-2014

PUBLICATIONS

Citations (as of Dec. 2023)

Google Scholar: 6326 Citations, h-index 40

Scopus: 3011 Citations, h-index 28

Refereed archival journal publications

1. Krolak C, Dighe M, Clark A, Shumaker M, Yeung R, Barr RG, Kono Y, Averkiou M. Quantification of Hepatocellular Carcinoma Vascular Dynamics With Contrast-Enhanced Ultrasound for LI-RADS Implementation. *Invest Radiol.* 2023 Sep 19. Epub ahead of print. PMID: 37725492.
2. Voutouri C, Mpekris F, Panagi M, Krolak C, Michael C, Martin JD, Averkiou MA, Stylianopoulos T. Ultrasound stiffness and perfusion markers correlate with tumor volume responses to immunotherapy. *Acta Biomater.* 2023 Sep 1;167:121-134. Epub 2023 Jun 13. PMID: 37321529.
3. Juang EK, De Koninck LH, Vuong KS, Gnanaskandan A, Hsiao CT, Averkiou MA. Controlled Hyperthermia With High-Intensity Focused Ultrasound and Ultrasound Contrast Agent Microbubbles in Porcine Liver. *Ultrasound Med Biol.* 2023 Aug;49(8):1852-1860. Epub 2023 May 26. PMID: 37246049; PMCID: PMC10330369.
4. Lai TY, Averkiou MA. Contrast-Enhanced Ultrasound with Optimized Aperture Patterns and Bubble Segmentation Based on Echo Phase. *Ultrasound Med Biol.* 2023 Jan;49(1):186-202.

5. Keller SB, Lai TY, De Koninck L, Averkiou MA. Investigation of the Phase of Nonlinear Echoes from Microbubbles During Amplitude Modulation. *IEEE Trans Ultrason Ferroelectr Freq Control*. 2022 Mar;69(3):1032-1040.
6. C. Voutouri, M. Panagi, F. Mpekris, A. Stylianou, C. Michael, M. A. Averkiou, J. D. Martin, T. Stylianopoulos. Endothelin Inhibition Potentiates Cancer Immunotherapy Revealing Mechanical Biomarkers Predictive of Response. *Adv. Therap.* 4(9) 2021: 2000289.
7. Keller SB, Averkiou MA. The Role of Ultrasound in Modulating Interstitial Fluid Pressure in Solid Tumors for Improved Drug Delivery. *Bioconjug Chem*. 2022 Jun 15;33(6):1049-1056. doi: 10.1021/acs.bioconjchem.1c00422. Epub 2021 Sep 12. PMID: 34514776.
8. Keller SB, Wang YN, Totten S, Yeung RS, Averkiou MA. Safety of Image-Guided Treatment of the Liver with Ultrasound and Microbubbles in an in Vivo Porcine Model. *Ultrasound Med Biol*. 2021 Nov;47(11):3211-3220.
9. Clark A, Bonilla S, Suo D, Shapira Y, Averkiou M. Microbubble-Enhanced Heating: Exploring the Effect of Microbubble Concentration and Pressure Amplitude on High-Intensity Focused Ultrasound Treatments. *Ultrasound Med Biol*. 2021 Aug;47(8):2296-2309.
10. Lai TY, Averkiou MA. Linear Signal Cancellation of Nonlinear Pulsing Schemes in a Verasonics Research Scanner. *IEEE Trans Ultrason Ferroelectr Freq Control*. 2021 May;68(5):1721-1728.
11. Keller SB, Sheeran PS, Averkiou MA. Cavitation Therapy Monitoring of Commercial Microbubbles With a Clinical Scanner. *IEEE Trans Ultrason Ferroelectr Freq Control*. 2021 Apr;68(4):1144-1154. PMID: 33112743.
12. Averkiou MA, Juang EK, Gallagher MK, Cuevas MA, Wilson SR, Barr RG, Carson PL. Evaluation of the Reproducibility of Bolus Transit Quantification With Contrast-Enhanced Ultrasound Across Multiple Scanners and Analysis Software Packages-A Quantitative Imaging Biomarker Alliance Study. *Invest Radiol*. 2020 Oct;55(10):643-656.
13. Keller SB, Suo D, Wang YN, Kenerson H, Yeung RS, Averkiou MA. Image-Guided Treatment of Primary Liver Cancer in Mice Leads to Vascular Disruption and Increased Drug Penetration. *Front Pharmacol*. 2020 Sep 30;11:584344.
14. Malone CD, Fetzer DT, Monsky WL, Itani M, Mellnick VM, Velez PA, Middleton WD, Averkiou MA, Ramaswamy RS. "Contrast-enhanced US for the Interventional Radiologist: Current and Emerging Applications." *Radiographics*. 2020 Mar-Apr;40(2):562-588.
15. Averkiou MA, Bruce MF, Powers JE, Sheeran PS, Burns PN. "Imaging Methods for Ultrasound Contrast Agents," *Ultrasound Med Biol*. 2020 Mar;46(3):498-517.
16. Butler M, Perperidis A, Zahra JLM, Silva N, Averkiou M, Duncan WC, McNeilly A, Sboros V. "Differentiation of vascular characteristics using contrast enhanced ultrasound imaging" *Ultrasound Med Biol*. 2019. June 14, *Ultrasound Med Biol*. 2019 Sep;45(9):2444-2455.
17. Kanoulas E, Butler M, Rowley CL, Voulgaridou V, Diamantis K, Fox K, Duncan WC, McNeilly AS, Averkiou M, Wijkstra H, Mischi M, Wilson RS, Lu W, Sboros V. "Super-Resolution Contrast Enhanced Ultrasound Methodology for the Identification of in-Vivo Vascular Dynamics in 2D." *Invest Radiol*. 2019 Aug;54(8):500-516.
18. Lai TY, Bruce M, Averkiou MA. "Modeling of the Acoustic Field Produced by Diagnostic Ultrasound Arrays in Plane and Diverging Wave Modes." *IEEE Trans Ultrason Ferroelectr Freq Control*. 2019 Jul;66(7):1158-1169.
19. Monsky W, Keravnou C, Averkiou M. "Contrast-enhanced ultrasound to ultrasound fusion during microwave ablation: feasibility study in a perfused porcine liver model." *J Ultrasound*. 2019 Sep;22(3):323-335.
20. Keller S, Bruce M, Averkiou MA. Ultrasound Imaging of Microbubble Activity during Sonoporation Pulse Sequences. *Ultrasound Med Biol*. 2019 Mar; 45(3):833-845.
21. Juang EK, De Cock I, Keravnou C, Gallagher MK, Keller SB, Zheng Y, Averkiou M. Engineered 3D microvascular networks for the study of ultrasound-microbubble-mediated drug delivery. *Langmuir*. 2019 Aug 6;35(31):10128-10138.

