Wei-Chih Wang

Department of Mechanical Engineering
University of Washington
Seattle, WA 98195
206-543-2479
abong@u.washington.edu
Lab website: depts.washington.edu/mictech/home
Personal website: faculty.washington.edu/abong

EDUCATION

Bachelor of Science in Electrical Engineering, 1989
University of Washington, Seattle, WA.
Master of Science in Electrical Engineering, 1992
University of Washington, Seattle, WA.
Doctor of Philosophy in Electrical Engineering, 1996
University of Washington, Seattle, WA.

EMPLOYMENT HISTORY

Research Assistant Professor	1/03 – present
Department of Mechanical Engineering at University of Washington	
Adjunct Research Assistant Professor	1/06 - present
Department of Electrical Engineering at University of Washington	
Invited Guest Lecturer	6/04 – present
Department of Electronic Engineering at Southern Taiwan University of Technology	
Lecturer	3/98 – 1/03
Department of Mechanical Engineering at University of Washington	
Research Associate	9/97 – 3/98
Department of Mechanical Engineering at University of Washington	
Post-Doctoral Fellow	3/96 – 6/97
Department of Electrical Engineering, University of Hawaii at Manoa	
Research Assistant and Teaching Assistant	3/92 – 12/94
Department of Electrical Engineering, University of Washington	
Tutor of Physics & Engineering Courses	3/85 – 3/92
Instructional Center, University of Washington	*6/97 – 3/98*

HONORS/AWARADS

- Recipient of College of Engineering Community and Innovation Award, University of Washington in 2006
- Article appear in SPIE Newsroom Micro/nano lithography & fabrication- MEMS based cantilever waveguide scanning system for a head mount display system. (2006) (http://newsroom.spie.org/x3121.xml?highlight=x525)
- Articles on waveguide based shear/pressure sensor appear in Ruthers Health, Saturday Evening Post, Washington Engineer, Proto Online – A Flexible Micromachined Optical Sensor for simultaneous measurement of pressure and shear force distribution on foot. (2005, 2006) (http://www.podiatryonline.com/main.cfm?pg=diabetes&fn=fiberoptic, http://www.findarticles.com/p/articles/mi_m1189/is_6_277/ai_n15792758,

http://www.engr.washington.edu:8080/enews/2005-10/15.html, http://www.buylowdrugs.com/foptic.php)

- Rank top 10 in patent disclosure at University of Washington in 2004 and 2005
- Top rank in patent disclosure at University of Washington in 2006
- Post-doctoral Fellowship, DARPA funded piezoelectric transducer project, Department of Electrical Engineering, University of Hawaii at Manoa
- Awarded the Ford Motor Company's fellowship in 1995
- Awarded the TRW fellowship in 1994
- Runner-up for the annual best teaching assistant award of Department of Electrical Engineering, University of Washington in 1993
- Received the Teddy Miller Tutor Award, University of Washington in 1989
- Received the annual University of Washington Instructional Center Physics Tutor Award in 1988

PUBLICATIONS

Refereed archival journal publications

[1] Wei-Chih Wang, M. Afromowitz, B. Hannaford, "Technique for mechanical measurement using optical scattering from a micro-pipette", IEEE Trans. Biomedical Eng., Vol. 40, 3, p298-304,1994

[2] Wei-Chih Wang, S. Yee, P. Reinhall, "Optical viscosity sensor using forward light scattering", Sensor & Actuator B 24-25, 1995

[3] Wei-Chih Wang, P. Reinhall, S. Yee, "Fluid viscosity measurement using forward light scattering [submerged optical fibre probe]", Measurement Science and Technology, 10 (4), 316-22,1999

[4] Wei-Chih Wang, Mark Fauver, Joe N. Ho, Eric J. Seibel, Per G. Reinhall, "Micromachined optical waveguide cantilever as a resonant optical scanner," SENSORS AND ACTUATORS: A., 102, pp.165-175, 2002.

[5] Wei-Chih Wang, Per Reinhall, "A novel double-sided micromachining process for silicon cantilever using a parallel capacitively coupled plasma, "Journal of Microlithography, Microfabrication, and Microsystems, Vol.4, 1, p.013010-1 to 6 (2005)

[6] Wei-Chih Wang, Jo Nhut Ho, Reinhall " Use of nonlinear vibration in liquid viscosity sensing," Journal of Vibration and Control, submitted

[7] Wei-Chih Wang, William Ledoux, Bruce Sangeorzan, Per Reinhall, "A 3-D force distribution sensor using fiber optic bend lLoss sensor," Journal of Rehabilitation Research and Development, vol.42, N. 3, p.315-326, 2005.

[8] Wei-Ching Chuang, Chi-Ting Ho, Ruey Fang Shyu, and Wei-Chih Wang, "Fabrication of high-resolution periodical structure using a replication process," Optics Express, Vol. 13 Issue 18 P 6685-6692 (September 2005)

[9] Wei-Ching Chuang, Chi-Ting Ho, Yi-Ru, Lian, Ching_Kong Chao, Ryue-Fang, Shyu, and Wei-Chih Wang, " Transducing mechnical forces using a polymer optical grating sensor," Material Science Forum, Vols. 505-507, p91-96, 2006

[10] Wei-Chih Wang, Chu-yu, Hunag, William Ledoux, Per Reinhall, "Developments of a Microfabricated optical bend loss sensor for distributive pressure measurement," IEEE Trans. Biomedical Eng., accepted will be published June, 2007.

[11] Wei-Chih Wang, Joe Ho, Per Reinhall "Use of nonlinear vibration for viscosity measurement," Journal of Vibration and Control, submitted (currently revising).

[12] Reynold Panergo, Choa-Shih liu, Per Reinhall, Wei-Chih Wang, " Resonant polymeric optical waveguide cantilever integrated for image acquisition," Journal of Lightwave technology, Vol. 25, No. 3, March, 2007

[13] Wei-Chih Wang, Per Reinhall "Scanning Polymeric Waveguide Design of a 2D display system," IEEE Journal of Display Technology, submitted.

