

**Xinmai Yang**  
Associate Professor  
Department of Mechanical Engineering  
The University of Kansas  
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## Education

Ph. D. Mechanical Engineering, Boston University, Boston, MA, May 2003  
(Mentors: R. Glynn Holt and Ronald A. Roy)

M. E. Solid Mechanics, Xi'an Jiaotong University, Xi'an, PR China, June 2000

B. E. Engineering Mechanics, Xi'an Jiaotong University, Xi'an, PR China, June 1997

## Employment History

Associate Professor, Mechanical Engineering, University of Kansas, 8/2014-present

Assistant Professor, Mechanical Engineering, University of Kansas, 8/2008-8/2014

Postdoctoral Research Associate, Biomedical Engineering, Washington University in St. Louis, 3/2006-8/2008 (Mentor: Lihong Wang)

Postdoctoral Research Associate, National Center for Physical Acoustics, University of Mississippi, 6/2003-2/2006 (Mentor: Charles C Church)

Graduate Research Assistant, Mechanical Engineering, Boston University, 1/2000-5/2003

## Courses taught at the University of Kansas

ME 311	Mechanics of Materials
ME 455	Mechanical Engineering Measurements and Experimentation
ME 508	Numerical Analysis
ME 702	Mechanical Engineering Analysis
ME 754	Biomedical Optics
ME 752	Acoustics

## Funded Project (>\$5.6M as PI)

1. Role: PI (Contact) 7/1/2020-6/30/2025  
MPIs: Xueding Wang (U Michigan) and Randolph Nudo (KUMC)  
NIH/NINDS R01NS118918 Total project cost \$2,755,599  
Title: Wearable real-time functional brain mapping for a non-human primate stroke model
2. Role: PI 9/1/2018-7/31/2022  
Co-Is: Xueding Wang (U Michigan) and Yannis Paulus (U Michigan)  
NIH/NEI R01EY029489 Total project cost: \$1,776,437  
Title: Precisely removing microvessels by photo-mediated ultrasound therapy
3. Role: Co-I 06/01/2020-05/31/2021  
PI: Yannis Paulus (U Michigan)  
NIH/NEI R41EY031219 Total project cost \$225,000  
Title: Novel Nanosecond Laser and Ultrasound to Selectively Treat Eye Neovascularization
4. Role: PI on Subcontract 5/15/2019-10/31/2020  
NIH/NHLBI 1R43HL147783 Total project cost \$225,000  
Title: Ultrasound-facilitated endovascular laser thrombolysis
5. Role: PI 3/15/2019-6/30/2019  
KU Frontiers Entrepreneurship Exploration Funding Program (through an NIH Clinical and Translational Science Award grant (UL1 TR002366)) Total project cost \$4,500  
Title: Laser/ultrasound-based blood clot removing device
6. Role: PI 09/30/2015-3/29/2018  
Department of Defense W81XWH-15-1-0524 Total project cost: \$295,179  
Title: Noninvasively relieving joint contracture by using ultrasound-assisted laser technique to remove scar tissues in the knee joint
7. Role: PI 07/15/2012-6/30/2015  
Co-I: Mark Cohen (KUMC)  
NIH/NIBIB 1R03EB015077 A1 Total project cost: \$139,923  
Title: Laser-enhanced particle-free HIFU heating
8. Role: PI 01/01/2010-12/31/2012  
Co-Is: Paul Cheney (KUMC) and Hongyu Zhang (KUMC)  
National Institutes of Health (NIBIB) R21EB010184 Total project cost: \$391,223  
Title: Photoacoustic imaging of functional domains on primary motor cortex of monkeys
9. Role: PI 08/01/2009-07/31/2011  
National Institutes of Health (NIDA) 1R03DA026987 Total project cost: \$219,975  
Title: The detection of brain activation induced by cocaine in small animals with photoacoustic imaging
10. Role: Mentor to an elementary school teacher 09/01/2008-08/31/2012  
PI: Elizabeth A. Friis (KU), Co-PI: Paulette Spencer (KU)  
National Science Foundation Total project cost: \$500,000

Title: RET Site: Bioengineering Toolkits for 4th Grade Teachers (BET 4Teachers)

11. Role: PI 07/01/2011-6/30/2012  
KU General Research Fund Total project cost: \$9,860  
Title: Photoacoustic and ultrasound imaging to guide ultrasound surgery
12. Role: PI 09/01/2009-8/31/2011  
KU New Faculty Research Fund Program Total project cost: \$8,000  
Title: Integrated photoacoustic imaging and high intensity ultrasound system