22. Dietrich CF, Averkiou M, et al. How to perform Contrast-Enhanced Ultrasound (CEUS). *Ultrasound Int Open* 2018 Jan; 4(1): E2-E15.
23. Averkiou MA, Keravnou C, Izamis ML, Leen E. Evaluation of perfusion quantification methods with ultrasound contrast agents in a machine-perfused pig liver. *Ultraschall Med.* 2018 Feb;39(1):69-79.
24. Keravnou C, De Cock I, Lentaker I, Izamis ML, Averkiou MA. Microvascular injury and perfusion changes induced by ultrasound and microbubbles in a machine-perfused pig liver. *Ultrasound Med Biol.* 2016 Nov;42(11):2676-2686.
25. Christophides D, Leen E, Averkiou M. Evaluation of the accuracy of liver lesion DCEUS quantification with respiratory gating. *IEEE Trans Med Imaging.* 2016 Feb;35(2):622-9.
26. Christophides D, Leen EL, Averkiou MA. Improvement of the accuracy of liver lesion DCEUS quantification with the use of automatic respiratory gating. *Eur Radiol.* 2016 Feb;26(2):417-24.
27. Keravnou CP, Izamis ML, Averkiou MA. Method for Estimating the Acoustic Pressure in Tissues Using Low-Amplitude Measurements in Water. *Ultrasound Med Biol.* 2015 Nov;41(11):3001-12.
28. Keravnou C, Mannaris C, Averkiou MA. Accurate measurement of microbubble response to ultrasound with a diagnostic ultrasound scanner. *IEEE Trans Ultrason Ferroelectr Freq Control.*, 2015 Jan; 62(1):176-84.
29. Powers J, Averkiou M. Principles of cerebral ultrasound contrast imaging. *Front Neurol Neurosci.* 2015;36:1-10.
30. Dharmarajah B, McKinnon TA, Keravnou C, Averkiou MA, Leen EL, Davies AH. Contrast-Enhanced Ultrasound for Thrombus Dissolution in an In Vitro Model of Acute Deep Venous Thrombosis. *J Vasc Surg Venous Lymphat Disord.* 2015 Jan;3(1):121.
31. Perperidis A, Thomas D, Averkiou M, Duncan C, McNeilly A, Butler M, Sboros V. Automatic dissociation between microvasculature and larger vessels for ultrasound contrast imaging. *Conf Proc IEEE Eng Med Biol Soc.* 2014 Aug;2014:5076-9.
32. Izamis ML, Efstathiades A, Keravnou C, Georgiadou S, Martins PN, Averkiou MA. Effects of air embolism size and location on porcine hepatic microcirculation in machine perfusion. *Liver Transpl.* 2014 May;20(5):601-11.
33. Keravnou CP, Averkiou MA. Harmonic generation with a dual frequency pulse. *J Acoust Soc Am.* 2014 May;135(5):2545-52.
34. Izamis ML, Efstathiades A, Keravnou C, Leen EL, Averkiou MA. Dynamic contrast-enhanced ultrasound of slaughterhouse porcine livers in machine perfusion. *Ultrasound Med Biol.* 2014 Sep;40(9):2217-30.
35. Christophides D, Leen E, Averkiou MA. "Automatic Respiratory Gating for Contrast Ultrasound Evaluation of Liver Lesions." *IEEE Trans Ultrason Ferroelectr Freq Control.* 2014 Jan; 61(1): 25-32. (front cover image)
36. Mannaris C, Efthymiou E, Meyre ME, Averkiou MA. In vitro localized release of thermosensitive liposomes with ultrasound-induced hyperthermia. *Ultrasound Med Biol.* 2013 Nov;39(11):2011-20.
37. Escoffre JM, Mannaris C, Geers B, Novell A, Lentacker I, Averkiou M, Bouakaz A. Doxorubicin liposome-loaded microbubbles for contrast imaging and ultrasound-triggered drug delivery. *IEEE Trans Ultrason Ferroelectr Freq Control.* 2013 Jan;60(1):78-87.
38. Dietrich CF, Averkiou MA, Correas JM, Lassau N, Leen E, Piscaglia F. An EFSUMB introduction into Dynamic Contrast-Enhanced Ultrasound (DCE-US) for quantification of tumour perfusion. *Ultraschall Med.* 2012 Aug;33(4):344-51. Epub 2012 Jul 27.
39. Mannaris C, Averkiou MA. Investigation of microbubble response to long pulses used in ultrasound-enhanced drug delivery. *Ultrasound Med Biol.* 2012 Apr;38(4):681-91.

40. Leen E, Averkiou M, Arditi M, Burns P, Bokor D, Gauthier T, Kono Y, Lucidarme O. Dynamic contrast enhanced ultrasound assessment of the vascular effects of novel therapeutics in early stage trials. *Eur Radiol*. 2012 Jul;22(7):1442-50.
41. Thapar A, Shalhoub J, Averkiou M, Mannaris C, Davies AH, Leen EL. Dose-dependent artifact in the far wall of the carotid artery at dynamic contrast-enhanced US. *Radiology*. 2012 Feb;262(2):672-9.
42. Gauthier TP, Averkiou MA, Leen EL. Perfusion quantification using dynamic contrast-enhanced ultrasound: the impact of dynamic range and gain on time-intensity curves. *Ultrasonics*. 2011 Jan;51(1):102-6.
43. Sboros V, Averkiou M, Lampaskis M, Thomas DH, Silva N, Strouthos C, Docherty J, McNeilly AS. Imaging of the ovine corpus luteum microcirculation with contrast ultrasound. *Ultrasound Med Biol*. 2011 Jan;37(1):59-68.
44. Strouthos C, Lampaskis M, Sboros V, McNeilly A, Averkiou M. Indicator dilution models for the quantification of microvascular blood flow with bolus administration of ultrasound contrast agents. *IEEE Trans Ultrason Ferroelectr Freq Control*. 2010 Jun;57(6):1296-310.
45. Lampaskis M, Averkiou M. Investigation of the relationship of nonlinear backscattered ultrasound intensity with microbubble concentration at low MI. *Ultrasound Med Biol*. 2010 Feb;36(2):306-12.
46. Averkiou M, Lampaskis M, Kyriakopoulou K, Skarlos D, Klouvas G, Strouthos C, Leen E. Quantification of tumor microvascularity with respiratory gated contrast enhanced ultrasound for monitoring therapy. *Ultrasound Med Biol*. 2010 Jan;36(1):68-77.
47. Powers J, Averkiou M, Bruce M. Principles of cerebral ultrasound contrast imaging. *Cerebrovasc Dis*. 2009;27 Suppl 2:14-24.
48. Leen E, Kumar S, Khan SA, Low G, Ong KO, Tait P, Averkiou M. Contrast-enhanced 3D ultrasound in the radiofrequency ablation of liver tumors. *World J Gastroenterol*. 2009 Jan 21;15(3):289-99.
49. Fowlkes, J.B., Abramowicz, J.S., Church, C.C., Holland, C.K., Miller, D.L., O'Brien Jr., W.D., Sanghvi, N.T., Stratmeyer, M.E., Zachary, J.F., Deng, C.X., Harris, G.R., Herman, B.A., Hynynen, K.H., Merritt, C.R.B., Thomenius, K.E., Bailey, M.R., Carson, P.L., Carstensen, E.L., Frizzell, L.A., Nyborg, W.L., Barnett, S.B., Duck, F.A., Edmonds, P.D., Ziskin, M.C., Abbott, J.G., Dalecki, D., Dunn, F., Greenleaf, J.F., Salvesen, K.A., Siddiqi, T.A., Averkiou, M.A., Brayman, A.A., Everbach, E.C., Wible Jr., J.H., Wu, J. & Simpson, D.G., "American Institute of Ultrasound in Medicine consensus report on potential bioeffects of diagnostic ultrasound: Executive summary", *Journal of Ultrasound in Medicine*, **27**(4), pp. 503-515, 2008.
50. Miller DL, Averkiou MA, Brayman AA, Everbach EC, Holland CK, Wible JH Jr, Wu J. Bioeffects considerations for diagnostic ultrasound contrast agents. *J Ultrasound Med*. 2008 Apr;27(4):611-32; quiz 633-6. Review.
51. M. Averkiou and J. Powers, "Ultrasound contrast media in the characterization of soft tissue lesions: ongoing research," *MEDICAMUNDI*, 51/2+3, 80-94, 2007.
52. V. A. Khokhlova, A. E. Ponomarev, M. A. Averkiou, and L. A. Crum, "Nonlinear pulsed ultrasound beams radiated by rectangular focused diagnostic transducers," *Ac. Physics* **52**(4), 560-570, 2006.
53. J. Guan, T. J. Matula, and M. Averkiou, "Imaging the destruction of individual ultrasound contrast microbubbles with diagnostic ultrasound," *Acoustic Research Letters Online* **5**, pp. 165-169, 2004.
54. Bruce M, Averkiou M, Tiemann K, Lohmaier S, Powers J, Beach K. Vascular flow and perfusion imaging with ultrasound contrast agents. *Ultrasound Med Biol*. 2004 Jun;30(6):735-43.
55. Averkiou M, Powers J, Skyba D, Bruce M, Jensen S. Ultrasound contrast imaging research. *Ultrasound Q*. 2003 Mar;19(1):27-37.

