

# Lei Xi, PhD

## PERSONAL INFORMATION

**Address:** Room 439, Yifu Building  
School of Physical Electronics  
University of Electronic Science and Technology of China  
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## EDUCATION

2010.08-2012.12 Doctor of Philosophy  
Department of Biomedical Engineering  
University of Florida, United State

2008.09-2010.07 Master of Science  
Department of Biomedical Engineering  
University of Florida, United State

2003.09-2007.06 Bachelor of Science  
College of Optoelectronics Science and Engineering  
Huazhong University of Science and Technology, Wuhan, China

## POSITIONS

2014.11-present Professor  
School of Physical Electronics  
University of Electronic Science and Technology of China

2013.01-2014.10 Postdoctoral Associate  
Department of Biomedical Engineering  
University of Florida, United State

2007.07-2008.06 Research Assistant  
Britton Chance Center for Biomedical Photonics  
Wuhan National Laboratory for Optoelectronics  
Huazhong University of Science and Technology, Wuhan, China

## HONORS

2012 **Outstanding Academic Achievement** from University of Florida

2008-2009 J.Crayton Pruitt Fellowship from University of Florida

2006-2007 Innovation and research reward from Huazhong University of Science and Technology

2003-2006 Excellent student scholarship from Huazhong University of Science and Technology

## INVITED TALKS

1. "Photoacoustic Tomography: Principles and Applications for Breast Cancer" Moffitt Cancer Center, Tampa, FL 2012

2. "Multiscale photoacoustic imaging for cancer research" Depart. of Electrical and Computer Engineering, University of Florida, 2013
3. "Multimode optical imaging for image-guided surgery" The Second Postdoc Research Symposium, University of Florida (04/21/2014)
4. "Photoacoustic Imaging of Breast Cancer: Detection and Image-guided Surgery " Invited Talk at SPIE Student Section Symposium on Medical Applications of Optics. College of Optics&Photonics, University of Central Florida. (5/5/2014)
5. "Intraoperative photoacoustic, diffuse optical and fluorescence molecular tomography based on MEMS mirror" International Conference on Optoelectronics and Microelectronics Technology and Application 2014, Tianjin.

## **RESEARCH FEILDS**

Biomedical Optics, Photoacoustic Tomography, Optical Coherence Tomography, Diffuse Optical Tomography, Fluorescence Molecular Tomography, Optical Imaging of Breast Cancer, Targeted Nanoprobe, Image-guided Surgery.

## **GRNATS**

1. Dual modality imaging system for early diagnosis of finger joint osteoarthritis, 81571722, National Science Foundation of China, 2016.1~2019.12, CNY 700,000, PI
2. Development of four-modality endoscopic system for the detection of prostate cancer by using MEMS mirror, 61528401, National Science Foundation of China, 2016.1~2017.12, CNY 200,000, PI
3. Optical image-guided surgery for breast cancer. 2016HH0019, Department of Science and Technology of Sichuan Province, 2016.1~2017.12, CNY 300,000, PI
4. Startup Grant, ZYGX2015KYQD011, University of Electronic Science and Technology of China, 2015.6~2017.6, CNY 350,000, PI

## **PUBLICATIONS (JOURNAL)**

### **2016**

1. **Lei Xi**, Huabei Jiang "Image-guided surgery using multimodality strategy and molecular probes" **WIREs Nanomedicine and Nanobiotechnology** 8 (1), 46-60.
2. **Lei Xi\***, Huabei Jiang "Integrated photoacoustic, diffuse optical and fluorescence molecular tomography system: Phantom and pre-clinical validations" **Journal of Biophotonics** (DOI: 10.1002/jbio.201500197) (\***Corresponding author**).

## **2015**

3. Xiaoqi Li, Coy D. Heldermon, Lei Yao, **Lei Xi**, Huabei Jiang "High resolution functional photoacoustic tomography of breast cancer " **Medical Physics** 42, 5321-5328 (2015). (
4. **Lei Xi**<sup>\*</sup>, Huabei Jiang "High resolution three-dimensional photoacoustic imaging of human finger joints in vivo" **Applied Physics Letters** 107, 063701 (2015) (**\*Corresponding author**).
5. Xianjin Dai<sup>#</sup>, **Lei Xi**<sup>#</sup>, Can Duan, Hao Yang, Huikai Xie, Huabei Jiang "Miniature probe integrating optical-resolution photoacoustic microscopy, optical coherence tomography, and ultrasound imaging: proof-of-concept" **Optics Letters** 40, 2921-2924 (2015) (**#equal contributors**).
6. Jianbo Tang, **Lei Xi**, Junli Zhou, Hua Huang, Tao Zhang, Paul Carney, Huabei Jiang "Noninvasive high-speed photoacoustic tomography of cerebral hemodynamics in awake-moving rats" **Journal of Cerebral Blood Flow Metabolism** 35, 1224-1232 (2015).