### Peer-viewed Journal Publications

- J1. Mingyang Wang, Yu Qin, Tao Wang, Jeffrey S. Orringer, Yannis M. Paulus, Xinmai Yang, and Xueding Wang, "Removing Subcutaneous Microvessels Using Photo-Mediated Ultrasound Therapy," *Lasers in Surgery and Medicine*, doi: 10.1002/lsm.23260, 2020.
- J2. Yu Qin, Yixin Yu, Xinyi Xie, Wei Zhang, Julia Fu, Yannis M Paulus, Xinmai Yang, and Xueding Wang, "The effect of laser and ultrasound synchronization in photo-mediated ultrasound therapy," *IEEE Transaction on Biomedical Engineering*, doi: 10.1109/TBME.2020.2985648, 2020.
- J3. David Hazlewood and Xinmai Yang, "Enhanced cavitation activity in a slab-shaped optical absorber during photo-mediated ultrasound therapy," *Physics in Medicine and Biology*, 65(5), 055006, 2020.
- J4. Madhumithra S Karthikesh and Xinmai Yang, "Photoacoustic image-guided interventions," *Experimental Biology and Medicine*, 245(4), 330-341, 2020.
- J5. Wei Zhang, Yu Qin, Xinyi Xie, Zizhong Hu, Yannis Paulus, Xinmai Yang, and Xueding Wang, "Real-time photoacoustic sensing for photo-mediated ultrasound therapy," *Optics Letters*, 44(16), 4063, 2019.
- J6. David Hazlewood and Xinmai Yang, "Enhanced laser surface ablation with an integrated photoacoustic imaging and high intensity focused ultrasound system," *Lasers in Surgery and Medicine*, 51(7), 616-624, 2019.
- J7. David Hazlewood, Yi Feng, Qinghua Lu, Jinxi Wang, and Xinmai Yang, "Treatment of post-traumatic joint contracture in a rabbit model using pulsed, high intensity laser and ultrasound," *Physics in Medicine and Biology*, 63(20), 205009, 2018.
- J8. Haonan Zhang, Xinyi Xie, Jia Li, Yu Qin, Wei Zhang, Qian Cheng, Songtao Yuan, Qinghuai Liu, Yannis M. Paulus, Xueding Wang, and Xinmai Yang, "Removal of choroidal vasculature using concurrently applied ultrasound bursts and nanosecond laser pulses," *Scientific Reports*, 8, 12848, 2018.
- J9. Hongrui Zhu, Dui Qin, Youshen Wu, Bowen Jing, Jiajun Liu, David Hazlewood, Hongmei Zhang, Yi Feng, Xinmai Yang, Mingxi Wan, Daocheng Wu, "Laser-activated Bioprobes with High Photothermal Conversion Efficiency for Sensitive Photoacoustic/Ultrasound Imaging and Photothermal Sensing," *ACS applied materials & interfaces*, 10(35), 29251-29259, 2018.
- J10. Shuying Li, Yu Qin, Xueding Wang, Xinmai Yang, "Bubble growth in cylindrically-shaped optical absorbers during photo-mediated ultrasound therapy," *Physics in Medicine and Biology*, 63(12),

125017, 2018.

- J11. David Hazlewood, Yi Feng, Qinghua Lu, Xinmai Yang, Jinxi Wang, “Novel rabbit model of moderate knee contracture induced by direct capsular damage,” *Journal of Orthopaedic Research*, 36(10), 2687-2695, 2018.
- J12. Zizhong Hu, Haonan Zhang, Aghapi Mordovanakis, Yannis M. Paulus, Qinghuai Liu, Xueding Wang, and Xinmai Yang, “High-precision, non-invasive anti-microvascular approach via concurrent ultrasound and laser irradiation,” *Scientific Reports*, 7, 40243, 2017.
- J13. Janggum Jo and Xinmai Yang, “Laser-enhanced high-intensity focused ultrasound heating in an in vivo small animal model,” *Applied Physics Letters*, 109(21), 213702, 2016.
- J14. Ti Zhang, Huizhong Cui, Chia-Yi Fang, Kun Cheng, Xinmai Yang, Huan-Cheng Chang, M Laird Forrest, “Targeted nanodiamonds as phenotype-specific photoacoustic contrast agents for breast cancer,” *Nanomedicine*, 10(4), 573-587, 2015.
- J15. Xinmai Yang and Janggum Jo, “Enhanced cavitation by using two consecutive ultrasound waves at different frequencies.” *Applied Physics Letters*, 105(19), 193701, 2014.
- J16. Huizhong Cui, Chenglin Hong, Andrew Ying, Xinmai Yang, and Shenqiang Ren, “Ultrathin Gold Nanowire-Functionalized Carbon Nanotubes for Hybrid Molecular Sensing.” *ACS nano* 7(9), 7805–7811, 2013.
- J17. Huizhong Cui, Ti Zhang, and Xinmai Yang, “Laser-enhanced cavitation during high intensity focused ultrasound: An in vivo study,” *Applied Physics Letters*, 102(13), 133702, 2013.
- J18. Ti Zhang, Huizhong Cui, Chia-Yi Fang, Long-Jyun Su, Shenqiang Ren, Huan-Cheng Chang, Xinmai Yang, and M. Laird Forrest, “Photoacoustic Contrast Imaging of Biological Tissues with Nanodiamonds Fabricated for High Near-Infrared Absorbance,” *Journal of Biomedical Optics*, 18, 026018, 2013.
- J19. Huizhong Cui and Xinmai Yang, “Laser enhanced high-intensity focused ultrasound thrombolysis: an in vitro study,” *Journal of the Acoustical Society of America*, 133(2), EL123, 2013.
- J20. Janggum Jo, Hongyu Zhang, Paul D. Cheney, and Xinmai Yang, “Photoacoustic detection of functional responses in the motor cortex of awake behaving monkey during forelimb movement,” *Journal of Biomedical Optics*, 17, 110503, 2012.
- J21. Huizhong Cui and Xinmai Yang, “Enhanced heating effect during photoacoustic imaging guided high intensity focused ultrasound,” *Applied Physics Letters*, 99(23), 231113, 2011.
- J22. Qihong Yang, Huizhong Cui, Shuang Cai, Xinmai Yang, and M. Laird Forrest “In vivo photoacoustic imaging of chemotherapy-induced apoptosis in squamous cell carcinoma using a near-infrared caspase-9 probe,” *Journal of Biomedical Optics*, 16, 116026, 2011.
- J23. Behrouz Soroushian and Xinmai Yang, “Measuring non-radiative relaxation time of fluorophores with biomedical applications by intensity-modulated laser induced photoacoustic effect,” *Biomedical Optics Express*, 2(10), 2749-2760, 2011.
- J24. Huizhong Cui and Xinmai Yang, “Real-time monitoring of high-intensity focused ultrasound ablations with photoacoustic technique: an in vitro study,” *Medical Physics*, 38, 5345, 2011.
- J25. Janggum Jo and Xinmai Yang, “Functional photoacoustic imaging to observe regional brain activation induced by cocaine hydrochloride,” *Journal of Biomedical Optics*, 16, 090505, 2011.
- J26. Janggum Jo and Xinmai Yang, “Detection of cocaine induced rat brain activation by photoacoustic tomography,” *Journal of Neuroscience Methods*, 195, 232-235, 2011.