56. Sboros V, Moran CM, Anderson T, Gatzoulis L, Criton A, Averkiou M, Pye SD, McDicken WN. An in vitro system for the study of ultrasound contrast agents using a commercial imaging system. *Phys Med Biol*. 2001 Dec;46(12):3301-21.
57. Simpson DH, Burns PN, Averkiou MA. Techniques for perfusion imaging with microbubble contrast agents. *IEEE Trans Ultrason Ferroelectr Freq Control*. 2001 Nov;48(6):1483-94.
58. Averkiou MA. Tissue harmonic ultrasonic imaging. *Comptes Rendus de l'Academie des Sciences - Series IV: Physics, Astrophysics*. 2001;2(8):1139-51.
59. Kashcheeva SS, Sapozhnikov OA, Khokhlova VA, Averkiou MA, Crum LA. Nonlinear distortion and attenuation of intense acoustic waves in lossy media obeying a frequency power law. *Ac. Physics*. 2000;46(2):170-177.
60. Makin IR, Averkiou MA, Hamilton MF. Second-harmonic generation in a sound beam reflected and transmitted at a curved interface. *J Acoust Soc Am*. 2000 Oct;108(4):1505-13.
61. Burns PN, Hope Simpson D, Averkiou MA. Nonlinear imaging. *Ultrasound Med Biol*. 2000 May;26 Suppl 1:S19-22.
62. Sboros V, Moran CM, Anderson T, Criton A, Averkiou M, McDicken WN. Assessment of the properties of ultrasound contrast agents using a commercial scanner: Preliminary results. *Ultrasound Med Biol*. 2000;26(SUPPL. 2).
63. Averkiou MA, Cleveland RO. Modeling of an electrohydraulic lithotripter with the KZK equation. *J Acoust Soc Am*. 1999 Jul;106(1):102-12.
64. Becher H, Tiemann K, Schlosser T, Pohl C, Nanda NC, Averkiou MA, Powers J, Lüderitz B. Improvement in Endocardial Border Delineation Using Tissue Harmonic Imaging. *Echocardiography*. 1998 Jul;15(5):511-518.
65. Morgan KE, Averkiou M, Ferrara K. The effect of the phase of transmission on contrast agent echoes. *IEEE Trans Ultrason Ferroelectr Freq Control*. 1998;45(4):872-5.
66. Averkiou MA, Hamilton MF. Nonlinear distortion of short pulses radiated by plane and focused circular pistons. *J Acoust Soc Am*. 1997 Nov;102(5 Pt 1):2539-48.
67. Averkiou MA, Hamilton MF. Measurements of harmonic generation in a focused finite-amplitude sound beam. *J Acoust Soc Am*. 1995 Dec;98(6):3439-42.
68. Averkiou MA, Lee YS, and Hamilton MF. Self demodulation of amplitude and frequency modulated pulses in a viscous fluid. *J. Acoust. Soc. Am*. 1993; 94, 2876-2883.

Conference proceedings and other non-journal articles

- **Fully refereed publications**

1. C. Krolak, M. Shumaker, A. Clark, M. Dighe, and M. Averkiou, "Tumor perfusion quantification with parametric processing of contrast-enhanced ultrasound," *28th European Symposium on Ultrasound Contrast Imaging*, pg. 63-65, Rotterdam, The Netherlands, Jan. 2023.
2. L. De Koninck, E. Juang, K. Vuong, A. Gnanaskandan, and M. Averkiou, "Targeted local hyperthermia with local and systemic injections of ultrasound contrast agents during HIFU," *28th European Symposium on Ultrasound Contrast Imaging*, pg. 124-126, Rotterdam, The Netherlands, Jan. 2023.
3. C. Krolak, A. Clark, M. Dighe, and M. Averkiou, "Characterization of hepatocellular carcinoma perfusion metrics with quantitative contrast-enhanced ultrasound," In *2022 IEEE International Ultrasonics Symposium (IUS)* (pp. xx-xx). IEEE.
4. C. Krolak, A. Clark, M. Dighe, and M. Averkiou, "Evaluation and early detection of hepatocellular carcinoma with quantitative contrast-enhanced ultrasound," *27th European Symposium on Ultrasound Contrast Imaging*, pg. 102-104, Rotterdam, The Netherlands, Jan. 2022.

5. L. De Koninck, C. Krolak, S. Keller, T-Y Lai, and M. Averkiou, "Improved tissue signal suppression through phase segmentation during amplitude modulation with Sonazoid," *27th European Symposium on Ultrasound Contrast Imaging*, pg. 54-57, Rotterdam, The Netherlands, Jan. 2022.
6. E. Juang, A. Gnanaskandan, CT Hsiao, L. De Koninck, and M. Averkiou, "High-intensity Focused Ultrasound and Microbubble Induced Hyperthermia in Ex Vivo Porcine Liver," In *2021 IEEE International Ultrasonics Symposium (IUS)* (pp. xx-xx). IEEE.
7. S. Keller, TY Lai, and M. Averkiou, "Investigation of the phase of the fundamental component of nonlinear echoes in amplitude modulation," In *2021 IEEE International Ultrasonics Symposium (IUS)* (pp. xx-xx). IEEE.
8. Keller S, Wang YN, Suo D, Yeung R, & Averkiou M. "Safety of image-guided ultrasound cavitation treatment for liver cancer in an in vivo porcine model." *26st European Symposium on Ultrasound Contrast Imaging*, pg. 95-97, Rotterdam, The Netherlands, Jan. 2021.
9. Lai, TY, and Averkiou, MA. "Contrast enhanced ultrasound with optimized aperture patterns," *26st European Symposium on Ultrasound Contrast Imaging*, pg. 53-56, Rotterdam, The Netherlands, Jan. 2021.
10. Keller, S., Suo, D., Wang, Y. N., Kenerson, H., Yeung, R., & Averkiou, M. (2020, October). Ultrasound and microbubble-mediated cancer treatment with a clinical scanner: results on safety and efficacy. In *2020 IEEE International Ultrasonics Symposium (IUS)* (pp. xx-xx). IEEE.
11. Lai, T., Averkiou, M. (2020, October). Linear signal cancellation of nonlinear pulsing schemes in a Verasonics research scanner. In *2020 IEEE International Ultrasonics Symposium (IUS)* (pp. xx-xx). IEEE.
12. Keller S, Matsuyoshi N, & Averkiou M. "Cavitation therapy monitoring of commercial microbubbles with a clinical scanner." *25st European Symposium on Ultrasound Contrast Imaging*, pg. 120-123, Rotterdam, The Netherlands, Jan. 2020. (won the 1st prize poster award)
13. Keller S, Suo D, Wang YN, Kenerson H, Sestero A, Yeung R, & Averkiou M. "Vascular disruption and enhanced drug penetration performed in a mouse model of HCC with a clinical scanner." *25st European Symposium on Ultrasound Contrast Imaging*, pg. 154-156, Rotterdam, The Netherlands, Jan. 2020.
14. Clark A, Bonilla S, Suo D, Averkiou M. "Enhanced heating with microbubbles in high intensity focused ultrasound applications." *25st European Symposium on Ultrasound Contrast Imaging*, pg. 157-160, Rotterdam, The Netherlands, Jan. 2020.
15. Keller, S., Suo, D., Wang, Y. N., Kenerson, H., Sestero, A., Yeung, R., & Averkiou, M. (2019, October). Image-guided doxorubicin delivery with ultrasound and microbubbles in a mouse model of hepatocellular carcinoma using a diagnostic ultrasound system. In *2019 IEEE International Ultrasonics Symposium (IUS)* (pp. 1527-1530). IEEE.
16. Lai, T. Y., Kou, S., Bruce, M., Loupas, T., & Averkiou, M. A. (2019, October). Harmonic Generation in Tissue with Matrix Arrays for 4D Cardiac THI. In *2019 IEEE International Ultrasonics Symposium (IUS)* (pp. 1834-1837). IEEE.
17. S. Keller, M. Averkiou, "Real-time Cavitation Therapy Monitoring with a Clinical Scanner," *24st European Symposium on Ultrasound Contrast Imaging*, pg. 199-201, Rotterdam, The Netherlands, Jan. 2019.
18. D. Suo, E. Juang, S. Keller, C. Pitts, M. Averkiou, "Image-guided bubble-enhanced thermal ablation," *24st European Symposium on Ultrasound Contrast Imaging*, pg. 73-75, Rotterdam, The Netherlands, Jan. 2019.