[14] Wei-Chih Wang, Chi-Ting ho, Yi-Ru Lian, and Wei-Ching Chuang, "Transducing mechanical force by use of a diffraction grating sensor,"Applied Optics, Vol.45, 9, p1894-1897, 2006

[15] Wei-Chih Wang, “MEMS based cantilever waveguide scanning system for a head mount display system,” SPIE Newsroom, Micro/Nano Lithography & Fabrication, 2006 (http://newsroom.spie.org/x3121.xml?highlight=x525)
[16] Yu-Cheng Lin, Wei-Ching Chuang, Chien-Jang Wu, and Wei-Chih Wang, “A compact-size D lens collimator for fiber coupling,” Journal of Optoelectronics and Advanced Materials, accepted will be published in June 2006.
[17] Wei-Chih Wang, Per Reinhall, “Reactive ion etching process for silicon oxide and low K spin-on glasses,” Journal of Electrochemical Society, submitted 2006.
[18] Joe Ho, Wei-Chih Wang, “Diagmagnetic levitation rotor: static stability”, Sensors and Actuators, submitted 2006.
[19] Alexander .I. Fedorchenko, Anbang Wang, Wei-Chih Wang,” Viscosity Effect on microstructure dynamics,” Sound and Vibration, pending (expected submission 2007).
[20] Wei-Chih Wang, Chu-Yu Huang “Composited fiberoptic distributive shear/pressure sensor,” IEEE Sensors Journal , Submitted.
[21] Wei-Chih Wang, Chu-yu, Hunag, ChengSheng Huang, “Numerical analysis of leakage loss using rib waveguide sensor,” pending (expected submission June 2007).

Non-journal fully refereed publications

[1] Wei-Chih Wang, S. Yee, P. Reinhall, "Optical viscosity sensor using forward light scattering", Sensor & Actuator Proc. for the Fifth Int'l Meeting on Chemical Sensors Rome, Italy 1994
[2] Wei-Chih Wang, P. Reinhall, S. Yee, "Fluid viscosity and mass flow measurement using forward light scattering" SPIE Proc. 2574: 146-51, 1995
[3] X.Zhu, E.Tran,W-C Wang, E.S.Kim,"Micromachined acoustic-wave liquid ejector", Hilton Head Solid-State Sensor and Actuator Workshop , 1996.
[4] Wei-Chih Wang, Jeffrey Dee, William Ledoux, Bruce Sangeorzan, Per Reinhall, “Development of a directional sensitive pressure and shear sensor,” in Proc. SPIE Vol. 4702, p. 212-220, 2002
[5] Wei-Chih Wang, Joe N. Ho, Per G. Reinhall, “Development of an optical waveguide cantilever scanner,” in Proc. SPIE 4876, p72-83, 2002.
[6] Wei-Chih Wang, Joe N. Ho, Per G. Reinhall, “Deep reactive ion etching of silicon using an aluminum etching mask,” in Proc. SPIE 4876, p 633-640, 2002.
[7] Wei-Chih Wang, Reynold Panergo, Per Reinhall, “Development of a microfabricated scanning endoscope using SU-8 based optical waveguide, “ 2003 SPIE NDE health monitoring and diagnostics, SPIE 5047, p305-313.
[8] Wei-Chih Wang, Reynold Panergo, Chrisopher Galvanin, William Ledoux, Bruce Sangeorzan, Per Reinhall, “A flexible micromachined optical sensor for simultaneous measurement of pressure and shear distribution on foot,” 2003 SPIE NDE health monitoring and Diagnostics, SPIE 5047, p275-285.
[9] Wei-Chih Wang, Reynold Panergo, Kasha Touloei, Per Reinhall, “Development of a microfabricated scanning endoscope using SU-8 based optical waveguide, “ 2003 International Polymer fiber conference, p.98-101.
[10] Wei-Chih Wang, Reynold Panergo, William Ledoux, Bruce Sangeorzan, Per Reinhall, “A PDMS based distributive shear/pressure sensor,” 2003 International Polymer Fiber Conference, p.68-71.
[11] Wei-Chih Wang, Reynold Panergo,” Resonant optical scanner using cantilever waveguide,” SPIE 5394, 2004, p280-287.
[12] Reynold Panergo, Wei-Chih Wang, William Ledoux, Bruce Sangeorzanb, Per Reinhall , “A flexible micromachined optical sensor for simultaneous measurement of pressure and shear force distribution on feet,” UW Biomechanics Symposium, May, 2003
[13] Chu-Yu Huang, Chao-Shih Liu, Reynold Panergo Cheng-Sheng Huang, Wei-Chih Wang, “Developments of a Force Image Algorithm for Micromachined Optical Bend Loss Sensor,” 2005 SPIE NDE health monitoring and Diagnostics, SPIE 5768, p38-43