- J27. Huizhong Cui and Xinmai Yang, "In-vivo imaging and treatment of solid tumor using integrated photoacoustic imaging and high intensity focused ultrasound system," *Medical Physics*, 37, 4777-4781, 2010.
- J28. Jacob Staley, Patrick Grogan, Abbas K. Samadi, Huizhong Cui, Mark S. Cohen, and Xinmai Yang, "The growth of melanoma brain tumors monitored by photoacoustic microscopy," *Journal of Biomedical Optics*, 15, 040510, 2010.
- J29. Huizhong Cui, Jacob Staley, and Xinmai Yang, "The integration of photoacoustic imaging and high intensity focused ultrasound," *Journal of Biomedical Optics*, 15, 021312, 2010.
- J30. Xinmai Yang, Anastasio Maurudis, John Gamelin, Andre Aguirre, Quing Zhu, and Lihong V. Wang, "Photoacoustic tomography of small animal brain with a curved array transducer," *Journal of Biomedical Optics*, 14, 054007, 2009.
- J31. Xinmai Yang, Erich. W. Stein, S. Ashkenazi, and Lihong V. Wang, "Nanoparticles for photoacoustic imaging," *Wiley interdisciplinary reviews: nanomedicine and Nanobiotechnology*, 1(3), 360-368, 2009.
- J32. Dipanjan Pan, Manojit Pramanik, Angana Senpan, Xinmai Yang, Kwang H. Song, Mike J. Scott, Huiying Zhang, Patrick J. Gaffney and Lihong V. Wang, "Molecular photoacoustic tomography with colloidal nanobeacons," *Angew. Chem. Int. Ed.* 48, 4170-4173, 2009.
- J33. Xinmai Yang and Lihong V. Wang, "Monkey brain cortex imaging by photoacoustic tomography," *Journal of Biomedical Optics*, 13, 044009, 2008.
- J34. Xinmai Yang, Sara E. Skrabalak, Zhi-Yuan Li, Younan Xia and Lihong V. Wang, "Photoacoustic tomography of a rat cerebral cortex in vivo with Au nanocages as an optical contrast agent," *Nano Letters*. 7(12), 3798-3802, 2007.
- J35. Xinmai Yang and Lihong V. Wang, "Photoacoustic tomography of a rat cerebral cortex with a ring-based ultrasonic virtual point detector," *Journal of Biomedical Optics*, 12, 060507, 2007.
- J36. Xinmai Yang, Meng-lin Li, and Lihong V. Wang, "Ring-based ultrasonic virtual point detector with applications to photoacoustic tomography," *Applied Physics Letter*, 90(25), 251103, 2007.
- J37. Lihong V. Wang and Xinmai Yang, "Boundary conditions in photoacoustic tomography and image reconstruction," *Journal of Biomedical Optics* 12(1), 014027, 2007.
- J38. Xinmai Yang and Charles C. Church, "A simple viscoelastic model for soft tissues in the frequency range 5 - 20 MHz," *IEEE UFFC* 53(8), 1404-1411, 2006.
- J39. Xinmai Yang and Charles C. Church, "A model for the dynamics of gas bubbles in soft tissue," *J. Acoust. Soc. Am.* 118(6), 3595-3906, 2005.
- J40. Xinmai Yang and Charles C. Church, "Nonlinear dynamics of gas bubbles in viscoelastic media," *Acoustics Research Letters Online*, 6(3), 151-156, 2005.
- J41. Xinmai Yang and Robin O. Cleveland, "Time domain simulation of nonlinear acoustic beams generated by rectangular pistons with application to harmonic imaging," *J. Acoust. Soc. Am.* 117(1), 113-123, 2005.
- J42. Xinmai Yang, Ronald A. Roy, and R. Glynn Holt, "Bubble dynamics and size distributions during focused ultrasound insonation," *J. Acoust. Soc. Am.* 116(6) 3423-3431, 2004.
- J43. Junqiang Zhu, Yapeng Shen, and Xinmai Yang, "Dynamic instability of laminated piezoelectric shell under the action of electric field and two-way compressive loads," *Hangkong Xuebao/Acta Aeronautica et Astronautica Sinica* 24(1), 21-27, 2003.

- J44. Xinmai Yang and Yapeng Shen, "Dynamic instability of laminated piezoelectric shell," *Int. J. Solids & Structures*, 38(14), 2291-2303, 2001.

### Book Chapters

- B1. Xinmai Yang and Lihong V. Wang. Virtual point detector using a ring in photoacoustic tomography, in *Photoacoustic imaging and spectroscopy*, edited by L. Wang, 2009.
- B2. Xinmai Yang and Mark Cohen. Melanoma to brain metastasis: photoacoustic microscopy, in *Tumors of the Central Nervous System, Volume 4*, edited by M. A. Hayat, 2012.

