ELAIN S. FU

Curriculum vitae

Chemical, Biological, and Environmental Engineering
Oregon State University
Johnson Hall 316K
Corvallis, OR 97331

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Citizenship: United States

EDUCATIONAL HISTORY

University of Maryland, College Park, MD
Ph.D., Physics, Advisor: Ellen Williams

Dissertation: *Fabrication and Characterization of Metastable Nano-and Micron-sized Surface Structures on Silicon Using Scanning Probe Microscopies*

University of Maryland, College Park, MD
M.S., Physics, Advisor: Ellen Williams

Brown University, Providence, RI
Sc.B., Physics

EMPLOYMENT HISTORY

Oregon State University, Chemical, Biological, and Environmental Engineering
Corvallis, OR
Assistant Professor (Tenure-track), 2015 to present
Assistant Professor (Sr. Research), 2013–2015
Adjunct Assistant Professor in Biomedical Sciences, 2014 to present

University of Washington, Bioengineering
Seattle, WA
Affiliate Assistant Professor, 2013 to present
Research Assistant Professor, 2010–2013
Senior Research Scientist, 2004–2010
Research Scientist, 2001–2004
Mentor: Professor Paul Yager

University of Washington, Physics
Seattle, WA
Research Associate, 1999–2000
Mentor: Professor Lillian McDermott

University of Washington, Genetics
Seattle, WA
Graduate Research Assistant, 1997–1998
Mentor: Professor Colin Manoil

University of Maryland, Physics
College Park, MD
Graduate Research Assistant, 1994–1997
Graduate Teaching Assistant, 1992–1993

PUBLICATIONS

Refereed Archival Journal Publications (*h*-index of 23 from Google Scholar)

1. C. Anderson, C. Holstein, E. Strauch, S. Bennett, A. Chevalier, J. Nelson, **E. Fu**, D. Baker, and P. Yager, A Rapid Diagnostic Assay for Intact Influenza Virus Using a High Affinity Hemagglutinin Binding Protein, *Analytical Chemistry,* (2017).
2. J. Imdieke[1], and **E. Fu**, Porous stamp-based reagent patterning for lateral flow assays, *Analytical Methods* 9*,* 2751-2756 (2017).
3. S. Huang, K. Abe, S. Bennett, T. Liang, P. Ladd, L. Yokobe, C. Anderson, K. Shah, J. Bishop, M. Purfield, P. Kauffman, S. Paul, A. Welch, B. Strelitz, K. Follmer, K. Pullar, L. Sanchez-Erebia, E. Gerth-Guyette, G. Domingo, E. Klein, J. Englund, **E. Fu**, and P. Yager, Disposable Autonomous Device for Rapid Swab-to-Result Diagnosis of Influenza, *Analytical Chemistry,* (2017).
4. A. To[1], C. Downs[2], and **E. Fu**, Wax transfer printing to enable robust boundary definition in devices based on non-standard porous materials, *Journal of Micromechanics and Microengineering* 27, 057001 (6pp) (2017).
5. **E. Fu** and C. Downs[2], Progress in the development and integration of fluid flow control tools in paper microfluidics, *Lab on a Chip* 17, 614-628 (2017).
6. T. Liang[2], R. Robinson[2], J. Houghtaling[1], G. Fridley, S. A. Ramsey, and **E. Fu**, Investigation of Reagent Delivery Formats in a Multivalent Malaria Sandwich Immunoassay and Implications for Assay Performance, *Analytical Chemistry*, DOI:10.1021/acs.analchem.5b04222 (2016).
7. R. Robinson[2], L. Wong[1], R. J. Monnat Jr., and **E. Fu**, Development of a Whole Blood Paper-Based Device for Phenylalanine Detection in the Context of PKU Therapy Monitoring, *Micromachines*, DOI:10.3390/mi7020028 (2016).
8. C. A. Holstein, A. Chevalier, S. Bennett, C. E. Anderson, K. Keniston, C. Olsen, B. Li, B. Bales, D. R. Moore, **E. Fu**, D. Baker, and P. Yager, Immobilizing Affinity Proteins to Nitrocellulose: A Toolbox for Paper-Based Assay Developers, *Analytical and Bioanalytical Chemistry*, DOI:10.1007/s00216-015-9052-0 (2015).
9. B. Toley, J. Wang, M. Gupta. J. Buser, L. Lafleur, B. Lutz, **E. Fu**, and P. Yager, A versatile valving toolkit for automating fluidic operations in paper microfluidic devices, *Lab on a Chip* 15, 1432-1444 (2015). Cited by 11.
10. G. Thiessen[2], R. Robinson[2], K. De Los Reyes[1], R. Monnat, and **E. Fu**, Conversion of a laboratory-based test for phenylalanine detection to a simple paper-based format and implications for PKU screening in low-resource settings, *Analyst* 140, 609-615 (2015). Cited by 2.
11. **E. Fu**, Enabling robust quantitative readout in an equipment-free model of device development, *Analyst* 139*,* 4750-4757 (2014). Cited by 5.