[14] Reynold Panergo[a], Chao-Shih Liu[a], Benjamin Estroff[b], Wei-Chih Wang[a], "Polymeric waveguide design of a 2D scanner," 2005 SPIE NDE health monitoring and Diagnostics, SPIE 5768, p 450-460
[15] Joe Ho, Wei-Chih Wang, " Levitated motor using diamagnetic materials", 2005 Progress in Electromagnetics Research Symposium, Hangzhou, China, 2005, p89-91.
[16] Wei-Chih Wang, Yi-Ru Lian, Chi-Ting Ho, Ching-Kong Chao and Wei-Ching Chuang, "A new novel means of transducing mechanical shear and tensile stress using a polymer optical grating sensor." Progress in Electromagnetics Research Symposium, Hangzhou, China, 2005, p92-95.
[17] Wang Wei-Chih Wang, Joe Ho, Per Reinhall "Mathematical model for the dynamics of a optical fiber viscometer", SPIE NDE health monitoring and Diagnostics, San Diego, CA., 2006, SPIE6277
[18] Wei-Chih Wang, Christopher Takahshi, Reynold Panergo, Per Reinhall, "Polymeric waveguide design of 2D display system ," SPIE NDE health monitoring and Diagnostics, San Diego, CA., 2006, SPIE6177.
[19] Wei-Chih Wang, Chu-Yu Huang, Per Reinhall, "A wireless composite optical bend loss sensor for pressure and shear measurement," SPIE NDE health monitoring and Diagnostics, San Diego, CA., 2006, SPIE6177.
[20] Wei-Ching Chuang, Chi-Ting Ho, Ruey Fang Shyu and Wei-Chih Wang, "A new replication method to fabricate polymer waveguide," SPIE NDE health monitoring and diagnostics, San Diego, CA., 2006, SPIE6177.
[22] Joe Ho, Wei-Chih Wang." Static stability and plate spacing for diamagnetic levitating magnets," Progress in Electromagnetics Research Symposium, Tokyo Japan, 2006.
[23] Joe Ho, Wei-Chih Wang," Exploration of possibility of levitating magnets using a non vertical configuration of suspending magnets," Progress in Electromagnetics Research Symposium, Tokyo Japan, 2006.
[24] Wei-Chih Wang, Per Reinhall, "Viscosity measurement using intrinsic fiberoptic polarimetric sensor," SPIE NDE health monitoring and diagnostics, San Diego, CA., 2007, SPIE 6532, accepted
[25] Wei-Chih Wang, Per Reinhall, "Optical and Mechanical Characterization of Microfabricated Optical Bend Loss Sensor for Distributive Pressure Measurement," SPIE NDE health monitoring and Diagnostics, San Diego, CA., 2007, SPIE 6532, accepted
[26] Chao-Shih Liu, Xin Liang, Wei-Chih Wang, "Composite fiberoptic sensor for shear and plantar pressure measurement," SPIE NDE health monitoring and Diagnostics, San Diego, CA., 2007, SPIE 6532, accepted

Project reports

[1] Wei-Chih Wang, "Development of A Directionally Sensitive Pressure and Shear Sensor For Patients with Lower Limb Complications Associated with Diabetes ", submitted to RR&D Center for Excellence, VA Puget Sound Health Care System, October 2001.
[2] Chrisopher Takahashi, Wei-Chih Wang, " Development of a wireless data acquisition system for shear sensor," submitted to RR&D Center for Excellence, VA Puget Sound Health Care System, October 2002.
[3] Gus Class, Wei-Chih Wang, " Development of a multichannel data acquisition system for shear sensor," submitted to RR&D Center for Excellence, VA Puget Sound Health Care System, August 2003.

Patents submitted and/or awarded

- **Fiberoptic scanning endoscope (US patent, 2000)**
- **Integrated Optical Scanning Image Acquisition and Display (US patent #10/655,482, September, 2002)**
- **Integrated Optical Scanning Image Acquisition and Display (US patent #, 20040122328, WO2005/024496, AU-A-2004269796)**
- **Polymer based electro-optic scanner for image acquisition and display (US #20050238277)**
- **Polymer based distributive waveguide sensor for pressure and shear measurement (US patent # 20050232532)**

- Measure fluid viscosity, mass density, and mass flow rate using forward light scattering from an optical fiber and fiber-optic Fabry-Perot interferometer. (Patent Pending, Disclose to Office of Technology Transfer, Univ. of Washington, OTT ref # 05-94-78)
- Gradient or multistep index microfabricated thin film waveguide (OTT ref # 2341-3310DL)
- Microfabricated optical waveguide scanning cantilever as a micro-display device (OTT ref # 2341-3247)
- Integrated optical scanning image acquisition and sensing device (OTT ref # 2341-3520DL)
- A 3-D pressure distribution sensor using an integrated optical waveguide array system (IPTT Ref#2946-3802)
- A polymeric based integrated optical image acquisition and/or image display system. (OTT # 2946-3917DL)
- A novel means of measuring mechanical shear/pressure stress using flexible polymeric sensor (OTL #3049-3918)
- "A 3-D pressure distribution sensor using an integrated optical waveguide array system", (OTT##3802DL)
- A SU-8 based micro waveguide cantilever scanner (OTTref#3986)
- A flexible polymer based smart skin (OTT DL ref# 4005)
- Integrated optical scanning image acquisition and display (OTT ref # 2341-3986-4466PT)
- Conductive polymer and its dielectric polymer actuator application (OTT ref # 7041D)
- An ultra high resolution touch screen monitor system (OTT ref # 7042D)
- A prosthetic linear incorporating a sensor for the distributed measurement of shear and pressure (OTT ref 7029D)
- Polymer based electro-optic scanner for image acquisition and display (US Provisional patent #60/548,930, March 1, 2004)
- Polymer based distributive waveguide sensor for pressure and shear measurement (US provisional patent, march 1, 2004)
- PENTAX Corporation finance the filing of US patent and signing optional agreement to license integrated optical scanning image acquisition and display system, September, 2003.
- Maskless lithography using micro UV scanner (OTT#7129D)
- A compact integrated electro-optic based interferometer (OTT #7130D)
- Reconfigurable antenna and interconnects (OTT#7183D)
- Polymer based bend loss waveguide sensor for shear and pressure measurement (UW Ref#7201D)
- Evanescent wave coupling sensor for shear/pressure measurement (UW Ref#7202D)
- Directional sensitive shear/pressure using fiber-optic or dielectric waveguide polarmetric sensor (UW Ref#7204D)
- Larger area pressure and shear measurement using optical time domain reflectometer (OTDR) (UW Ref#7205D)
- Novel methods of creating a true smart structure for stress monitoring and active mechanical support on footwear (UW reference #7206D)
- Polymer based capacitive shear/pressure sensor (UW reference #7207D)
- All grating 2-D electro-optic scanner (submitted)
- Elastomeric fiber optic composite sensor for shear/pressure sensing (7292D)
- Novel 3-D microfabrication machine using ink-jet printer (7242D)
- Active resistor, capacitor and inductor (submitted)
- Increase beam bending angle using novel geometric beam deflectors (7273D)
- Hotwire acoustic sensor (7265D)
- Gecko tape (submitted)
- Self-configurable building block (7267D)
- Rapid prototyping self assembling building blocks (7288D)
- Ferromagnetic polymer (Ref#4005DL)
- Active stiffness change composite polymer using electromagnetorehological actuator (UW Ref#7396D)