### Conference Proceedings

- C1. Yannis M. Paulus, Yu Qin, Yixin Yu, Julia Fu, Xueding Wang, and Xinmai Yang, "Photo-mediated Ultrasound Therapy to Treat Retinal Neovascularization", *Proceeding of the 42nd Annual International Conference of the IEEE Engineering in Medicine and Biology Society*, Montréal, Québec, Canada, July 20-24, 2020.
- C2. Xinmai Yang, Zizhong Hu, Hao Zhang, Aghapi Mordovanakis, Yannis Paulus, and Xueding Wang, "Antivascular effect induced by photo-mediated ultrasound," *Proceedings of SPIE Photonic West BiOS Optical Interactions with Tissue and Cells XXVIII*, Vol. 100620, 100620F, San Francisco, CA, January 28–February 2, 2017.
- C3. Xinmai Yang, Zizhong Hu, Haonan Zhang, Aghapi Mordovanakis, Yannis Paulus, and Xueding Wang, "Antivascular photo-mediated ultrasound therapy," *2016 IEEE International Ultrasonics Symposium (IUS)*, Tours, France, 16443621, September 18-21, 2016.
- C4. Janggun Jo and Xinmai Yang, "The propagation of photoacoustic shock waves", *Proceedings of SPIE Photonic West BiOS Photons Plus Ultrasound: Imaging and Sensing 2014*, Vol. 8943, 89434S, San Francisco, CA, February 1-6, 2014.
- C5. Ti Zhang, Huizhong Cui, Chia-Yi Fang, Janggun Jo, Xinmai Yang, Huan-Cheng Chang, M Laird Forrest, "In vivo photoacoustic imaging of breast cancer tumor with HER2-targeted nanodiamonds," *SPIE NanoScience+ Engineering 2013*, 881504, August 25-29, 2013.
- C6. Behrouz Soroushian and Xinmai Yang, "Measuring non-radiative relaxation time of fluorophores by intensity-modulated laser induced photoacoustic effect," *Proceedings of SPIE Photonic West BiOS Photons Plus Ultrasound: Imaging and Sensing 2013*, Vol. 8581, 85812V, San Francisco, CA, February 2-7, 2013.
- C7. Qihong Yang, Huizhong Cui, Shuang Cai, M. Laird Forrest, and Xinmai Yang, "Photoacoustic imaging of chemotherapy-induced apoptosis in squamous cell carcinoma," *Proceedings of SPIE Photonic West BiOS Photons Plus Ultrasound: Imaging and Sensing 2012*, Vol. 8223, 822306, San Francisco, CA, January 21-26, 2012.
- C8. Janggun Jo, Hongyu Zhang, Paul Cheney, and Xinmai Yang, "Photoacoustic imaging of functional domains in primary motor cortex in Rhesus Macaques," *Proceedings of SPIE Photonic West BiOS Photons Plus Ultrasound: Imaging and Sensing 2012*, Vol. 8223, 822308, San Francisco, CA, January 21-26, 2012.
- C9. Huizhong Cui and Xinmai Yang, "Monitoring of HIFU thermal damage using integrated photoacoustic imaging and high intensity focused ultrasound technique," *Proceedings of SPIE Photonic West BiOS Photons Plus Ultrasound: Imaging and Sensing 2011*, Vol. 7899, 78993L, San Francisco, CA, January 22-27, 2011.

- C10. Janggun Jo and Xinmai Yang, "Photoacoustic imaging to detect rat brain activation after cocaine hydrochloride injection," Proceedings of SPIE Photonic West BiOS Photons Plus Ultrasound: Imaging and Sensing 2011, Vol. 7899, 78993W, San Francisco, January 22-27, CA, 2011.
- C11. Huizhong Cui, Jacob Staley, and Xinmai Yang, "The integration of photoacoustic imaging and high intensity focused ultrasound," Proceedings of SPIE Photonic West BiOS Photons Plus Ultrasound: Imaging and Sensing 2010, Vol. 7564, 756428, San Francisco, CA, January 23-28, 2010.
- C12. Xinmai Yang, Anastasios Maurudis, John Gamelin, Andres Aguirre, Quing Zhu, and Lihong Wang, "Three-dimensional photoacoustic tomography of small animal brain with a curved array transducer," Proceedings of SPIE Photonic West BiOS Photons Plus Ultrasound: Imaging and Sensing 2009, Vol. 7177, 71770k, San Jose, CA, January 24-29, 2009.
- C13. Xinmai Yang, Sara Skrabalak, Erich Stein, Bin Wu, Xunbin Wei, Younan Xia, and Lihong V. Wang, "Photoacoustic tomography with novel optical contrast agents based on gold nanocages or nanoparticles containing near-infrared dyes," Proceedings of SPIE Photonic West BiOS Photons Plus Ultrasound: Imaging and Sensing 2008, Vol. 6856, 68560I, San Jose, CA, January 19-24, 2008.
- C14. Xinmai Yang and Lihong V. Wang, "Monkey brain cortex imaging by use of photoacoustic tomography," Proceedings of SPIE Photonic West BiOS Photons Plus Ultrasound: Imaging and Sensing 2008, Vol. 6856, 685608, San Jose, CA, January 19-24, 2008.
- C15. Cheng-Ying Chou, Mark A. Anastasio, Jin Zhang, Geng Ku, Xinmai Yang, and Lihong V. Wang, "Multi-bandwidth image reconstruction in photoacoustic tomography," Proceedings of SPIE Photonic West BiOS Photons Plus Ultrasound: Imaging and Sensing 2008, Vol. 6856, 68561G, San Jose, CA, January 19-24, 2008.
- C16. Xinmai Yang, Men-lin Li, and Lihong V. Wang, "Photoacoustic tomography with a virtual point detector," Proceedings of SPIE Photonic West BiOS Photons Plus Ultrasound: Imaging and Sensing January 20-25, 2007, Vol. 6437, 643718, San Jose, CA, January 20-25, 2007.
- C17. Xinmai Yang and Lihong V. Wang, "Boundary effects on image reconstruction in photoacoustic tomography," Proceedings of SPIE Photonic West BiOS Photons Plus Ultrasound: Imaging and Sensing 2007, Vol. 6437, 64370W, San Jose, CA, January 20-25, 2007.
- C18. Charles C. Church and Xinmai Yang, "A Theoretical Study of Gas Bubble Dynamics in Tissue," Proc. of 17th International Symposium on Nonlinear Acoustics, State College, PA, July 18-22, 2005.
- C19. Xinmai Yang and Charles C. Church, "Theoretical investigation of bubble heating in soft tissue," Proc. of the Fifth International Symposium on Therapeutic Ultrasound, Boston, MA, October 27-29, 2005.
- C20. Frank Barber and Xinmai Yang, "Real-time detection of HIFU-induced changes in focal attenuation from B-mode compound scan data," Proc. of the Fifth International Symposium on Therapeutic Ultrasound, Boston, MA, October 27-29, 2005.
- C21. Xinmai Yang and Charles C. Church, "The activation of tissue factors by high intensity focused ultrasound-a pathway to acoustic-biochemical hemostasis," Proc. of the Fifth International Symposium on Therapeutic Ultrasound, Boston, MA, October 27-29, 2005.
- C22. R. Glynn Holt, Ronald A. Roy, Charles R. Thomas, Caleb Farny, Tianming Wu, Xinmai Yang, Patrick Edson, "Therapeutic Bubbles: Basic Principles of Cavitation in Therapeutic Ultrasound," Proc. of the Fifth International Symposium on Therapeutic Ultrasound, Boston, MA, October 27-