## **2014**

7. Lei Yao<sup>#</sup>, **Lei Xi**<sup>#</sup>, Huabei Jiang "Photoacoustic computed microscopy," **Scientific Reports** 4 (2014) (**#equal contributors**)
8. **Lei Xi**, Chaolong Song and Huabei Jiang "Confocal photoacoustic microscopy using a single multifunctional lens," **Optics Letters** 39, 3328-3331 (2014).
9. **Lei Xi**, Minati Satpathy, Qing Zhao, Weiping Qian, Lily Yang, Huabei Jiang "HER-2/Neu targeted delivery of a nanoprobe enables dual photoacoustic and fluorescence tomography of ovarian cancer," **Nanomedicine: Nanotechnology, Biology and Medicine** 10. 669-677 (2014).
10. **Lei Xi**, Guangyin Zhou, Ning Gao, Lily Yang, David Gonzalo, Steven Hughes and Huabei Jiang "Photoacoustic and fluorescence image-guided surgery using multifunctional targeted nanoprobe," **Annals of Surgical Oncology** 21, 1602-1609 (2014).
11. **Lei Xi**, Stephen Grobmyer, Guangyin Zhou, Weiping Qian, Lily Yang, Huabei Jiang "Molecular photoacoustic tomography of breast cancer using receptor targeted magnetic iron oxide as contrast agents," **Journal of Biophotonics** 7, 401-409 (2014). (**Editor's Choice**)
12. Zhen Yuan, Xiaoqi Li, **Lei Xi** "Listening to light scattering in turbid media: Quantitative optical scattering imaging using photoacoustic measurements with one-wavelength illumination" **Journal of Optics** 16, 065301 (2014).
13. Zhijun Chen, Qing Ruan, Song Han, **Lei Xi**, Brian Law, Wen G. Jiang, Hubei Jiang, David Ostrov, Jun Cai "Discovery of structure-based small molecular inhibitor of  $\alpha$ B-crystallin against basal-like/triple negative breast cancer development in vitro and in vivo," **Breast Cancer Research and Treatment** 145, 45-49 (2014).

## **2013**

14. Chaolong Song<sup>#</sup>, **Lei Xi**<sup>#</sup>, Huabei Jiang " Acoustic lens with variable focal length for photoacoustic microscopy," **Journal of Applied Physics** 114, 194703 (2013) (**#equal contributors**)

15. Chaolong Song<sup>#</sup>, **Lei Xi**<sup>#</sup>, Huabei Jiang "Liquid acoustic lens for photoacoustic tomography," **Optics Letters** **38**, 2930-2933 (2013) (**#equal contributors**)
16. **Lei Xi**, Can Duan, Huikai Xie, Huabei Jiang "Miniature probe combining optical-resolution photoacoustic microscopy (ORPAM) and optical coherence tomography (OCT) for in vivo microcirculation study" **Applied Optics** **52**, 1928-1931 (2013)
17. Hao Yang, **Lei Xi**, Sean Samuelson, Huikai Xie, Lily Yang, Huabei Jiang "Handheld miniature probe integrating diffuse optical tomography with photoacoustic imaging through a MEMS scanning mirror," **Biomed. Opt. Express** **4** (3), 427-432 (2013)

## **2012**

18. **Lei Xi**, Xiaoqi Li, Huabei Jiang "Variable-thickness multilayered polyvinylidene fluoride transducer with improved sensitivity and bandwidth for photoacoustic imaging" **Applied Physics Letters** **101**(17) (2012)
19. Qiang Ruan<sup>#</sup>, **Lei Xi**<sup>#</sup>, Sanford Boye, William W Hauswirth, Song Han, Zhijuan Chen, Michael E Boulton, Brain K Law, Wen G Jiang, Huabei Jiang, Jun Cai "Development of anti-angiogenic therapeutic model by combining scAAV2-delivered siRNAs and noninvasive photoacoustic imaging of tumor vasculature development," **Cancer Letters** **332**, 120-129 (2012) (**# equal contributors**)
20. **Lei Xi**, Lei Zhou, Huabei Jiang "C-scan photoacoustic microscopy for in vivo imaging of Drosophila pupae," **Applied Physics Letter**. **101**(1) 013702 (2012)
21. **Lei Xi**, Stephen R. Grobmyer, Lei Wu, Ruimin Chen, Guangyin Zhou, Luke G. Gutwein, Jingjing Sun, Wenjun Liao, Qifa Zhou, Huikai Xie, and Huabei Jiang "Evaluation of breast tumor margins in vivo with intraoperative photoacoustic imaging," **Optics Express** **20**, 8726-8731 (2012)
22. **Lei Xi**, Xiaoqi Li, Huabei Jiang "Design and evaluation of a hybrid photoacoustic tomography and diffuse optical tomography system for breast cancer detection," **Medical Physics** **39**, 2584 (2012)
23. Bin He, **Lei Xi**, Huikai Xie, Lily Yang, Huabei Jiang "Microelectromechanical systems scanning-mirror-based handheld probe for fluorescence molecular tomography" **Applied Optics** **20**, 4678-4683 (2012)