- Active Stiffness Change Composite Polymer Using Magnetorheological Actuator and Electrorheological Actuator (No. 7397D)
- Magneto-optic composite polymer (7291D)
- Electro-optic (EO) polymer based 2-D micro-lens with adjustable focal length (UW Ref#7395D)
- Distributive magentometer system (7440D)
- New polymer composite magnetostrictive sensor (7441D)
- Patternable electric and magnetic conductive polymer (positive and negative tone) (7438D)
- Thin film deposition conductive polymer (UW REF#7437D)
- Composite polymer with shape memory alloy, (UW Ref#7464D)
- Optical switch using polymeric ferromagnetic ring (UW Ref#7487D)
- Diamagnetic rotor system- energy harvesting device and motor systems using polymer composite (UW Ref#7486D)
- "Use of nonlinear vibration in liquid viscosity sensing", UW Ref#7520D
- Liquid crystal based refractive, index sensor, UW Ref#7633D
- Bite Sensor, UW Ref#7634D
- Thermal plastic actuator, UW Ref#7644D
- Optical waveguide design, UW Ref#7645D
- Micron-size Fourirer transform spectrometer, UW Ref#7648D
- Fiberoptic lighting system, UW Ref#7661D
- Robotic lighting system, UW Ref#7662D
- Fiberoptic polarimetric sensor for viscosity measurement (UW Ref#7685D)
- Integrated fluid viscosity sensor (UW Ref#7686D)
- Fiberoptic Shockwave sensor (UW Ref#7699D)
- Clinical Force sensing glove (7731D)
- Lens Array Design for Beam Collimating (UW Ref#7736D)
- Optical Packaging Design for Electrooptic Scanner (Ref#7737D)
- New Grating Scoupler Design for Electrooptic Scanner (Ref#7738D)
- Amorphous actuator (7740D)

OTHER SCHOLARLY ACTIVITIES
Invited lectures and seminars

- Wei-Chih Wang, "Introduction to microsensors and microactuators," Department of Architecture, University of Washington, November 6, 2001
- Wei-Chih Wang, "Compact microwave comunication systems", RF, Antennas, and Remote Sensing, University of Washington, August 5, 2002.
- Wei-Chih Wang, "Current status and outlook for micro sensors and actuators development at UWME," Center for Microtechnology, March 15, 2003.
- Wei-Chih Wang, "Micro-fluidic sensors and actuators for medical applications," University of Washington Microscale Life Sciences Center, June 25, 2003.
- Wei-Chih Wang, "Biomedical application using micro sensors and actuators," South Taiwan Technology University, Tainan, Taiwan, August 26, 2003.
- Wei-Chih Wang, "Development of a microfabricated scanning endoscope using SU-8 based optical waveguides," 12th International Conference on Polymer Optical Fiber, Seattle, WA., September 3, 2003.
- Wei-Chih Wang, "Optical waveguides, devices, applications", South Taiwan Technology University, Tainan, Taiwan, June to August 2004
- Wei-Chih Wang, " Micro sensors and actuators in biomedical applications," National ChengKung University, Tainan, Taiwan, August 6th, 2004.
- Wei-Chih Wang, " Micro Sensors and actuators in biomedical applications," National Taiwan University, Taipei, Taiwan, August 15th, 2004.
- Wei-Chih Wang, " Micro sensors and actuators in biomedical applications," National Huwei

University of Science and Technology, Huwei, Taiwan, August 19th, 2004.

- Wei-Chih Wang, "Microscanner for image acquisition", South Taiwan Technology University, Tainan, Taiwan, Decemeber,16th, 2004.
- Wei-Chih Wang, "Optical method in mechanical analysis," South Taiwan Technology University, Tainan, Taiwan, June to September, 2005
- Wei-Chih Wang, "Optical waveguides, devices, applications," South Taiwan Technology University, Tainan, Taiwan, June 18th to September 5th , 2005
- Wei-Chih Wang, "Polymer based MEMS," South Taiwan Technology University, Tainan, Taiwan, June 18th to September 2nd , 2005
- Wei-Chih Wang, "Overview of microtahcnology laboratory research", Department of Mechanical Engineering, National ChnegKung University, Tainan, Taiwan, August 17th, 2005.
- Wei-Chih Wang, "composite sensors and actuators, devices, applications," South Taiwan Technology University, Tainan, Taiwan, June 30th to September 1st , 2006
- Wei-Chih Wang, "Overview of microtahcnology laboratory research," Industrial Technology Research Institute of Taiwan, Department of Communication and Optoelectronics, July 15th, 2006
- Wei-Chih Wang, "Overview of microtahcnology laboratory research", Department of Mechanical Engineering, National Cheng Kung University, Tainan, Taiwan, August 23th, 2006.
- Wei-Chih Wang, "Overview of microtahcnology laboratory research", Department of Applied Mechanics, National Taiwan University, Tainan, Taiwan, August 25th, 2006.
- Wei-Chih Wang, "Polymer based microsensor and actuator for industrial and biomedical application", Biomechanics seminar, University of Washington, October 26th , 2006.

Presentations given at conferences

[1] Wei-Chih Wang, S. Yee, P. Reinhall, "Optical Viscosity Sensor Using forward Light Scattering", Sensor & Actuator Proc. for the Fifth Int'l Meeting on Chemical Sensors Rome, Italy 1994

[2] Wei-Chih Wang, P. Reinhall, S. Yee, "Fluid viscosity and mass flow measurement using forward light scattering" SPIE Proc. 2574: 146-51, 1995

[3] X.Zhu, E.Tran,W-C Wang, E.S.Kim,"Micromachined acoustic-wave liquid ejector", Hilton Head Solid-State Sensor and Actuator Workshop , 1996.