29, 2005.

- C23. R. Glynn Holt, Ronald A. Roy, Patrick A. Edson, and Xinmai Yang. "Bubbles and HIFU: the good, the bad, and the ugly," Proc. of the Second International Symposium on Therapeutic Ultrasound, edited by L Crum, 120, 2002.

### Conference presentations and published abstracts

- P1. Yixin Yu, Yu Qin, Julia Fu, Xinmai Yang, Xueding Wang, Yannis Mantas Paulus, "Treatment of corneal neovascularization using synchronous nanosecond laser pulses and ultrasound bursts," ARVO annual meeting online, Investigative Ophthalmology & Visual Science, 61(7), 4057, 2019.
- P2. Yu Qin, Yixin Yu, Xinyi Xie, Wei Zhang, Julia Fu, Yannis M Paulus, Xinmai Yang, and Xueding Wang, "Photo-mediated ultrasound therapy for treatment of corneal neovascularization in rabbit eyes," Photons Plus Ultrasound: Imaging and Sensing 2020, SPIE Photonics West, San Francisco, CA, February 4-6, 2020.
- P3. Yu Qin, Yixin Yu, Julia Fu, Xinyi Xie, Tao Wang, Maria A. Woodward, Yannis M Paulus, Xinmai Yang, and Xueding Wang, "The effect of laser and ultrasound synchronization in photo-mediated ultrasound therapy," Photons Plus Ultrasound: Imaging and Sensing 2020, SPIE Photonics West, San Francisco, CA, February 4-6, 2020.
- P4. Yu Qin, Xinyi Xie, Yixin Yu, Wei Zhang, Qian Cheng, Yannis Paulus, Xinmai Yang, Xueding Wang, "The effect of laser and ultrasound synchronization in photo-mediated ultrasound therapy," International Ultrasonics Symposium (IUS), 2019 IEEE International, Glasgow, Scotland, October 6-9, 2019.
- P5. Xinmai Yang, Yannis M Paulus, and Xueding Wang, "Antivascular photo-mediated ultrasound therapy and its application in the eye," 177th meeting of Acoustical Society of America, J. Acoust. Soc. Am. 145 (3), 1810, Louisville, KY, May 13-17, 2019 (Invited).
- P6. Yixin Yu, Wei Zhang, Yu Qin, Xinyi Xie, Xinmai Yang, Xueding Wang, and Yannis Paulus, "Photoacoustic signal-guided photo-mediated ultrasound therapy as a novel method to remove microvasculature," ARVO annual meeting, Investigative Ophthalmology & Visual Science, 60(11), PB0172, Vancouver, Canada, April 26-27, 2019.
- P7. Yixin Yu, Xinyi Xie, Yu Qin, Xiaobo Xia, Maria A Woodward, Xinmai Yang, Xueding Wang, Yannis Mantas Paulus, "Removal of suture-induced corneal neovascularization in rabbits using concurrently applied nanosecond laser pulses and ultrasound," ARVO annual meeting, Investigative Ophthalmology & Visual Science, 60(9), 938, Vancouver, Canada, April 26-27, 2019.
- P8. Xinyi Xie, Yu Qin, Wei Zhang, Songtao Yuan, Qinghuai Liu, Qian Cheng, Yannis M. Paulus, Xinmai Yang, and Xueding Wang, "Image-guided photo-mediated ultrasound therapy as a novel method for treating eye diseases," Photons Plus Ultrasound: Imaging and Sensing 2019, SPIE Photonics West, San Francisco, CA, February 3-6, 2019.
- P9. Shuying Li, Yu Qin, Xueding Wang, and Xinmai Yang, "Bubble growth in cylindrically shaped optical absorbers during photo-mediated ultrasound therapy," Optical Interactions with Tissue and Cells XXX, SPIE Photonics West, San Francisco, CA, February 2-3, 2019.
- P10. Yu Qin, Xinyi Xie, Wei Zhang, Yanxiu Li, Yannis M. Paulus, Xinmai Yang, and Xueding Wang, "Photo-mediated ultrasound therapy selective removal of corneal neovascularization in rabbit eyes," Optical Interactions with Tissue and Cells XXX, SPIE Photonics West, San Francisco, CA, February 2-3, 2019.