19. Lai, T. Y., & Averkiou, M. A. (2018, October). The Linear and Nonlinear Ultrasound Field of Convex Arrays Operating in a Diverging Wave Mode. In *2018 IEEE International Ultrasonics Symposium (IUS)* (pp. 1-4). IEEE.
20. T. Lai, M. Bruce, M. Averkiou, "Modeling the acoustic field produced by diagnostic ultrasound arrays in plane wave mode," *23rd European Symposium on Ultrasound Contrast Imaging*, pg. 132-135, Rotterdam, The Netherlands, Jan. 2018.
21. S. Keller, M. Bruce, M. Averkiou, "High Resolution Ultrafast Imaging of Microbubble Activity During Sonoporation," *23rd European Symposium on Ultrasound Contrast Imaging*, pg. 85-88, Rotterdam, The Netherlands, Jan. 2018. (won the 1st prize poster award)
22. Keller, S., Zong, R., Hannah, A., Bruce, M., & Averkiou, M. (2017, September). High resolution ultrafast imaging of microbubble destruction during sonoporation. In *2017 IEEE International Ultrasonics Symposium (IUS)* (pp. 1-4). IEEE.
23. E. Juang, I. De Cock, C. Keravnou, S. Keller, M. Gallagher, Y. Zeng, M. Averkiou, "Engineered 3D microvessels for the study of angiogenesis and sonoporation," *22nd European Symposium on Ultrasound Contrast Imaging*, pg. 104-107, Rotterdam, The Netherlands, Jan. 2017. (won the 1st prize poster award)
24. I. De Cock, E. Juang, C. Keravnou, S. Keller, M. Gallagher, Y. Zeng, M. Averkiou, "Sonoporation in 3D endothelialized microvascular networks," *22nd European Symposium on Ultrasound Contrast Imaging*, pg. 23-25, Rotterdam, The Netherlands, Jan. 2017.
25. Rousou CM, Christofides D, Polyviou P, Marcou Y, Kakouri E, Averkiou MA, "Evaluation of patient response to neoadjuvant therapy with the use of dynamic contrast enhanced ultrasound (DCEUS): Work in progress," *IFMBE Proceedings*, volume 57, pg. 742-745, 2016.
26. M. Averkiou, C. Keravnou, ML. Izamis, and E. Leen, "Can bolus wash-in/washout analysis measure flow changes in the liver microvasculature?" *21st European Symposium on Ultrasound Contrast Imaging*, pg. 132-133, Rotterdam, The Netherlands, Jan. 2016.
27. S. Turco, C. Keravnou, R. van Sloun, H. Wijkstra, M. Averkiou, M. Mischi, "Effects of perfusion and vascular architecture on contrast dispersion: validation in ex-vivo porcine liver under machine perfusion," in *Proceedings of the 2016 IEEE Ultrasonics Symposium*, pp. 1-4, 2016.
28. Dharmarajah B, McKinnon TA, Keravnou C, Averkiou M, Laffan MA, Leen ELS, Davies AH, "Thrombus dissolution using contrast enhanced ultrasound in an in-vitro model of acute deep vein thrombosis," *BRITISH JOURNAL OF SURGERY* Volume: 102 Supplement: 5 Pages: 37-38 2015.
29. Perperidis A, Thomas D, Averkiou M, Duncan C, McNeilly A, Butler M, Sboros V., "Automatic dissociation between microvasculature and larger vessels for ultrasound contrast imaging," *Conf Proc IEEE Eng Med Biol Soc.* 2014 Aug;2014:5076-9.
30. M. Averkiou, D. Christofides, A. Nicolaidis, B. Dharmarajah, A. Thapar, Alun Davies and E. Leen, "Evaluation of carotid plaque perfusion using DCEUS," *19th European Symposium on Ultrasound Contrast Imaging*, pg. 179-181, Rotterdam, The Netherlands, Jan. 2014.
31. ML Izamis, C. Keravnou, D. Christophides, E. Leen, and M. Averkiou, "Basic bolus kinetics explored in an ex vivo liver machine perfusion model," *19th European Symposium on Ultrasound Contrast Imaging*, pg. 90-93, Rotterdam, The Netherlands, Jan. 2014.
32. D. Christophides, E. Leen, and M. A. Averkiou, "Improvement of accuracy of liver lesion DCEUS quantification using automatic respiratory gating," *19th European Symposium on Ultrasound Contrast Imaging*, pg. 69-71, Rotterdam, The Netherlands, Jan. 2014.

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Patents

- 39 US and WIPO Patents. Most recent patent awarded Apr. 2022.
 - Key patents in the areas of tissue harmonic imaging, real-time perfusion imaging, therapeutic applications of ultrasound, perfusion quantification, and therapy monitoring.
 - Member of the IP committee of Philips Medical Systems (1999-2005) that evaluated and selected the patentable ideas and drafted the IP strategy.
 - Founding member of the University of Cyprus Patent Committee (2005-2013)
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24. M. A. Averkiou, "Ultrasonic diagnostic imaging system transmitter for sum and difference frequency imaging," United States Patent 6,494,839, Dec. 17, 2002.
25. J. E. Powers, M. A. Averkiou, M. Bruce, D. M. Skyba, R. R. Entrekin, J. D. Fraser, C. R. Cooley, B. S. Robinson, D. N. Roundhill, G. A. Schwartz, and P. R. Pesque, "Three dimensional ultrasonic diagnostic imaging with high density hexagonal acquisition," United States Patent 6,471,650, Oct. 29, 2002.
26. J. E. Powers, M. A. Averkiou, M. Bruce, D. M. Skyba, R. R. Entrekin, J. D. Fraser, C. R. Cooley, B. S. Robinson, D. N. Roundhill, G. A. Schwartz, and P. R. Pesque, "Ultrasonic diagnostic imaging of the coronary arteries," United States Patent 6,468,216, Oct. 22, 2002.
27. J. R. Jago, D. N. Roundhill, J. E. Powers, and M. A. Averkiou, "Ultrasonic harmonic imaging with adaptive image formation," United States Patent 6,458,083, Oct. 1, 2002.
28. M. A. Averkiou, "Ultrasonic diagnostic imaging of nonlinearly intermodulated and harmonic frequency components", United States Patent 6,440,075, Aug. 27, 2002.
29. M. A. Averkiou, "Ultrasonic diagnostic imaging with nonlinearly intermodulated frequency components", United States Patent 6,440,074, Aug. 27, 2002.
30. M. A. Averkiou, "Ultrasonic nonlinear imaging at fundamental frequencies", United States Patent 6,319,203, Nov. 20, 2001.
31. M. A. Averkiou, M. F. Bruce, and J. E. Powers, "Ultrasonic diagnostic imaging with contrast agents", United States Patent 6,315,729, Nov. 13, 2001.
32. D. N. Roundhill, M. A. Averkiou, and J. E. Powers, "Ultrasonic diagnostic imaging with blended tissue harmonic signals," United States Patent 6,283,919, Sept. 4, 2001.
33. M. A. Averkiou, J. E. Powers, P. N. Burns, D. N. Roundhill, J. J. Hwang, J. D. Wiggins, "Ultrasonic tissue harmonic imaging," United States Patent 6,251,074, Jun. 6, 2001.
34. M. A. Averkiou and J. E. Powers, "Ultrasonic pulse inversion harmonic separation with reduced motional effects," United States Patent 6,186,950, Feb. 13, 2001.
35. M. A. Averkiou, J. E. Powers, M. Bruce, D. M. Skyba, "Realtime ultrasonic imaging of perfusion using ultrasonic contrast agents," United States Patent 6,171,246, Jan. 9, 2001.

36. M. A. Averkiou, “Ultrasonic transmit pulses for nonlinear ultrasonic imaging”, United States Patent 5,980,457, Nov. 9, 1999.
37. D. N. Roundhill, and M. A. Averkiou, “Ultrasonic diagnostic imaging of harmonic frequencies with speckle reduction processing”, United States Patent 5,908,389, Jun. 1, 1999.
38. M. A. Averkiou, J. E. Powers, P. N. Burns, D. N. Roundhill, and J. J. Hwang, “Ultrasonic diagnostic imaging of response frequency differing from transmit frequency”, United States Patent 5,879,303, Mar. 9, 1999.
39. M. A. Averkiou, M. F. Bruce, and J. E. Powers, “Ultrasonic diagnostic imaging with contrast agents”, United States Patent 5,833,613, Nov. 10, 1998.

Abstracts, letters, non-refereed papers, technical reports

Other significant research dissemination (web sites, software, Wikis, etc.)