[4] Wei-Chih Wang, Jeffrey Dee, William Ledoux, Bruce Sangeorzan, Per Reinhall, "Development of a directional sensitive pressure and shear sensor," San Diego, March, 2002

[5] Wei-Chih Wang, Joe N. Ho, Per G. Reinhall, "Development of an optical waveguide cantilever scanner," Galway, Ireland, September, 2002.

[6] Wei-Chih Wang, Joe N. Ho, Per G. Reinhall, "Deep reactive ion etching of silicon using an aluminum etching mask," Galway, Ireland, September, 2002.

[7] Wei-Chih Wang, Reynold Panergo, Per Reinhall, "Development of a microfabricated scanning endoscope using SU-8 based optical waveguide, " 2003 SPIE NDE health monitoring and Dianostics, San Diego, March, 2003.

[8] Wei-Chih Wang, Reynold Panergo, Chrisopher Galvanin, William Ledoux, Bruce Sangeorzan, Per Reinhall, "A flexible micromachined optical sensor for simultaneous measurement of pressure and shear distribution on foot," 2003 SPIE NDE health monitoring and Dianostics, San Diego, March 2003.

[9] Wei-Chih Wang, Reynold Panergo, Kasha Touloei, Per Reinhall, "Development of a microfabricated scanning endoscope using SU-8 based optical waveguide, " 2003 International Polymer fiber conference, Seattle, September, 2003.

[10] Wei-Chih Wang, Reynold Panergo, William Ledoux, Bruce Sangeorzan, Per Reinhall, "A PDMS based distributive shear/pressure sensor," 2003 International Polymer Fiber Conference, Seattle, September, 2003.

[11] Wei-Chih Wang, Reynold Panergo," Resonant optical scanner using cantilever waveguide," SPIE NDE health monitoring and Dianostics, San Diego, March, 2004.

[12] Wei-Chih Wang, Chu-Yu Huang, William Ledoux, Bruce Sangeorzan, Per Reinhall, "A polymer based distributive shear/pressure sensor," SPIE NDE health monitoring and Dianostics, SanDiego, March, 2005.
[13] Wei-Chih Wang, Reynold Panergo, "Resonant optical scanner using cantilever waveguide," SPIE NDE health monitoring and Dianostics, San Diego, March, 2005.
[14] Wei-Chih Wang, "A new replication method to fabricate polymer waveguide," SPIE NDE health monitoring and Dianostics, Sandiego, CA., 2006
[15] Wang Wei-Chih Wang, "Mathematical model for the dynamics of a optical fiber viscometer", SPIE NDE health monitoring and Dianostics, Sandiego, CA., 2006.
[16] Wei-Chih Wang, "Viscosity measurement using intrinsic fiberoptic polarimetric sensor," SPIE NDE health monitoring and diagnostics, San Diego, CA., March 22, 2007
[17] Wei-Chih Wang, "Optical and Mechanical Characterization of Microfabricated Optical Bend Loss Sensor for Distributive Pressure Measurement," SPIE NDE health monitoring and Diagnostics, San Diego, CA., March 23, 2007

Professional society memberships

IEEE (1986-1996, 2006- present)
Eta Kappa Nu (1996- present)
OSA(1992-1998)
SPIE(2004 -present)

GRADUATE STUDENTS
Chaired doctoral degrees

- Joe Ho, Mechanical Engineering (expected year of completion: June 2006)
- Chen-Shen Huang, Mechanical Engineering (expected year of completion: June 2007)
- Chu-Yu Huang, Mechanical Engineering (expected year of completion: June 2008)
- Chai-Hsieng Wang, Mechanical Engineering (Expected year of completion: June 2009)
- Wei-Shu Hua, Ocean Engineering Department, National Taiwan University (June 2009)

Chaired or Co Chaired masters degrees

- Reynold Parnergo , Mechanical Engineering (June 2006)
- Jian Shiao, Mechanical Engineering (June 2006)
- Chai-Hsieng Wang, Mechanical Engineering (December 2006)
- Jeff Dee, Mechanical Engineering (expected year of completion: June 2007)
- Jonathan R. Thorn, Mechanical Engineering (expected year of completion: June 2007)
- Xin Liang, Mechanical Enginering (expected year of completion: June 2008)
- Kung-Lun Wu, visiting post-master student from Electronic Engineering Department, Southern Taiwan University of Technology (June 2005)
- Chih-Jie Fu, visiting post-master student from Electronic Engineering Department, Southern Taiwan University of Technology (June 2006)
- Wei-Shu Hua, visiting post-master student from Electronic Engineering Department, Southern Taiwan University of Technology (June 2006)
- Yi-lang Liu, visiting post-master student from Electronic Engineering Department, Southern Taiwan University of Technology (June 2008)
- Go Xun, Electrical Engineering, Southern Taiwan University of Technology, (June 2008)

Other significant student supervision

- Michael Philetus Weller, architecture master thesis, "self-assembling building blocks", June, 2003
- Chia-Hsien Hsu . Mechanical Engineering (completion: March 2006)
- Chao-Shih Liu, Mechanical Engineering (completion: June 2005)
- Joe Ho, Mechanical Engineering, "Numerical Investigation for Nonlinear Behavior of a fiberoptic viscometer," Mechanical Engineering master thesis, December, 2002
- Kung-Lun Wu, visiting post-master student from Electronic Engineering Department, Southern Taiwan University of Technology (June 2005)
- Chih-Jie Fu, visiting post-master student from Electronic Engineering Department, Southern Taiwan University of Technology (June 2006)
- Wei-Shu Hua, visiting post-master student from Electronic Engineering Department, Southern Taiwan University of Technology (June 2006)
- Lucky Liu, visiting post-master student from Electronic Engineering Department, Southern Taiwan University of Technology (expected year of completion: June 2007)
- Yilang Lyu, visiting post-master student from Electronic Engineering Department, Southern Taiwan University of Technology (expected year of completion: June 2008)
- Yan-Min Kuo, visiting predoctoral scholar from Department of Engineering Science and Ocean Engineering, National Taiwan University (visiting period: March to December, 2007)
- Ivo Stachiv, National Taiwan University (visiting period: February, 2007)