12. S. Ramachandran, **E. Fu**, B. Lutz, and P. Yager, Long-term dry storage of an enzyme-based reagent system for ELISA in point-of-care devices, *Analyst* 139, 1456-1462 (2014). Cited by 25.
13. B. Toley, B. McKenzie[1], T. Liang[2], J. Buser, P. Yager, and **E. Fu**, Tunable-delay shunts for paper microfluidic devices, *Analytical Chemistry* 85, 11545-11552 (2013). Cited by 24.
14. J. Houghtaling[1], T. Liang[2], G. Thiessen[2], and **E. Fu**, Dissolvable bridges for manipulating fluid volumes in paper networks, *Analytical Chemistry* 85, 11201-11204 (2013). Cited by 13.
15. S. Byrnes, G. Thiessen[2], and **E. Fu**, Progress in the development of paper-based diagnostics for low-resource point-of-care settings, *Bioanalysis* 5, 2821-2836 (2013). Cited by 21.
16. P. Spicar-Mihalic, B. Toley, J. Houghtaling[1], T. Liang[1], P. Yager, and **E. Fu**, CO_2 laser cutting and ablative etching for the fabrication of paper-based devices, *Journal of Micromachining and Microengineering* 23, 067003 (2013). Cited by 17.
17. B. Lutz, T. Liang[1], **E. Fu**, S. Ramachandran, P. Kaffman, and P. Yager, Dissolvable fluidic time delays for programming multi-step assays in instrument-free paper diagnostics, *Lab on a Chip* 13, 2840-2847 (2013). Cited by 71.
18. G. Fridley, H. Le, **E. Fu**, and P. Yager, Controlled release of dry reagents in porous media for tunable temporal and spatial distribution upon rehydration, *Lab on a Chip* 12, 4321-4327 (2012). Cited by 24.
19. **E. Fu**, T. Liang[1], P. Spicar-Mihalic, J. Houghtaling[1], S. Ramachandran, and P. Yager, A two-dimensional paper network format that enables simple multi-step assays for use in low-resource settings in the context of malaria antigen detection, *Analytical Chemistry* 84, 4574-4579 (2012). Cited by 93.
20. **E. Fu**, T. Liang[1], J. Houghtaling[1], S. Ramachandran, S. Ramsey, B. Lutz, and P. Yager, Enhanced sensitivity of lateral flow tests using a two-dimensional paper network format, *Analytical Chemistry* 83, 7941-7946 (2011). Cited by 99.
21. B. Lutz, P. Trinh, C. Ball, **E. Fu**, and P. Yager, Two-dimensional paper networks: programmable fluidic disconnects for multi-step processes in shaped paper. *Lab on a Chip* 11, 4274-4278 (2011). Cited by 75.
22. **E. Fu**, S. A. Ramsey, P. Kauffman, B. Lutz, and P. Yager, Transport in two-dimensional paper networks, *Microfluidics and Nanofluidics* 10, 29-35 (2011). Cited by 126.
23. J. Osborn, B. Lutz, **E. Fu**, P. Kauffman, D. Stevens, and P. Yager, Microfluidics without pumps: translating adjacent flows onto paper networks, *Lab on a Chip* 10, 2659-2665 (2010). Cited by 157.
24. P. Kauffman, **E. Fu**, B. Lutz, and P. Yager, Visualization and measurement of flow in two-dimensional paper networks, *Lab on a Chip* 10, 2614-2617 (2010). Cited by 47.
25. **E. Fu**, P. Kauffman, B. Lutz, and P. Yager, Chemical signal amplification in two-dimensional paper networks, *Sensors and Actuators B* 149, 325-328 (2010). Cited by 98.
26. **E. Fu**, B. Lutz, P. Kauffman, P. Yager, Controlled reagent transport in disposable 2D paper networks, *Lab on a Chip* 10, 918-920 (2010). Cited by 163.
27. **E. Fu**, K. E. Nelson, S. A. Ramsey, J. O. Foley, K. Helton, P. Yager, Modeling of a competitive microfluidic heterogeneous immunoassay: sensitivity of the assay response to varying system parameters, *Analytical Chemistry* 81, 3407-3413 (2009). Cited by 19.
28. K. Helton, K. Nelson, **E. Fu**, and P. Yager, Conditioning saliva for use in a microfluidic sensor, *Lab on a Chip* 8, 1847-1851 (2008). Cited by 17.

