



The Department of MECHANICAL ENGINEERING



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Yu, Miao



Professor
Director, Maryland Robotics Center
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Postdoc positions available in the areas of nanophotonic sensors and acoustic metamaterials

Research Interests

Optical sensors
Sensor mechanics and material behavior at multiple spatial scales
Micro-scale and nano-scale sensor systems
Sensors for civil, mechanical, electrical, biochemical, biomechanics, biology, medical, and environmental applications, and sensor networks
Adaptive optics
Wavefront sensing and control
Imaging through turbulence
Smart materials and structures
Theoretical and experimental mechanics

Education

Ph.D., (Mechanical Engineering) University of Maryland, 2002
M.S., (Engineering Mechanics) Tsinghua University, Beijing, China, 1998
B.S., (Engineering Mechanics) Tsinghua University, Beijing, China, 1996

Honors and Awards

Faculty Early Career Development (CAREER) Award from National Science Foundation (2007)
Young Investigator Research Program (YIP) Award from Air Force Office of Scientific Research (2007)
The Ralph E. Powe Junior Faculty Enhancement Award (2006)

Invention of the Year Award in the Physical Sciences Category from the University of Maryland (2002)

Six invention disclosures, three U.S. patents in the area of fiber-optic sensor systems

Professional Memberships and Service

Paper Reviewer for Journal of Precision Engineering, Journal of Mechatronics, and Journal of Experimental Mechanics, AIAA Journal, Journal of Experimental Mechanics, Journal of Intelligent Material Systems and Structures, Journal of Acoustic Society of America, IEEE/ASME Journal of Microelectromechanical Systems

ASEE Field Reviewer for Post-doctoral Fellowship Proposals

Program Committee of SPIE Conference on Modeling, Signal Processing and Control, since 2004

Technical Committee of ASME-IMECE on Dynamics and Control of Structures and Systems, since 2006

Program Committee of SPIE Optics East Conference on Sensors for Harsh Environments, 2007

Program Committee of SPIE Photonics Asia Conference on Advanced Materials and Devices for Sensing and Imaging, 2007

Selected Publications

2009

Y. Liu and M. Yu, "Investigation of inclined dual-fiber optical tweezers for 3D manipulation and force sensing," *Opt. Express*, 17, 13624–13638, 2009.

2008

H. Liu, M. Yu, and X. M. Zhang, "Biomimetic optical directional microphone with structurally coupled diaphragms," *Applied Physics Letters*, 93, 243902, 2008.

M. Yu, X. Long, and B. Balachandran, "Sensor diaphragm under initial tension: nonlinear responses and design implications," *Journal of Sound and Vibration*, Vol. 312, pp. 39–54, 2008.

S. Nesson, M. Yu, X. M. Zhang, and A. Hsieh, "Miniature fiber-optic pressure sensor with composite polymer-metal diaphragm for intradiscal pressure measurements," *Journal of Biomedical Optics*, Vol. 13(4), 044040, 2008.

L. Currano, S. Bauman, W. Churaman, M. Peckerar, J. Wienke, S. Kim, M. Yu, and B. Balachandran, "Latching MEMS shock sensors for ultra-low power acceleration monitoring," *Sensors and Actuators A: Physical*, Vol. 147 (2), pp. 490–497, 2008.

2007

W. M. Zhu, T. Zhong, A. Q. Liu, X. M. Zhang, and M. Yu, "Micromachined optical well structure for thermo-optic switching," *Applied Physics Letters*, 91, 261106, 2007.

2005

M. Yu and B. Balachandran, "Pressure sensor diaphragm under initial tension: linear analysis," *Experimental Mechanics*, Vol. 45 (2): pp 123–129, 2005.

2004

M. Yu and M. A. Vorontsov, "Compensation of distant phase-distorting layers I: Narrow field of view adaptive receiver system," *Journal of the Optical Society of America A*, Vol. 21(9), pp.1645–1658, 2004.

M. A. Vorontsov and M. Yu, "Compensation of distant phase-distorting layers II: Extended field of view adaptive receiver system," *Journal of the Optical Society of America A*, Vol. 21(9), pp. 1659–1668, 2004.

2003

M. Yu and B. Balachandran, "Acoustic measurements using a fiber optic sensor system," *Journal of Intelligent Material Systems and Structures*, Vol. 14(7), pp. 409–414, 2003.

Related News

Alumnus Wins DARPA Young Faculty Award

UMD alumnus to conduct research on polymer-based replicated multi-modal fiber Bragg grating for Fentanyl detection. September 4, 2018

Lu, Gollob, Picard win ISR annual awards

ISR's outstanding graduate student, undergraduate student, and staff member awards were given at the Institute's welcome back reception. August 30, 2018

Bioinspired robotics REU students present final projects

The REU was led by Hugh Bruck and Sarah Bergbreiter, along with Clark School faculty and graduate student mentors. August 15, 2018

Hahn Receives NSF CAREER Award

NSF awards Hahn funding to research “white-box” autonomy in medical systems. April 2, 2018

Yu Named ASME Fellow

Professor Miao Yu has been named an American Society of Mechanical Engineers (ASME) Fellow. August 4, 2017