Averkiou Lab Webpage: <http://faculty.washington.edu/maverk/>

QIBA wiki: https://qibawiki.rsna.org/index.php/Ultrasound_CEUS_BC

General articles showcasing the clinical impact of my lab’s research:

1. College of Engineering: <https://www.engr.washington.edu/news/article/2021-07-13/hope-and-healing>
2. The Trend in Engineering: Advancing ultrasound technology for cancer diagnosis
3. UW Today: One researcher combats cancer with the help of UW doctors and his colleagues, 7/19/2021
4. IEEE Ultrasonics, Ferroelectrics and Frequency Control Society, Newsletter October 2021: <https://ieee-uffc.org/post/news/combating-cancer-contrast-enhanced-ultrasound>
5. ICUS, International Contrast Ultrasound Society, News releases October 2020, “Evaluation of the Reproducibility of Bolus Transit Quantification With Contrast-Enhanced Ultrasound Across Multiple Scanners and Analysis Software Packages — A Quantitative Imaging Biomarker Alliance Study” : <http://icus-society.org/http-icus-society-org-evaluation-of-the-reproducibility-of-bolus-transit-quantification-with-contrast-enhanced-ultrasound-across-multiple-scanners-and-analysis-software-packages-a-quantitative-imagi/>
6. Society of Radiologists in Ultrasound (SRU), American College of Radiology, Fall 2021 Newsletter, “CEUS More than tiny bubbles. A must read article that came out of UW,” <https://www.sru.org/Portals/0/2021/2021%20Fall%20Newsletter%20Final.pdf?ver=2021-10-01-111909-157×tamp=1633101575981>

Workshops—Courses at professional meetings (selection)

1. M. Averkiou, “Debate – Micron-sized contrast agents have a great future in clinical HIFU”, 19th ISTU, Barcelona, Spain, 2019. (invited)
2. M. Averkiou, Lecture on Biomedical Acoustics, Physical Acoustics Summer School, PASS 2016, *Acoustical Society of America*, Heber City Utah, 15-21 June 2016.
3. M. Averkiou, Lecture on Biomedical Acoustics, Physical Acoustics Summer School, PASS 2014, *Acoustical Society of America*, Heber City Utah, 28 May – 3 June 2014.
4. M. Averkiou, “Ultrasound: Physics, Imaging, Contrast Agents,” special course on MR guided focused ultrasound, EC Integrated Project “Sonodrugs”, Bordeaux, France, 11-15 May 2009.
5. M. Averkiou, “Nonlinear imaging techniques for ultrasound contrast agents,” 2nd Joint Workshop of French and Russian Acoustical Societies: Linear and nonlinear acoustics: Modern trends and applications, Les Houches, France, March 2008.

6. M. Averkiou and S. Yarmenitis, “The hypervascular focal liver lesion in contrast enhanced ultrasound: Malignant or benign?” 5th Aegean Postgraduate Radiology Course, Sept. 2007.
7. M. Averkiou, “Technique for contrast enhanced ultrasonography,” 8th Conference of the Hellenic Society of Ultrasound in Medicine and Biology, Athens, Greece, June 2007.
8. M. Averkiou, “Σύγχρονες εφαρμογές ενισχυτικών ουσιών στην υπερηχογραφία,” Μετεκπαιδευτικά μαθήματα ακτινολογίας, Τομέας Ακτινολογίας, Πανεπιστήμιο Κρήτης, Περίοδος Ζ, Σειρά 17, Οκτώβριος 2006 – Μάιος 2007.
9. J. B. Fowlkes and M. A. Averkiou, “Physics of Ultrasound Minicourse: Doppler and Nonlinear Ultrasound—Contrast and Tissue Harmonic Imaging,” Refresher Course, 89th *Scientific Assembly and annual meeting of the Radiological Society of North America (RSNA)*, Nov. 2003.
10. M. A. Averkiou, “Imaging of Complex Media with Acoustic and Seismic Waves: Nonlinear Acoustics in Medical Imaging,” Summer school course by Laboratoire Ondes et Acoustique, Paris, France, Sept. 2003.
11. M. A. Averkiou, “Ultrasound contrast agents imaging techniques,” Plenary Session: Advances in Harmonic and contrast Imaging, 10th Congress of the World Federation for Ultrasound in Medicine and Biology (WFUMB), American Institute of Ultrasound in Medicine, Montreal, Canada, 2003.
12. J. B. Fowlkes and M. A. Averkiou, “Physics of Ultrasound Mini course: Doppler and Nonlinear Ultrasound—Contrast and Tissue Harmonic Imaging,” Refresher Course, 88th *Scientific Assembly and annual meeting of the Radiological Society of North America (RSNA)*, Nov. 2002.
13. J. B. Fowlkes and M. A. Averkiou, “Update Course in Diagnostic Radiology Physics: CT and US Cross-sectional Imaging—Doppler and Nonlinear US, Contrast and Tissue Harmonic Imaging,” Refresher Course, 87th *Scientific Assembly and annual meeting of the Radiological Society of North America (RSNA)*, Nov. 2001.
14. M. A. Averkiou, “Microbubbles and ultrasound – Principles and Instrumentation: How to exploit the physics and how to use the instrumentation,” Fifth annual symposium on Contrast Echocardiography, *American Society of Echocardiography*, Chicago, IL, June, 2000.
15. J. B. Fowlkes and M. A. Averkiou, “Contrast and tissue harmonic imaging,” Categorical Course in CT and US, 86th *Scientific Assembly and annual meeting of the Radiological Society of North America (RSNA)*, November 2000.
16. M. A. Averkiou, “Physical insight into the properties of tissue harmonic imaging”, Categorical course on Nonlinear imaging of tissue and contrast agents, 44th *AIUM Annual Convention*, San Francisco, California, 2000.

OTHER SCHOLARLY ACTIVITY

Invited lectures and seminars.

1. M. Averkiou and P. Burns, “A touch of CEUS physics: quantification and the future,” A free educational webinar presented by the International Contrast Ultrasound Society (ICUS) for CME credits, Feb. 23, 2023.
2. M. Averkiou, “Evaluation of liver tumors with CEUS,” UW Radiology, March 17, 2023.
3. M. Averkiou, C. Krolak, A. Clark, M. Dighe. “Automated quantification of hepatocellular carcinoma perfusion for LI-RADS classification with parametric image analysis,” *The 36th Annual Advances in Contrast Ultrasound Bubble Conference*, Chicago, 2022.

4. M. Averkiou, "Ultrasound and microbubbles: imaging tumors and delivering drugs," Community outreach program, UW Continuum College (UWC²) course OSHER 999, Seattle, May 2022.
5. M. Averkiou, R. Barr, T. Erpelding, "Quantitative Imaging Biomarker Alliance Effort: Contrast-Enhanced Ultrasound Biomarker Committee," AIUM, March 2022.
6. M. Averkiou, "CEUS for pediatric HCC therapy monitoring," St. Jude Children's Hospital, Apr. 21, 2022.
7. Averkiou M, "Bubble-enhanced HIFU," Biomedical Acoustics: Therapeutic Ultrasound, Acoustics in Focus, 180th Meeting of the Acoustical Society of America, June 2021.
8. M. Averkiou, C. Krolak, A. Clark, M. Dighe. A CEUS quantification protocol for the evaluation and early detection of HCC to augment LiRADS," *The 35nd Annual Advances in Contrast Ultrasound Bubble Conference*, Chicago 2021.
9. Averkiou M, "Contrast-enhanced ultrasound for the evaluation of early detection of HCC," Hepatic Oncology Seminar (HOSE), University of Washington, May 10, 2021.
10. Averkiou M, Dighe M. "Tumor Perfusion Quantification with Contrast-Enhanced Ultrasound," invited seminar at St. Jude Children's Hospital, Dec. 18, 2020.
11. Averkiou M, Ultrasound and microbubbles: imaging tumors and delivering drugs," invited seminar at UT Austin on 11/20/2020.
12. Averkiou M, O'Donnell M. "Ultrasound-based Methods Guiding Interventional Procedures and Optimizing Drug Delivery," Image Guided Therapeutics: From Conception to Commercialization Virtual Event at UBC, June 25, 2020.
13. Keller S, Suo D, Wang YN, Kenerson H, Sestero A, Yeung R, Averkiou M. Image-guided doxorubicin delivery with ultrasound and microbubbles in a mouse model of hepatocellular carcinoma with a diagnostic ultrasound system," *The 34nd Annual Advances in Contrast Ultrasound Bubble Conference*, Chicago 2019.
14. M. Averkiou, "Debate – Micron-sized contrast agents have a great future in clinical HIFU", 19th ISTU, Barcelona, Spain, 2019.
15. Averkiou M, "Ultrasound contrast agents for diagnosis and therapy," Cardiovascular Grand Rounds, University of Washington, Dec. 7, 2018.
16. Averkiou M, Gallagher M, Monserate M. QIBA CEUS perfusion quantification standardization. *The 33rd Annual Advances in Contrast Ultrasound Bubble Conference*, Chicago 2018.
17. McCarville B and Averkiou M. Therapeutic Monitoring of Intermediate and High-Risk Rhabdomyosarcoma: A Pilot Study. *The 33rd Annual Advances in Contrast Ultrasound Bubble Conference*, Chicago 2018.
18. M. Averkiou, "Quantification approaches with contrast-enhanced ultrasound," *AIUM*, New York 2018 (invited, abstract book not published yet—J Ultrasound Medicine).
19. M. Averkiou, T. Lai, "Nonlinear Simulation for Diagnostic Imaging," *AIUM*, New York, 2018. (invited, abstract book not published yet—J Ultrasound Medicine).
20. Averkiou M, Keller S, Zogn R, Hammond R, Hannah A, Bruce M. High-resolution ultrafast imaging of microbubble activity during sonoporation. *The 32nd Annual Advances in Contrast Ultrasound Bubble Conference*, Chicago 2017.
21. Averkiou MA, Keravnou C, De Cock I. Microvascular injury and perfusion changes induced by sonoporation. *The 31st Annual Advances in Contrast Ultrasound Bubble Conference*, Chicago 2016.