RESEARCH ACTIVITES
Sponsored Research
Current and Past:

Grant number # 119024 Eric J. Seibel (PI) $40,000 7/1/99-6/30/01 (Completed)
Washington Technology Center MEMS Research Fund
"Resonant waveguide cantilever designed as MEMS optical scanner"
Role: Research Scientist

Grant number Bruce J. Sangeorzan (PI) $11,341 8/30/03-9/30/03 (completed)
Department of Veterans Affairs
"Center for excellence in limb loss prevention and prosthetic engineering "
Equipment fund
Role: subcontract

Grant number Bruce J. Sangeorzan (PI) $,8098 8/30/04-9/30/04 (completed)
Department of Veterans Affairs
"Center for excellence in limb loss prevention and prosthetic engineering "
Equipment fund
Role: subcontract

Grant number Bruce J. Sangeorzan (PI) $11,976 8/30/05-9/30/05 (completed)
Department of Veterans Affairs
"Center for excellence in limb loss prevention and prosthetic engineering "
Equipment fund
Role: subcontract

Grant number 1 R21 EB003406-01 Wei-Chih Wang (PI) $399,462 4/01/04/-3/30/07
National Institutes of Health
In-shoe shear stress sensor for diabetic patients
Role: PI

Grant number: na Wei-Chih Wang (PI) $46,936 6/1/05/-12/31/06

UW TGIF
"Development of an ultrahigh resolution, variable field of view endoscope using a novel electro-optic scanner"
Role: PI

Grant number: n/a Wei-Chih Wang (PI) $10,000 7/01/05/-8/30/05
Southern Taiwan University of Technology
Materials and supplies fund
Role: PI

Grant number 94wfa0102446 AnBang Wang (PI) $120,000 9/01/06-7/31/09
Taiwan National Science Council
International collaboration research
"Integrated optical scanning endoscope'
Role:Co-PI

Grant number 1 R21 EB004564-01A1 Wei-Chih Wang (PI) $398,462 6/01/06/-5/31/08
National Institutes of Health
Development of a novel electro-optic endoscope
Role: PI

Grant number: n/a Wei-Chih Wang (PI) $10,000 7/01/05/-8/30/05
Southern Taiwan University of Technology
Materials and supplies fund
Role: PI

Grant number Bruce J. Sangeorzan (PI) $11,976 8/30/06-9/30/06
Department of Veterans Affairs
"Center for excellence in limb loss prevention and prosthetic engineering "
Equipment fund
Role: subcontract

Grant Number Wei-Chih Wang (PI) $25,603 8/1/06-7/31/07
Department of Defense
"High efficiency mid infrarad fiber switch system"
Role: PI

Grant number 94wfa0102446 Choa-Shih Liu (PI) $15,000 129/01/06-11/31/07
Taiwan National Science Council
International collaboration research
"Composite fiber sensor for plantar pressure and shear measurement'
Role:Co-PI

Pending:

Grant number R01 Lih lin (PI) $1,500,000 5/08/07/-4/30/09
National Institutes of Health
A new integrated endoscope system
Role: Co-PI

Grant number Pending Choa-Shih Liu (PI) $120,000 129/01/06-11/31/07
Taiwan National Science Council
International collaboration research
Fully integrated optical coherent tomography sensor
Role:Co-PI

Grant number R21 Wei-Chih Wang (PI) $400,000 12/1/07-11/30/10

National Institute of Health
A smart prosthetic liner
Role: PI

Grant number R01 Rahul Kuver (PI) 12/1/07-11/30/12
National Institute of Health
Viscoelastic sensor for cancer detection in mucin layer
Role: Co-PI

Grant Number David Nuckely (PI) 6/1/07-5/31/10
National Institute of Health STTR
Fiber tip sensors for pressure sensing
Role: Co-PI

Grant Number Michael Chang (PI) 5/1/07-4/31/8
University of Washington Bioengineering fund
Fiberoptic shockwave acoustic sensor
Role: consultant

Grant Number Michael Chang (PI) 5/1/07-4/31/8
University of Washington Bioengineering fund
Fiberoptic shockwave acoustic sensor
Role: consultant

Unsponsored Research

Integrated optical scanning image acquisition and sensing device
(09/99-present)
Future possible funding from PENTAX (PENTAX has signed the optional agreement to license)

Flexible polymer sensors and actuators
(03/01-present)
Future funding

Directional microphone using micro fabricated hot wire sensor
(06/06- present)
Publication

Polymer based multi-parameter sensor system (smart skin)
(03/01-present)
Future funding

3-D microfabrication technique for high frequency devices
(06/96- present)
Publications and Future funding

Fiber optic based distributive fault line detection system
(09/99 to present)
Publications and Future funding

Electro-optic based IR spectrometer for health monitoring

(03/02 to present)
Future funding

Liquid Crystal based SPR spectrometer system
(06/06 to present)
Collaboration project with national Huwei University in Taiwan
Publications and Future funding

Antonymous robotic mapping unit
(12/01 to present)
Publications

Self Assembly modular robot
(03/03 to present)
Publications and Future finding

Micro-Machined Acoustic Wave Liquid Ejector
(02/96 to present)
Publications

Dome-shaped diaphragm micro-transducers
(02/96 to present)
Publications

FEM modeling of composite structure for ZnO based flat diaphragm transducer
(12/96 to present)
Publications

Fluid viscosity measurement using fiber-optic Fabry-Perot interferometer
(12/91 to present)
Future funding

Directional strain measurement using fiber-optic polarimetric sensor
(12/94 to present)
Publications and Future funding

Strain and viscosity measurement using elliptical core two mode fiber-optic sensor
(6/93 to present)
Publications and Future funding

Use of Nonlinear Vibration in Liquid Viscosity Sensing
(12/95 to present)
Publications

Compact integrated 3-D microfabrication system for meta material
(01/05 to present)
patent and future funding