Miao Yu named Maryland Robotics Center director

Yu develops sensors useful in a variety of robotics applications. June 20, 2017

Yu Promoted to Professor

Department of Mechanical Engineering Associate Professor Miao Yu promoted to the rank of Professor. May 8, 2017

Kusimo to Deliver Student Speech for Clark School Spring Commencement

Mechanical Engineering senior Abisola Kusimo will deliver Clark School Spring Commencement student speech. May 19, 2015

New AFOSR NIFTI Center features eight Clark School faculty

Center will create bio-inspired solutions for small, remotely operated aircraft. April 14, 2015

UMD Researchers Use Artificially Engineered Materials to Create Breakthrough for Sound Sensors

"Enhanced Acoustic Sensing through Wave Compression and Pressure Amplification in Anisotropic Metamaterials" published in *Nature Communications* October 14, 2014

Maryland Industrial Partnerships Program Approves 18 Technology Development Projects

Worth \$4.7 million, the projects team Maryland faculty and companies to bring products closer to market. September 9, 2014

Bruck Named SEM Fellow

Department of Mechanical Engineering Professor Hugh Bruck named SEM Fellow. June 25, 2014

Bruck, Smela, Yu receive NSF grant for compliant multifunctional robotic structures

National Robotics Initiative grant will develop a robotic 'nervous system.' September 3, 2013

Yu and Liu Receive New Patent

Miao Yu and Haijun Liu patent bio-inspired system and method for sensing and localizing acoustic signals. August 26, 2013

Mechanical Engineering Alumnus to Join Faculty at WPI

Yuxiang Liu will teach mechanical engineering at the Worcester Polytechnic Institute starting this fall. May 6, 2013

Six Mechanical Engineering Students Selected for 2013 Future Faculty Program

Department has largest cohort in Clark School. February 22, 2013

Mechanical Engineering Graduate Students Win Travel Grants to 2012 ASME International Mechanical Engineering Conference and Exposition

Sandip Haldar and Haijun Liu won the grants based on research projects. October 8, 2012

Miao Yu selected for NAE Frontiers of Engineering Symposium

Yu is one of 100 young engineers selected to discuss cutting-edge research. June 18, 2012

Miao Yu Invited to Attend 2012 U.S. Frontiers of Engineering Symposium

Professor among 100 engineers under 45 selected to attend the conference. June 11, 2012

Dr. Miao Yu and Research Team Receives Patent

Professor and research team patent an ultra-miniature fiber-optic pressure sensor system and method of fabrication. May 10, 2012

Zhijian Zhang Wins First Place in IEEE Photonics Society's Student Poster Competition

Ph.D. student receives award for poster display on optics and photonics. May 9, 2012

Kusimo Wins \$1,000 in Alpha Phi Alpha Scholarship Contest

Sophomore mechanical engineering major encourages youth to be advocates for their beliefs. March 23, 2012

Yu and Team Develop Fiber-Based Plasmonic Lens

UMD/NIST collaboration develops versatile optical technology. February 22, 2012

Yu Collaborates With U.S. Army Research Lab

ME professor and students develop new microphone array system. October 17, 2011

Miao Yu Promoted to Associate Professor

UM graduate receives tenure in the Department. May 17, 2011

Miao Yu wins NSF grant for fiber optic tweezers

The project will develop a flexible and efficient dexterous dual fiber tweezers system. August 15, 2010

Espy-Wilson, Rubloff Are Top UM Inventors

Speech enhancing algorithm, high-density energy storage cells named best of '09. April 14, 2010

Aerospace publication highlights Miao Yu research

Fly ear work of ISR-affiliated professor could aid MAV navigation. December 8, 2008

Yu, Balachandran awarded US Patent 7,428,054

Micro-optical fiber tip based sensor system will measure pressure, acceleration and pressure gradients. October 2, 2008

Miao Yu Receives AFOSR YIP Award

Award will support research on fly ear-inspired sensors for detection and localization. October 24, 2007

Mechanical Engineering Recognizes Faculty Accomplishments

Edward B. Magrab honored at reception recognizing distinguished service to campus and department. May 16, 2007

Teng Li wins Ralph E. Powe Junior Faculty Enhancement Award

Seed money to be used to explore flexible electronics research. April 30, 2007

Department Welcomes German Fulbright Scholars

German-American Fulbright Program provides educational exchange. April 13, 2007

Miao Yu wins NSF CAREER Award

Yu's research will create a new class of miniature directional microphones inspired by the remarkable sound localizing ears of the fly Ormia. March 14, 2007

Mechanical Engineering Honors Prof. James Wallace & Faculty

Mechanical Engineering faculty were honored at the Faculty Recognition Event and Dinner on Friday, May 12. May 15, 2006

Miao Yu Receives Powe Junior Faculty Enhancement Award

Yu is one of only two Maryland faculty nominated by the University to earn this award. April 15, 2006

Dr. Miao Yu to Joins ME Department

Dr. Miao Yu joined the Mechanical Engineering Department in January as a tenure-track Assistant Professor. January 15, 2005

New Company Formed on Award-Winning Invention

The company, called Odexia, is incorporating with plans to open in College Park, Balachandran said. May 2, 2003

Profs. Balachandran and Sandborn Winners of OTC Invention of the Year Competition

Professors Balakumar Balachandran and Peter Sandborn were the winners of two of the three (OTC) Invention of the Year Awards. April 15, 2003