22. M. Averkiou, DCEUS: Developments and new applications, 27th Congress of the European Federation of Societies for Ultrasound in Medicine and Biology (EFSUMB), *EUROSON 2015*, Athens, Greece, 2015.
23. M. Averkiou, Ultrasound-mediated, image-guided drug delivery approaches, 27th Congress of the European Federation of Societies for Ultrasound in Medicine and Biology (EFSUMB), *EUROSON 2015*, Athens, Greece, 2015.
24. M. Averkiou, DCEUS Technique for monitoring outcomes of therapies targeting angiogenesis, 27th Congress of the European Federation of Societies for Ultrasound in Medicine and Biology (EFSUMB), *EUROSON 2015*, Athens, Greece, 2015.
25. Averkiou MA, Keravnou C, Izamis ML, Leen E. Evaluation of perfusion quantification methods with ultrasound contrast agents in a machine-perfused pig liver. *The 30th Annual Advances in Contrast Ultrasound Bubble Conference*, Chicago 2015.
26. M. Averkiou, "Ultrasound and microbubbles for monitoring therapies targeting tumor vascularity," International Conference on Nanotheranostics ICoN, Larnaca, Cyprus, 26-28 September 2013.
27. M. A. Averkiou, "Nonlinear imaging modes: optimization," Microbubble Ultrasound Imaging Course, *Euroson School*, Edinburgh, Scotland, June 25-26, 2012.
28. M. A. Averkiou, "DCE-US monitoring treatment of liver metastases," Microbubble Ultrasound Imaging Course, *Euroson School*, Edinburgh, Scotland, June 25-26, 2012.
29. M. A. Averkiou, "DCE-US technique for the monitoring of chemotherapy of liver metastases," *44th Annual Scientific Meeting of the British Medical Ultrasound Society*, Telford, UK, 2012.
30. M. A. Averkiou, "Ultrasound-enhanced drug delivery with a diagnostic scanner?," *17th European Symposium on Ultrasound Contrast Imaging*, pg. 93-94, Rotterdam, The Netherlands, Jan. 2012.
31. M. Averkiou, "Bubble detection for perfusion: Are we at the end of our technological development?" *16th European Symposium on Ultrasound Contrast Imaging*, Rotterdam, The Netherlands, Jan. 2011.
32. M. A. Averkiou, "Nonlinear pulsing schemes for diagnostic ultrasound," *J. Acoust. Soc. Am.* 126(4) Pt. 2, 2202(A), 2009.
33. M. Averkiou, "New Developments on Breast Lesion Imaging with Ultrasound Contrast Agents," 10th European Society of Surgery (ESS) Conference, Limassol, Cyprus, 9-11 Nov. 2006.
34. M. Averkiou and A. Nicolaides, "Macro and Micro-Vascular Imaging with Ultrasound Contrast Agents," International Aristotle Vascular Experts' Meeting 2006, Thessaloniki, Greece, May 29-30, 2006.
35. M. Averkiou, "Απεικόνιση και Ποσοτικοποίηση της Αγγειογένεσης Όγκων με Σκιαγραφικό Υπερήχων," 2^ο Κυπρο-Ελλαδικό Συνέδριο Ακτινολογίας, Nicosia, Cyprus, 29-30 April 2006.
36. M. Averkiou, "Ultrasound Contrast Agents in Liver Lesions," 8th Marianna Lordos Seminar, Marianna Lordos Cancer Memorial Fund, Larnaca, Cyprus, 10-12 Feb. 2006.
37. M. A. Averkiou, M. Bruce, S. Jensen, P. Rafter, T. Brock-Fisher, and J. Powers, "Pulsing schemes for the detection of nonlinear echoes from contrast microbubbles," *9th European Symposium on Ultrasound Contrast Imaging*, Rotterdam, The Netherlands, Jan. 2004.
38. M. A. Averkiou, "Ultrasound contrast agents imaging techniques," Plenary Session: Advances in Harmonic and contrast Imaging, 10th Congress of the World Federation for Ultrasound in Medicine and Biology (WFUMB), American Institute of Ultrasound in Medicine, Montreal, Canada, 2003

39. M. A. Averkiou, D. M. Skyba, and M. F. Bruce, "Real time perfusion imaging with ultrasound contrast agents," *The 5th Heart Centre Symposium on Ultrasound Contrast Imaging*, Rotterdam, Netherlands, Jan. 2000.
40. M. A. Averkiou, "Pulse Inversion imaging: in search of a bubble detection scheme," *The 4th Heart Centre Symposium on Ultrasound Contrast Imaging*, Rotterdam, The Netherlands, Jan. 1999.
41. J. Powers, M. A. Averkiou, and M. Bruce, "Contrast Imaging--The ATL Approach," *The 2nd European Symposium on Contrast Imaging*, Rotterdam, Netherlands, Jan. 1997.
42. M. A. Averkiou, L. A. Crum, and M. F. Hamilton, "Theoretical modeling of the acoustic pressure field produced by commercial lithotripters," *J. Acoust. Soc. Am.* 98, 2941, 1995.

Professional society memberships.

- Acoustical Society of America, *Fellow* (since 22 May 2009). Technical Committees: Biomedical Ultrasound, Physical Acoustics, since 1987
- IEEE, *Senior Member*, since 17 Sept. 2011.
- IEEE Ultrasound Ferroelectrics and Frequency control, since 1995
- European Federation of Societies for Ultrasound in Medicine and Biology, 2004
- The International Contrast Ultrasound Society, since 2009

Journal Reviews/Funding Agencies Reviews:

- Frontiers in Pharmacology, Associate editor, since 2021
- The Journal of the Acoustical Society of America, since 1994
- Journal of Ultrasound in Medicine, since 1998
- Ultrasound in Medicine and Biology, since 1999
- IEEE Transactions on Medical Imaging, since 1999
- IEEE Ultrasonics Ferroelectrics and Frequency Control, since 2000
- Journal of Engineering in Medicine, since 2009
- Investigative Radiology, since 2013
- Computers in Biology and Medicine, since 2014
- European Commission, REA/C/04, evaluation of proposals: FETOPEN-2014-2015, FETOPEN-2014-2015, MSCA-IF Call 2017
- Ultraschall, European Journal of Ultrasound, since 2014
- European Journal of Vascular and Endovascular Surgery, since 2014
- European Radiology, since 2015
- Physics in Medicine and Biology, since 2015
- Scientific Reports, Nature, since 2016
- World Journal of Gastroenterology, since 2017
- Frontiers in Pharmacology, since 2019
- Journal of Controlled Release, since 2020
- Quantitative Imaging in Medicine and Surgery, since 2022
- International Journal of Surgery, since 2022

Conference Session Organizer/Chair:

- European Symposium on Ultrasound Contrast Imaging (an ICUS conference—premier international contrast conference), Scientific Board Member (responsible for the organization and scientific content of the conference), 2006-2022.