## **2011**

24. Xiaoqi Li, **Lei Xi**, Ruixin Jiang, Lei Yao, and Huabei Jiang, "Integrated diffuse optical tomography and photoacoustic tomography: phantom validations," **Biomedical Optics Express** **2**, 2348-2353 (2011)

## **2010**

25. **Lei Xi**, Jingjing Sun, Yiping Zhu, Lei Wu, Huikai Xie, and Huabei Jiang "Photoacoustic imaging based on MEMS mirror scanning," **Biomedical Optics Express** **1**, 1278-1283 (2010)

## 2008

26. Kun Bi, Xiaochun Xu, **Lei Xi**, Shaoqun Zeng, and Qingming Luo, "A DR-WFOI fusion system for the real-time molecular imaging in vivo," **Chinese Optics Letters** 6, 893-895 (2008)

## **PUBLICATIONS (CONFERENCE)**

1. Wenjun Liao, Wenjing Liu Jingjing Sun, Yiping Zhu, Lei Wu, Huikai Xie, **Lei Xi**, Huabei Jiang, "Miniature photoacoustic imaging probe using MEMS scanning miromirror," Optical MEMS and Nanophotonics (OMN), 2011 International Conference
2. **Lei Xi**, Stephen R. Grobmyer, Lei Wu, Ruimin Chen, Guangyin Zhou, Luke G. Gutwein, Jingjing Sun, Wenjun Liao, Qifa Zhou, Huikai Xie, and Huabei Jiang, "Intraoperative photoacoustic tumor imaging," BSu3A.48 Biomedical Optics/Digital Holography, 2012 Miami, Florida, US.
3. Xiaoqi Li, **Lei Xi**, Ruixing Jiang, Lei Yao, Huabei Jiang "Intergrated diffuse optical tomography and photoacoustic tomography: phantom validations" Btu3A.21 Biomedical Optics/Digital Holography, 2012 Miami, Florida, US.
4. Minati Satpathy, Weiping Qian, Rafal Zielinski, Liya Wang, **Lei Xi**, Jacek Capala, Andrew Wang, Malgorzata Lipowska, Brad A. Kairdolf, Huabei Jiang, Shuming Nie, Hui Mao, Lily Yang. Multimodality imaging of ovarian cancer using HER2 affibody conjugated nanoparticles. Abstract in Proceedings of the 104th Annual Meeting of the American Association for Cancer Research
5. **Lei Xi**, Guangyin Zhou, Ning Gao, Lily Yang, David Gonzalo, Steven Hughes and Huabei Jiang "Evaluation of a Multifunctional Targeted Nanoprobe for Photoacoustic and Fluorescence Image-guided Surgery," BW1B.4 Biomedical Optics/Digital Holography, 2014 Miami, Florida, US. (Oral Presentation)
6. **Lei Xi**, Can Duan, Huikai Xie, Huabei Jiang, "Miniature probe combining optical-resolution photoacoustic microscopy (ORPAM) and optical coherence tomography (OCT) for in vivo microcirculation study," BS3A.62 Biomedical Optics, 2014 Miami, Florida, US.
7. Chaolong Song, **Lei Xi**, Huabei Jiang, "Tunable acoustic lens for photoacoustic microscopy", BS3A.65 Biomedical Optics, 2014 Miami, Florida, US.
8. Chaolong Song, **Lei Xi**, Huabei Jiang, "Evaluation of the negative liquid lens for photoacoustic tomography," BS3A.64 Biomedical Optics, 2014 Miami, Florida, US.

## **PATENTS**

1. CN201239138Y (Chinese Patent, Approved)
2. CN101317764B (Chinese Patent, Approved)
3. Compact lens system for use in photoacoustic microscopy (US, Application Number: 14296858)

## **JOURNAL Service**

**2015.8~ Associate Editor, Journal of Medical Imaging, SPIE**

**Reviewers:** Nanomedicine: NBM, Optics Letters, Optics Express, Applied Optics, Biomedical Optics Express, Journal of Biophotonics, Journal of X-ray Science and Technology, Journal of Innovative Optical Health Sciences, Journal of Biomedical Optics, Materials Today, Frontiers in human Neuroscience, Medical Physics, Optical Engineering