- P11. Jinxi Wang; David Hazlewood; Yi Feng; Qinghua Lu; Xinmai Yang, “Pulsed, High Intensity Laser and Ultrasound Treatment of Post-Traumatic Arthrofibrosis in a Novel Rabbit Model of Moderate Knee Contracture.” Orthopaedic Research Society Annual Meeting, Austin, TX, February 2-5, 2019.
- P12. Xinyi Xie, Wei Zhang, Yu Qin, Songtao Yuan, Qinghuai Liu, Qian Cheng, Yannis M. Paulus, Xinmai Yang, and Xueding Wang, “Image-guided photo-mediated ultrasound therapy as a novel anti-vascular treatment for eye diseases,” International Ultrasonics Symposium (IUS), 2018 IEEE International, Kobe, Japan, October 22-25, 2018.
- P13. Xinmai Yang, Xinyi Xie, Yu Qin, Shuying Li, Wei Zhang, Yannis M Paulus, and Xueding Wang, “Antivascular photo-mediated ultrasound therapy for neovascularization in the eye,” International Ultrasonics Symposium (IUS), 2018 IEEE International, Kobe, Japan, October 22-25, 2018.
- P14. Xinyi Xie, Wei Zhang, Yu Qin, Xinmai Yang, Xueding Wang, Songtao Yuan, Yannis Mantas Paulus, and Qinghuai Liu, “Image-guided photo-mediated ultrasound therapy as a novel method to selectively treat eye vasculature,” ARVO annual meeting, Investigative Ophthalmology & Visual Science, 59(9), 5852. Honolulu, HI, April 29-May 3, 2018.
- P15. David Hazlewood, Yi Feng, Qinghua Lu, Jinxi Wang, Xinmai Yang. “Treatment of Post-Traumatic Joint Contracture Using Pulsed, High Intensity Ultrasound and Laser in Rabbit Animal Model.” Biomedical Engineering Society annual meeting, Atlanta, GA, October 17-20, 2018.
- P16. Haonan Zhang, Jia Li, Zhang Wei, Xinyi Xie, Qian Cheng, Yannis M Paulus, Xinmai Yang, Xueding Wang, “Imaging guided photo-mediated ultrasound therapy to remove choroidal blood vessels,” Ophthalmic Technologies XXVIII, SPIE Photonics West, January, 27-February 1, 2018.
- P17. Haonan Zhang, Jia Li, Wei Zhang, Xinyi Xie, Qian Cheng, Yannis M Paulus, Xinmai Yang, Xueding Wang, “Imaging guided photo-mediated ultrasound therapy,” Optical Interactions with Tissue and Cells XXIX, January, 27-February 1, 2018.
- P18. Xinmai Yang, Haonan Zhang, Jia Li, Yannis Paulus, Xueding Wang, “The application of antivascular photo-mediated ultrasound therapy in removing microvessels in the eye,” International Ultrasonics Symposium (IUS), 2017 IEEE International, Washington DC, September 6-9, 2017.
- P19. Yannis Mantas Paulus, Haonan Zhang, Jia Li, Zizhong Hu, Aghapi Mordovanakis, Xueding Wang, Xinmai Yang, “Photo-mediated ultrasound therapy as a novel method to selectively treat eye vasculature,” ARVO annual meeting Investigative Ophthalmology & Visual Science, 58(8), 5983-5983, Baltimore, MD, May 6-11, 2017.
- P20. Xinmai Yang, Zizhong Hu, Haonan Zhang, Aghapi Mordovanakis, Yannis Paulus, and Xueding Wang, “Antivascular effect induced by photo-mediated ultrasound,” SPIE BiOS Optical Interactions with Tissue and Cells XXVIII, SPIE Photonics West, San Francisco, CA. January 28-February 2, 2017.
- P21. Haonan Zhang, Zizhong Hu, Jia Li, Qian Cheng, Aghapi Mordovanakis, Yannis Paulus, Xueding Wang, and Xinmai Yang, “Photo-mediated ultrasonic antivascular therapy -- a novel method of selectively treating neovascularization,” SPIE BiOS Ophthalmic Technologies XXVII, SPIE Photonics West, San Francisco, CA, January 28–February 2, 2017.
- P22. Xinmai Yang, Zizhong Hu, Haonan Zhang, Aghapi Mordovanakis, Yannis Paulus, and Xueding Wang, “Antivascular photo-mediated ultrasound therapy,” International Ultrasonics Symposium (IUS), 2016 IEEE International, Tours, France, September 18-21, 2016.