- IEEE/IUS (largest medical ultrasound conference) Medical Ultrasonics TPC, MCA-Microbubble Contrast Agents Track Lead (organizes all MCA oral and poster sessions), 2021-now.
- IEEE/IUS Medical Ultrasonics TPC, committee member, September 2018-now.
- EUROSON School of CEUS 2012, Microbubble Ultrasound Imaging Course, Edinburgh, 25-26 June 2012.
- EUROSON School 2009, Contrast enhanced ultrasound in liver, biliary, pancreatic and gastrointestinal disease, Under the Auspices of EFSUMB, Bologna, Italy, Sept. 2009.
- 149th *Acoust. Soc. Am.*, Gene Therapy and Molecular Imaging, Vancouver, Canada, 2005
- 10th Symposium on Ultrasound Contrast Imaging, Functional Imaging., Rotterdam, Netherlands, 2005
- 9th Symposium on Ultrasound Contrast Imaging, Radiology, Rotterdam, Netherlands, 2004
- 130th *Acoust. Soc. Am.*, Lithotripsy, St. Louis, MO, USA, 1995

GRADUATE STUDENTS

Chaired Doctoral Degrees

- Ting-Yu Lai, “Beamforming Approaches for Ultrafast Nonlinear Ultrasound Imaging,” PhD Thesis, University of Washington, Dec. 2021. Current position: Ultrasound Systems Engineer, Philips Healthcare, Bothell, WA.
- Sara Keller, “Ultrasound-mediated drug delivery: from bubble physics to cancer therapy,” PhD Thesis, University of Washington, August 2021. Current position: Postdoctoral Research Assistant, Institute of Biomedical Engineering, University of Oxford, UK.
- D. Christophides, “Methods and algorithms for the quantification of blood flow in the microcirculation with contrast enhanced ultrasound,” PhD Thesis, University of Cyprus, August 2015. Current position: Senior Machine Learning Engineer, Cargill, Geneva Switzerland.
- C. Keravnou, “Ultrasound-mediated, image-guided approaches for drug delivery in a machine perfused pig liver,” PhD Thesis, University of Cyprus, August 2015. Current position: Predictive Maintenance Lead Engineer, Vassiliko Cements Work Ltd.
- C. Mannaris, “Ultrasound Enhanced Drug Delivery: Pressure and temperature activation approaches,” PhD Thesis, University of Cyprus, May 2014. Current position: Postdoctoral Fellow, Oxford University UK.
- Alicia Clark (Mechanical Engineering), co-advising, PhD Thesis, University of Washington, December 2018. Current position: Senior Fellow/postdoctoral researcher, at Université Grenoble Alpes, France

Current Doctoral Students

- Lance De Koninck, “Ultrasound-induced and microbubble-enhanced mild hyperthermia for enhanced drug delivery,” expected June 2026.
- Connor Krolak, “Image-guided ultrasound cavitation and mechanotherapeutic drugs to modulate the tumor microenvironment for targeted HCC treatment,” expected June 2026. (*ITHS Fellowship 2022-2023*)
- Gerald Lee, research rotation, “Elastic properties and fluid pressure changes induced with cavitation treatments on liver cancer,” expected 2029.

Chaired Masters Degrees

- Kaleb Vuong, “Investigation of ultrasound and microbubble-induced mild hyperthermia for cancer treatment,” UW-BIOE, BS-MS Program, August 2023.
- Kevin Burgett, “Perfusion Quantification of Hepatocellular Carcinoma with Contrast Enhanced Ultrasound,” MAB Program, Bioengineering, University of Washington, June 2020. Current position: Algorithm & Research Engineer, Philips Emergency Care, Bothell, WA.
- Ryan Hammond, “Quantification of changes in blood flow after traumatic spinal cord injury using ultrasound and microbubbles,” MS/BS Program, Bioengineering, University of Washington, August 2020. Current position: Ultrasound Engineer, Fujifilm Sonosite, Bothell, WA.
- Carina Pereira, “A Comparison of Deep Learning Algorithms for Medical Image Classification and Image Enhancement,” MS, Bioengineering, University of Washington, Dec. 2018. Current position: Ultrasound Engineer, Philips Healthcare, Bothell, WA.
- Eric Juang, “Ultrasound- and microbubble-mediated Drug Delivery in Microvascular Networks,” MS Thesis, University of Washington, Feb. 2019. Current position: Medical Student at Creighton University School of Medicine.
- C. Tapolou, “Study for the use of ultrasound contrast agents to accurately measure blood flow in vivo,” MS Thesis, University of Cyprus, May 2016. Current position: PhD student, UCY.
- E. Pieri, “A method for detecting stroke based on scattering from ultrasound contrast agents,” MS Thesis, University of Cyprus, May 2016. Current position: PhD student, UCY.
- C. Rousou, “Evaluation of breast cancer patient response to neoadjuvant therapy with the use of dynamic contrast enhanced ultrasound (DCEUS),” MS Thesis, University of Cyprus, May 2016. Current position: PhD student, Univ. of Utrecht.
- C. Papantonis, “Dual frequency pulsing schemes for ultrasound contrast imaging,” MS Thesis, University of Cyprus, May 2015. Current position: Mechanical Engineer Anaxagoras Pneumatics LTD, Cyprus.
- P. Damianou, “Changes of chemical properties of Doxorubicin after exposure to ultrasound and microbubbles,” MS Thesis, University of Cyprus, August 2014.
- E. Efthymiou, “Theoretical investigation of the ultrasound induced temperature elevation for drug delivery applications,” MS Thesis, University of Cyprus, May 2013. Current position: Air Traffic Control Engineer, Air Traffic Control, Department of Civil Aviation, Cyprus
- C. Kalli, “Ultrasound hyperthermia for drug activation with lightly focused and unfocused sources,” MS Thesis, University of Cyprus, Dec. 2012. Current position: Global Head of Imaging Technology, R & D Pharmaceutical Diagnostics, GE Healthcare, UK.
- C. Mannaris, “Experimental investigation of nonlinear pulsing schemes used in diagnostic ultrasound,” MS Thesis, University of Cyprus, Dec. 2008. Current position: Postdoctoral Fellow, University of Oxford UK.

Current Masters Students

- Sheri Gu, UW-BIOE, MAB Program, expected June 2024.

Other significant Training: Mentored Postdoctoral Fellows

- Alicia Clark, PhD University of Washington 2018, duration: March 2019-2021, Bubble enhanced heating for therapeutic ultrasound applications in the brain. Current position: Postdoctoral Researcher at Université Grenoble Alpes, France.

- Dingjie Suo, PhD North Carolina State University 2017, duration: Dec. 2017-2020, Image-guided, ultrasound and microbubble-mediated HCC treatment with sonoporation. Current position: Faculty, Beijing Institute of Technology, China.
- Ine De Cock, PhD University of Gent 2015, duration: 2015-2016, Ultrasound mediated drug delivery. Current position: Senior scientist/project leader, AmatsiSEPS, Zwijnaarde, Belgium.
- Christina Keravnou, PhD University of Cyprus 2015, duration: 2015-2016, Microvascular injury and perfusion changes induced by sonoporation in a machine perfused pig liver. Current position: Predictive & Diagnostic Maintenance Manager, Vassiliko Cements Work Ltd, Cyprus.
- Maria Louisa Izamis, PhD Massachusetts Institute of Technology 2010, duration: 2012-2014, Evaluation of donor organ viability preserved by machine perfusion with contrast enhanced ultrasound. Current position: Innovation Program Director, Philips Healthcare, Cambridge MA.
- Costas Strouthos, PhD University of Illinois at Urbana-Champaign 1999, duration: 2008-2009, Quantification of Liver Cancer Microvasculature with Contrast Ultrasound for Monitoring Therapy. Current position: Lecturer European University Cyprus and Physics Teacher at Tutors Panaretos Educational Center.