SUPERVISION OF UNDERGRADUATE INDEPENDENT STUDY

- Christopher Takahashi, Jeff Dee, Joshua Weinstein and Samuel Radochonski are recipients of Mary Gates Undergraduate Research Fellowships (2002-2004)
- Advised more than 50 undergraduate students in the undergraduate Student Research Program, 1998 to present, some of them are listed:
  Jeff Dee, Joshua Weinstein and Christopher Takahashi, Billy Chow, Tuan Le, Gus Class, Samuel

Radochonski, Mike Wong, Michelle Bler, Khsha Touloei, Michael Pheletus, Joe Ho, James Etzcorn, Coji Kuwahara, Jo Ho, Colin Liles, Christopher Galvanin, Michelle Gamble, Daniel Ortiz, Daniel Chang, Daniel Chen, Loren Wallace, Taguchi Blayne H P ,Reynold Panergo, Cheng-Sheng Huang, Ting Wang, Neing Wang, Al Toweilly, Mathew Hummer, Nigel Steer, Kritramom Tejavibmbya, Jake Hitero, Geoffery Greenleaf, Josh Weltman, Christopher Brown, Ann Ng, David Lanning, mechelle maureene ,Zac Hendrickson, Cheng Kim, Kevin Leong, Kevin Wang, Chanadejh Sachalathorn, Steve Evans, Mike Hansen, Betty Wang, Jeffery Wimbeery, Betty Wang, Maggie Wang, Mark Pacpaco, Melissa Wang, Huyen Nguyen, Tien Ngyuen, George Stults, Huam Pham, Tim Cass, Dung Nguyen, Hamed Khoojinian, Inwoo kim, Rick Yin, Daniel Kim, Daniel Chang, Amber , nicolas noel stephensen., Billy Chow, Ignacio Shin, Christopher K Willey, Zac Hendrickson, jae hyun kim, David Wu, Kevin Leung, Thurston, Ryan, mechelle maureene, Benjamin Burt Estroff, gurmeet singh ghumman, Brian Porter, Keegan Wincewicz, Yohan K. Han, Chong S. Kim, Raymond Chung, Josie Imlay, Zia Quadir, Abram Clark, Inwoo Kim, Lee, Jane Juin, Moseid, Benjamin Lawrence, Josie Imlay,Tri Pham, Christopher lee, Cameron lee, Billy Tuang, Tomas Pulmano, Aimi Shaari Ahmad-Shukri, Anna Leoung, Nathan Richard Keech, Minhphat Ngoc Nguyen, Balatero, David John , Briant, Colin Thomas, Dillon, Julian Roy , Park, Kony , Storz, Joshua Jonathan , Weiss, Allen Michael Devoe , Art Coons, Huge Tmopkins , Juan Pinzon, Cassidy Werner, Alec Denson, Trip…..., Tony…., Alex Perez., Sean Pakani , Alex Perez, Morgan Jane Eastman Lorenz, Sean

COURSES TAUGHT

EE 320 Analog Circuit Design Lab
EE 312 Electromagnetic and Solid state Lab
Engr100 Introductory to Engineering Deaign (Spring 1998 – present)
ME 557 Optical Method for Mechanical Measurement (Winter 2005 – present)
STUT 500 Optical Waveguides, Devices and Application (June to September 2004)
STUT 500 Optical Method for Mechanical Measurement (June to September 2005)
STUT 500 and Introductory to Micro Sensors and Actuators (June to September 2006)
Teaching performance for classes taught are all above 4.2 out of 5.0 system. They can be download from University of Washington Website

TEACHING PLAN

Applied Electromagnetic
Introductory electromagnetic field theory and Maxwell's equations in integral and differential forms; uniform plane waves in linear media; boundary conditions and reflection and transmission of waves; guided waves; transmission lines and Smith chart; electrostatics.

Circuit Theory
Electric circuit theory. Analysis of circuits with sinusoidal signals. Phasors, system functions, and complex frequency. Frequency response. Computer analysis of electrical circuits. Power and energy.

Devices and Circuits
Physics, characteristics, applications, analysis and design of circuits using semiconductor diodes, field-effect transistors and bipolar transistors.

Analog Circuit Design
Design of analog circuits and systems applying modern integrated circuit technology: operational amplifiers, differential amplifiers, active filters, voltage references and regulators.

Introduction to Optics
Introduction to optical principles and phenomena. Topics include electromagnetic theory of light, interference, diffraction, coherence, light wave propagation in metals and crystals, beam optics, resondator optics, and guided-wave optics.

Fiber Optics, Devices, and Applications
Wave propagation in optical waveguiding structures, signal distortion, coupling of modes, modulation,

sources and detectors, fabrication and measurement methods, communication and sensor systems.

Fiber Optic Sensors and Embedded Smart Structure
Topics in fiber optic sensors and sensor systems, includes mechanical and chemical sensors and embedded and distributive fiber optic sensor system.

Fundamentals of Integrated Circuit Technology
Processing physics, chemistry, and technology, including evaporation, sputtering, epitaxial growth, diffusion, ion implantation, laser etching, oxidation, chemical vapor deposition, photoresistS. Design considerations for bipolar and MOS devices, material and process characterization.

Introduction to Microelectromechanical Systems
Theoretical and practical aspects in design, analysis, and fabrication of MEMS devices. Fabrication processes, including bulk and surface micromachining. Applications such as micro sensors and actuators, or chemical and thermal transducers, recent advances.

Finite Element Analysis
(Development of theory and concepts of finite element analysis. Applications in mechanics of solids, heat transfer, and design of dynamical systems emphasis on modeling of microelectromehcnaical system.)