- P23. Yannis Paulus, Zizhong Hu, Xinmai Yang, Aghapi Mordovanakis, and Xueding Wang, "Photo-mediated ultrasound therapy as a novel method to selectively treat small blood vessels," The Association for Research in Vision and Ophthalmology Annual meeting, Seattle, WA, May 1-May 5, 2016.
- P24. Xinmai Yang, "The application of nonlinear photoacoustic cavitation", The 35th Progress In Electromagnetics Research Symposium, Guangzhou, China, 25-28 August, 2014. (Invited talk)
- P25. Xinmai Yang, "Photoacoustic imaging of brain cortex in rhesus macaques" 167th meeting of the Acoustical Society of America, J. Acoust. Soc. Am. 135 (4), 2209-2209, Rhode Island, Providence, 5-9 May, 2014. (Invited talk).
- P26. Behrouz Soroushian and Xinmai Yang, "Measuring non-radiative relaxation time of fluorophores by intensity-modulated laser induced photoacoustic effect," SPIE Photonic West, San Francisco, CA, February 2-7, 2013.
- P27. Xinmai Yang, "Photoacoustic contrast imaging of biological tissue with nanodiamonds fabricated for high near-infrared absorbance," the 39th annual meeting of FACSS SCIX2012, Kansas City, MO, September 30-October 5, 2012. (Invited talk).
- P28. Huizhong Cui and Xinmai Yang, "Laser-induced-cavitation enhanced ultrasound thrombolysis," 164th meeting of Acoustical Society of America, J. Acoust. Soc. Am. 132, 2038, Kansas City, MO, October 22-26, 2012.
- P29. Qihong Yang, Huizhong Cui, Shuang Cai, M. Laird Forrest, and Xinmai Yang, "Photoacoustic imaging of chemotherapy-induced apoptosis in squamous cell carcinoma," SPIE Photonic West, San Francisco, CA, January 21-26, 2012.
- P30. Janggun Jo, Hongyu Zhang, Paul Cheney, and Xinmai Yang, "Photoacoustic imaging of functional domains in primary motor cortex in Rhesus Macaques," SPIE Photonic West, San Francisco, CA, January 21-26, 2012.
- P31. Xinmai Yang and Huizhong Cui, "The role of photoacoustic detection in high-intensity focused ultrasound surgery," AAPM annual meeting, Medical Physics, Vol. 38 (6), 3764, Vancouver, BC, Canada, 2011. (Invited talk).
- P32. Xinmai Yang and Huizhong Cui, "Real-time monitoring of high-intensity focused ultrasound ablation with photoacoustic technique," 161<sup>st</sup> meeting of the Acoustical Society of America, J. Acoust. Soc. Am. 129, 2673. Seattle, WA, May 23-27, 2011.
- P33. Huizhong Cui and Xinmai Yang, "Monitoring of HIFU thermal damage using integrated photoacoustic imaging and high intensity focused ultrasound technique," SPIE Photonic West BiOS Photons Plus Ultrasound: Imaging and Sensing 2011, San Francisco, CA, January 22-27, 2011.
- P34. Janggun Jo and Xinmai Yang, "Photoacoustic imaging to detect rat brain activation after cocaine hydrochloride injection," SPIE Photonic West BiOS Photons Plus Ultrasound: Imaging and Sensing 2011, San Francisco, CA, January 22-27, 2011.
- P35. Huizhong Cui, Jacob Staley, and Xinmai Yang, "A combined photoacoustic imaging and high intensity focused ultrasound system," SPIE Photonic West BiOS Photons Plus Ultrasound: Imaging and Sensing 2010, San Francisco, CA, January 23-28, 2010.
- P36. Xinmai Yang, Anastasios Maurudis, John Gamelin, Andres Aguirre, Quing Zhu, and Lihong Wang, "Three-dimensional photoacoustic tomography of small animal brain with a curved array transducer," SPIE Photonic West BiOS Photons Plus Ultrasound: Imaging and Sensing 2009, San

Jose, CA, January 24-29, 2009.

- P37. Xinmai Yang, Anastasios Maurudis, John Gamelin, Andres Aquirre, Quing Zhu, and Lihong V. Wang, "Three-Dimensional Rat Brain Functional Imaging with a Curved Array Photoacoustic Tomographic System," BMES Annual Fall Meeting, St. Louis, MO, October 2-4, 2008.
- P38. Xinmai Yang, Sara Skrabalak, Erich Stein, Bin Wu, Xunbin Wei, Younan Xia, and Lihong V. Wang, "Photoacoustic tomography with novel optical contrast agents based on gold nanocages or nanoparticles containing near-infrared dyes," SPIE Photonic West BiOS Photons Plus Ultrasound: Imaging and Sensing 2008, San Jose, CA, January 19-24, 2008.
- P39. Xinmai Yang and Lihong V. Wang, "Monkey brain cortex imaging by use of photoacoustic tomography," SPIE Photonic West BiOS Photons Plus Ultrasound: Imaging and Sensing 2008, San Jose, CA, January 19-24, 2008.
- P40. Cheng-Ying Chou, Mark A. Anastasio, Jin Zhang, Geng Ku, Xinmai Yang, and Lihong V. Wang, "Multi-bandwidth image reconstruction in photoacoustic tomography," SPIE Photonic West BiOS Photons Plus Ultrasound: Imaging and Sensing 2008, San Jose, CA, January 19-24, 2008.
- P41. Xinmai Yang, Men-lin Li, and Lihong V. Wang, "Photoacoustic tomography with a virtual point detector," SPIE Photonic West BiOS Photons Plus Ultrasound: Imaging and Sensing 2007, San Jose, CA, January 20-25, 2007.
- P42. Xinmai Yang and Lihong V. Wang, "Boundary effects on image reconstruction in photoacoustic tomography," SPIE Photonic West BiOS Photons Plus Ultrasound: Imaging and Sensing 2007, San Jose, CA, January 20-25, 2007.
- P43. Charles C. Church and Xinmai Yang. "The mechanical index and cavitation in tissue," 149<sup>th</sup> meeting of the Acoustical Society of America, J. Acoust. Soc. Am. 117, 2530, Vancouver, Canada, May 16-20, 2005.
- P44. Xinmai Yang and Charles Church. "Nonlinear dynamics of gas bubbles in soft tissue," 149<sup>th</sup> meeting of the Acoustical Society of America, J. Acoust. Soc. Am. 117, 2559, Vancouver, Canada, May 16-20, 2005.
- P45. Xinmai Yang and Charles C. Church. "A simple viscoelastic model for soft tissues in the frequency range 5--15 MHz," 147<sup>th</sup> meeting of the Acoustical Society of America, J. Acoust. Soc. Am. 115, 2412, New York, May 24-28, 2004.
- P46. Charles C. Church and Xinmai Yang. "A review of theoretical models for microbubble contrast agents," 146<sup>th</sup> meeting of the Acoustical Society of America, J. Acoust. Soc. Am. 114, 2319, Austin TX, November 10-14, 2003.
- P47. Yuan Jing, Xinmai Yang, Robin O. Cleveland. "Experimental and numerical investigation of Tissue Harmonic Imaging (THI)," 145<sup>th</sup> meeting of the Acoustical Society of America, J. Acoust. Soc. Am, 113, 2324 Nashville, TN, April 28-May 2, 2003.
- P48. Xinmai Yang, Jinlan Huang, R. Glynn Holt and Ronald A Roy. "Estimating "true" HIFU-induced temperature changes using thermocouples," 145<sup>th</sup> meeting of the Acoustical Society of America, J. Acoust. Soc. Am, 113, 2310, Nashville, TN, April 28-May 2, 2003.
- P49. Ronald A. Roy, R. Glynn Holt, Xinmai Yang, and Patrick Edson. "The role of bubbles and cavitation in the production of thermal lesions from high-intensity focused ultrasound," 144<sup>th</sup> meeting of the Acoustical Society of America, J. Acoust. Soc. Am. 112, 2241, Cancun, Mexico, December 2-6, 2002.
- P50. Xinmai Yang, R. Glynn Holt, Patrick Edson, and Ronald A. Roy. "A theoretical model for bubble