Other significant student supervision

Co-Advising/Member of Examination Committee

- Teng Liu, Bioengineering, (Doctoral Supervisory Committee), 8/10/22 – now.
- Yin Guo, Bioengineering, (Chair, PhD qualifying examination committee), 12/15/2021 – now.
- Kaiyu Zhang, Bioengineering, (Chair, PhD qualifying examination committee), March 2022.
- Katrina Henrikson (Chair, PhD qualifying examination committee), “Socket Fit Assessment and Osseointegration for Transtibial Amputees,” Bioengineering, University of Washington, 2017.
- James-Kevin Tan, “Synthetic Polymer and Microbubble Systems for Gene Delivery to the Brain,” Bioengineering, University of Washington, (PhD reading committee) 2016.
- Tzu-Cheng (Efren) Lee, “Statistical Distributions of Ultra-Low Dose CT Sinograms in the Data Processing Stream,” Bioengineering, University of Washington (PhD general exam and reading committee) 2016.
- E. Andreou, “Σχεδιασμός ρομποτικού συστήματος συμβατού με τη μαγνητική τομογραφία για διεξαγωγή ελάχιστα παρεμβατικών επεμβάσεων με απεικονιστική καθοδήγηση,-- Design of an MRI compatible robotic system for image guided minimally invasive interventions” MS Thesis, University of Cyprus, June 2011
- M. Tohntis, “Large Eddy Simulations of Particle Deposition in the Airways of the Human Respiratory System: A comparison of patients with COPD (Chronic Obstructive Pulmonary Disease) to healthy subjects,” MS Thesis, University of Cyprus, Dec. 2010.
- N. Aristokleous, “Στατική και Δυναμική Καρδιακή Μοντελοποίηση και Ποσοτικοποίηση Δεικτών Ολικής Μηχανικής Λειτουργίας από Εικόνες Μαγνητικής Τομογραφίας,” MS Thesis, University of Cyprus, Jan. 2010.
- J. Sijl, “Ultrasound Contrast Agents – Optical and Acoustical Characterization,” PhD Thesis, Physics of Fluids, Faculty of Science and Technology, University of Twente, The Netherlands, Dec. 2009.

- M. Constantinou, Μελέτη διασποράς σωματιδίων γύρω από κυβικό στερεό εμπόδιο σε τυρβώδεις ροές με προσομοίωση μεγάλων δινών, MS Thesis, University of Cyprus, Dec. 2009.
- E. Svoukis, “Development of the 3w method for thermal conductivity characterization of bulk samples and thin films,” MS Thesis, University of Cyprus, 2008.
- A. Kartakoullis, “Spectral analysis of optical coherence tomography signals,” MS Thesis, University of Cyprus, 2007.
- G. Katsambas, “Laplace equation in parallel,” MS Thesis, University of Cyprus, 2007.
- R. Themosthenous, “Linear analysis of turbulent plane strain flow in a rotating frame,” MS Thesis, University of Cyprus, 2007.

Undergraduate Theses/Final Year Projects/Capstone Design Projects

- Chelsea Hu, Quantification of tumor perfusion changes for monitoring therapeutic outcomes of cancer patients, Bioengineering, University of Washington, June 2026.
- Harry Shin, Passive cavitation detection for optimizing cavitation treatments of tumors, Bioengineering, University of Washington, June 2025.
- Hanna Michaelis, Development of ultrasound phantom for the optimization of passive cavitation detection, Bioengineering, University of Washington, June 2025.
- Angela Wei, Development of perfusion quantification software package for the evaluation of liver cancer response to systemic therapies, Bioengineering, University of Washington, June 2025.
- Ryan Horn, Bubble-induced HIFU enhances drug delivery with local mild hyperthermia, Bioengineering, University of Washington, June 2023.
- Jordan Vogel, Design of focused transducers coupling enclosures for ultrasound induced drug delivery applications, Bioengineering, University of Washington, June 2024.
- Kaleb Vuong, “Ultrasound-induced mild hyperthermia for improved drug delivery,” Bioengineering, University of Washington, June 2022.
- Pranav Sarda, “Contrast-enhanced ultrasound of liver lesions with planar random apertures on a Verasonics scanner,” Bioengineering, University of Washington, June 2022.
- Renee Nahum, “LVO Optimization for Point of Care Applications,” Capstone Design Project (funded by Fujifilm Sonosite), Bioengineering, University of Washington, June 2021.
- Katie Thien, “LVO Optimization for Point of Care Applications,” Capstone Design Project (funded by Fujifilm Sonosite), Bioengineering, University of Washington, June 2021. Current position: Philips Healthcare, Bothell, WA.
- Sierra Bonilla, “In-vitro Bubble-Enhanced Heating for Focused Ultrasound Treatments in the Brain,” Capstone Design Project, Bioengineering, University of Washington, June 2020.
- Conner Pitts, “Method and system for microbubble characterization for drug delivery,” Capstone Design Project, Bioengineering, University of Washington, expected June 2019. Current position: Philips Healthcare, Bothell, WA.
- Sitai Kou, “The nonlinear field produced by imaging transducers operating in ultrafast plane wave mode,” Capstone Design Project, Bioengineering, University of Washington, expected June 2019, Current position: PhD candidate, Washington University, St. Louis, MO.
- Miguel Monserate, “4D perfusion quantification with contrast enhanced ultrasound,” capstone Design Project, Bioengineering, University of Washington, expected June 2019.
- Ryan Hammond, “Quantification of changes in blood flow after traumatic spinal cord injury using ultrasound and microbubbles,” Capstone Design Project, Bioengineering, University of

Washington, expected June 2018. Current position: Ultrasound Engineer, Fujifilm Sonosite, Bothell, WA.

- Madison Gallaher, “Standardization of Flow Quantification Methods with Contrast Enhanced Ultrasound with Clinical Systems,” Capstone Design Project, Bioengineering, University of Washington, June 2018. Current position: Ultrasound Engineer, Fujifilm Sonosite, Bothell, WA.
- Richard Zong, Mary Gates Scholar 2016-17, “In Vitro Study of HepG2 Viability under Ultrasound and Microbubbles,” Capstone Design Project, Bioengineering, University of Washington, June 2017. Current position: Philips Healthcare, Bothell, WA.
- Joanna Sun, “Detecting Diffuse Liver Disease with Tissue Harmonic Ultrasound Imaging,” Capstone Design Project, Bioengineering, University of Washington, June 2017. Current position: Philips Healthcare, Bothell, WA.
- Maria Nicolaou, “Theoretical modeling of the ultrasound field of transducers used in ultrasound-mediated drug delivery,” Final Year Project, University of Cyprus, May 2014.
- Elena Pieri, “Theoretical modeling of the ultrasound field of transducers used in ultrasound-mediated drug delivery,” Final Year Project, University of Cyprus, May 2014.
- C. Rousou, “Dissolution of chemical substances after exposure to high intensity ultrasound and microbubbles,” Final Year Project, University of Cyprus, May 2014.
- Christiana Tapolou, “Design and development of a liver flow phantom for the study of perfusion quantification with ultrasound contrast agents,” Final Year Project, University of Cyprus, May 2014.
- Penelope Koshi, “Design and development of a liver flow phantom for the study of perfusion quantification with ultrasound contrast agents,” Final Year Project, University of Cyprus, May 2014.
- Spyridon Menikou, “Design and development of a liver flow phantom for the study of perfusion quantification with ultrasound contrast agents,” Final Year Project, University of Cyprus, May 2014.
- A. Yianni, “Measurement and analysis of acoustic parameters from classes where students with hear impairment study,” Undergraduate Thesis Project, University of Cyprus, May 2010.
- C. Keravnou, M. Karayianni, C. Kalli, “Image-guided, ultrasound-induced, drug delivery,” Undergraduate Thesis Project, University of Cyprus, May 2010.
- L. Demetriou, “Programming and automation of a computer controlled 3-axes micropositioner suitable for ultrasonic measurements,” Undergraduate Thesis Project, University of Cyprus, May 2009.
- I. Tsokkou, “Experimental Investigation of imaging and quantification of blood flow in the microcirculation of organs and tissues,” Undergraduate Thesis Project, University of Cyprus, May 2009.
- S. Kyprianou, “Degradation of Diclofenac using high intensity ultrasound waves,” Undergraduate Thesis Project, University of Cyprus, August 2007.

University Courses Developed and Taught (at UW and UCY)

- BIOEN 448/548 Bioacoustics and Therapeutic Ultrasound (UW, 2022-)
- BIOEN 449/549 Ultrasound Imaging (UW, 2022-)
- BIOEN 447/547 Fundamentals of MRI and Ultrasound Imaging (UW, 2016-2021)
- BIOEN 449/549 Diagnostic and Therapeutic Ultrasound (UW, 2016-2021)
- BIOEN 532 Professional Skills (UW, 2017-221)

- Medical Imaging - Diagnostic Ultrasound (UCY: graduate level course, taught 2006-2014)
- Biomedical and Industrial Applications of Engineering Acoustics (UCY: graduate level course, taught 2006-2014)
- Therapeutic and diagnostic applications of ultrasound (UCY: senior elective course, taught 2006-2014)
- Numerical Methods (UCY: junior Mechanical Engineering main core course, taught 2005-2014)