SERVICE
College Service

- Faculty mentor for IWT Virtual Development Center, University of Washington, 2001-2002
- Engineering Openhouse exhibit for engr100 and ME undergraduate research (1999-present) Engr100 Rube Goldberg Project exhibit was one of the most popular displays in the 2004 Engineering Open house.
- Integrating biological diversity into the mechanical engineering curriculum planning committee (2004 - present)
- Establish an international academic exchange program with Southern Taiwan University of Technology (2003)
- Start a mutual tuition waiver program on the exchange program with Southern Taiwan University of Technology Jan. 2005.
- Invite Dr. Alex Jen from Material Science Department to be the keynote speaker to the IEEE sponsored International nanotechnology conference, Nov. 2004, Tainan, Taiwan.
- Started the Mechanical Engineering department's microelectromechnical system seminar (Nov. 2004 – present)
- Serve as faculty mentor to Engr100 course (2001 to present)
- Invite Associate Dean from Dr. C.C. Liu from University of Washington to visit Southern Taiwan University of Technology March 2005.
- Invite and arrange Dr. Per Reinhall from Mechanical Engineering Department to National Taiwan University and Southern Taiwan Martin Afromowitz from UW Electrical Engineering Department to National Taiwan University and Southern Taiwan University of Technology for a presentation in gray scale lithography , August 19 to 29, 2005
- Invite and arrange Dr. Akira Ishimaru from UW Electrical Engineering Department to National Taiwan University, National ChengKung University, National Sun Yat-sen University and Southern Taiwan University of Technology for a presentation in metamaterial, MAGING AND DETECTION OF HIDDEN OBJECTS, TIME - REVERSAL AND SUPER – RESOLUTION and FSO (Free space optical) COMMUNICATION AND OWC(Optical wireless communication)IN FOG AND CLOUDS, Nov 29 to Dec. 2, 2005
- Invite Dr. Hung-Wen Chang from National Sun Yat-sen University, Institute of Electro-Optical Engr., Semiconductor dielectric waveguides, basic theory and design principle, Oct 14 , 2005 for UWME MEMS and EE EM group seminar.

- Invited Dr. Wei-Chih Chuang from National Huwei University of Science and Technology as visiting scholar from March to June 2005.
- Invited Dr. Jeremy Wu from National Taiwan University for the MEMS seminar
- Invited Dr. AnBang Wang from National Taiwan University for MEMS seminar
- Invited Dr. Afromowitz, Dr. Lih lin from Electrical Engineering Department for MEMS seminar
- Collaborate with Dr. Jeremy Wu from National Taiwan University on wireless sensor network system project (June 2004 to present).
- Collaborate with Dr. AnBang Wang and Dr. Alexander Fedorchenlo from National Taiwan University on Fluid viscosity sensor Project (September 2004 to present)
- Collaborate with Dr. Wen-Chih Chuang from National Huwei University of Science and Technology on Roman-Nath diffracting grating sensor (June 2004 to present)
- Collaborate with Dr. Chi-Ting Ho, National Chung Ching University on diffractive Bragg grating sensor for tensile and shear measurement (June 2004 to present)
- Instructor for ME557, optical method for mechanical analysis, Spring 2005 and winter 2006
- Started undergraduate level class in digital electronics and field programmable chip design 2004 to present.
- Started Microeletromechnaical system seminar at Department of Mechanical Engineering 2004 – present.
- Show Dr. Jae-Sung Park, Dr. Jaehyun Chung and Dr. katherin Zhang around WTC Microfabrication laboratory Spring 2005
- Serve in the review committees for University of Washington Royalty Research Fund, 2006
- Affiliated Assistant Professor at Southern Taiwan University of Technology, Tainan, Taiwan, 2004-present
- Invited Dr. Eun Sok Kim from University of California State to National Taiwan University, National ChengKung University, Industrial Technology Research Institute of Taiwan and Southern Taiwan University of Technology for a presentation in piezoelectric MEMS devices, August, 2006.
- Invited Dr. Viola Vogel from bioengineering, University of Washington to Southern Taiwan University of Technology sponsored International nanotechnology conference, Nov., 2006.
- Invited Dr. Akira Ishimaru from electrical egineering, University of Washington to National Taiwan University and Southern Taiwan University of Technology sponsored International nanotechnology conference, Nov., 2006.

University service

- Started an international exchange program with Electrical Engineering Department, South Taiwan Technology University, Tainan, Taiwan, 2003 to present.
- Serve in the Review committees for Mary Gates Endowment for Students Research Training Grants, 2003 to present.
- Serve in the Qualify Exam committees in Department of Mechanical Engineering, University of Washington, Fall 2004.
- Serve in the Biomechanics planning committees for Department of Mechanical Engineering, University of Washington, 2003 to present.
- Faculty mentor for Design Machine Group, Architecture Department, University of Washington, 2000-present
- Faculty mentor for UW outreach program, June 2000.
- Arrange four visiting predoctoral scholars and three exchange student from Southern Taiwan University of Technology to work on self assemble robot and polymer composite projects in 2005 and 2006.
- Arrange one research science from National Taiwan University to work on piezoelectric based actuator, 2006.
- Arrange meeting for the president of the Southern Taiwan University of Technology, Dr. Chang, with Associate Dean of College of Engineering, Dr. Riskin, and meeting with Associate Dean of School of Business, Dr. Sundem, May, 9, 2006.

- Faculty participant in Institute of Advance Materials Science and Technology University of Washinbgton, 2007-present
- Faculty participant in selection committee for Alfred Mann Foundation Institute at University of Washington

Professional society and other service

- Chair for Biological and Medical Applications session in Smart Structure and Materials and Nondestructive Evaluation for Health Monitoring and Diagnostics Conference, San Diego, CA., 2003 to present.
- Serve in Reviewing Committees for National Science Foundation - Medical Devices Panel - P070699, March 12th 2007
- Serve in manuscript review committees for IEEE Lasers and Electro-Optics Society, 2007- present
- Sever in manuscript review committees for IEEE transaction on robotics, 2007- present
- Serve in manuscript review committees International Journal of Optomechatronics, 2007- present

Community service

- Faculty Mentor for Seattle YMCA outreach program, April 2001.

All other service

- Japanese Baptist Church Choir director (2001- present)
- Japanese Baptist Church Worship Committee (2000-2003)
- Chinese Gospel Chorale (1998 to present)
- The Seattle Tudor Choir (1993 to present)
- Provide Music for Monthly Sunday service at Nikei Menor, Seattle (1998- present)