enhanced ultrasound heating due to time-dependent bubble size distribution,” 144<sup>th</sup>, meeting of the Acoustical Society of America, J. Acoust. Soc. Am. Cancun, Mexico, December 2-6, 2002.

P51. Xinmai Yang, Ronald A. Roy, and R. Glynn Holt. “The effect of dissolved gas concentration on bubble-enhanced heating in tissue-mimetic materials,” 144<sup>th</sup> meeting of the Acoustical Society of America, J. Acoust. Soc. Am. 112, 2241, Cancun, Mexico, December 2-6, 2002.

P52. R. Glynn Holt, Patrick A. Edson, Xinmai Yang, and Ronald A. Roy. “Bubble and cavitation-assisted hyperthermia (BACH),” 141<sup>st</sup> meeting of the Acoustical Society of America, J. Acoust. Soc. Am. 109, 2432, Chicago, IL, June 4-8, 2001.

### **Other invited scholarly presentations**

OP1. Xinmai Yang, “Bubble dynamics” Department of Physics, Tongji University, Shanghai, China, July 27, 2018.

OP2. Xinmai Yang, David Hazlewood, Yi Feng, and Jinxi Wang, “Pulsed High-Intensity Laser and Ultrasound to Relieve Post-traumatic Joint Contracture,” Symposium on Skeletal Biology and Disease, KU School of Medicine, September 21, 2017.

OP3. Xinmai Yang, “Bubble dynamics and its applications in biomedical engineering,” Department of Physics, Tongji University, Shanghai, China. June 24, 2016.

OP4. Xinmai Yang, “Anti-vascular photo-mediated ultrasound therapy,” Tongji University, Institute of Acoustics, Shanghai, China, June 23, 2016.

OP5. Xinmai Yang, “Anti-vascular photo-mediated ultrasound therapy,” Department of Ophthalmology, the First Affiliated Hospital of Nanjing Medical University, Nanjing, China, June 22, 2016.

OP6. Xinmai Yang, “Photoacoustic imaging in biological tissue,” KU Department of Chemistry, March 4, 2013.

OP7. Xinmai Yang, “Photoacoustic imaging in biological tissue,” KUMC, November 17, 2009.

OP8. Xinmai Yang, “Photoacoustic imaging in biological tissue,” Coliseum Speaker, Department of Physics and Astronomy, University of Mississippi. November 3, 2009.

### **Professional Service records outside KU**

Editorial Board Member, Experimental Biology and Medicine

Guest editor, Applied Science, “photoacoustic tomography” special issue, 2018-2020

Member of technical committee on Biomedical Acoustics, Acoustic Society of America

Over the years, I have reviewed for the following journals and publishers (more than 30 manuscripts reviewed in the last three years)

Journal of Acoustical Society of America

Physics in Medicine and Biology

Journal of Biomedical Optics

Medical Physics

Sensors

Applied Science

Molecules

Photoacoustics

Expert Review of Medical Devices  
Journal of Optics  
Acta Neurobiologiae Experimentalis  
Optical Express  
Plos one  
Chinese Optics Letters  
Journal of Medical and Biological Engineering  
Optics Letters  
NeuroImage  
Journal of Thermophysics and Heat Transfer  
Mathematical Problems in Engineering  
Ultrasonic Imaging  
IEEE Transaction on Biomedical Engineering  
ASME Journal of Vibration and Acoustics  
Biomedical Optics Express  
Journal of Electronic Imaging  
Laser in Surgery and Medicine  
Nano Research  
Nanomedicine  
Journal of Cerebral Blood Flow & Metabolism  
Journal of Vibration and Sound  
J. Canadian Physics  
Book review for Wiley  
Book Review for Oxford University Press  
Book Review for CRC press  
Book review for Cambridge University Press

**Study sections/panels served**

NIH study section ETTN P81, Grant Panelist. (April 2020 - May 2020)  
NIH study section SBIB T-10, Grant Panelist. (January 2020 - March 2020)  
NIH study section ETTN P50, Grant Panelist. (December 2019 - February 2020)  
NIH study section ETTN P81, Grant Panelist. (December 2019 - February 2020)  
NSF graduate fellow research program, Grant Panelist. (December 2019 - January 2020)  
NIH study section SBIB T-10, Grant Panelist. (October 2019 - November 2019)  
NIH study section BST-T(40), Grant Reviewer, Ad Hoc. (April 2019 - May 2019)  
NSF Graduate Research Fellowship Program, Grant Panelist. (December 2018 - March 2019)  
NSF Graduate Research Fellowship Program, Grant Panelist. (December 2017 - January 2018)