29. M. Hasenbank, T. Edwards, **E. Fu**, R. Garzon, T. Kosar, M. Look, A. Mashadi-Hossein, and P. Yager, Demonstration of multi-analyte patterning using piezoelectric inkjet printing of multiple layers, *Analytica Chimica Acta* 611, 80-88 (2008). Cited by 38.
30. J. Foley, A. Mashadi-Hossein, **E. Fu**, B. Finlayson, and P. Yager, Experimental and model investigation of the time-dependent 2-dimensional distribution of binding in a herringbone microchannel, *Lab on a Chip* 8, 557-564 (2008). Cited by 22.
31. J. Foley, **E. Fu**, L. Gamble, and P. Yager, Microcontact printed antibodies on gold surfaces: Function, uniformity, and silicone contamination, *Langmuir* 24, 3628-3635 (2008). Cited by 21.
32. **E. Fu**, S. A. Ramsey, P. Yager, Dependence of the signal amplification potential of colloidal gold nanoparticles on resonance wavelength in surface plasmon resonance-based detection, *Analytica Chimica Acta* 599, 118-123 (2007). Cited by 12.
33. M. Hasenbank, **E. Fu**, J. Nelson, D. Schwartz, and P. Yager, Investigation of heterogeneous electrochemical processes using multi-stream laminar flow in a microchannel, *Lab on a Chip* 7, 441-447 (2007). Cited by 5.
34. K. Hawkins, M. Steedman, R. Baldwin, **E. Fu**, S. Ghosal, and P. Yager, A method for characterizing adsorption of flowing solutes to microfluidic surfaces, *Lab on a Chip* 7, 281-285 (2007). Cited by 12.
35. T. Chinowsky, M. Grow, K. Johnston, K. Nelson, T. Edwards, **E. Fu**, and P. Yager, Compact surface plasmon resonance imaging system for saliva-based medical diagnostics, *Biosensors and Bioelectronics* 22, 2208-2215 (2007). Cited by 65.
36. **E. Fu**, S. Ramsey, J. Chen, T. Chinowsky, B. Wiley, Y. Xia, and P. Yager, Resonance wavelength-dependent signal of absorptive particles in surface plasmon resonance-based detection, *Sensors and Actuators B* 123, 606-613 (2007). Cited by 10.
37. M. Hasenbank, **E. Fu**, and P. Yager, Lateral spread of an amplification signal using an enzymatic system on a conductive surface, *Langmuir* 22, 7451-7453 (2006). Cited by 12.
38. **E. Fu**, S. Ramsey, R. Thariani, and P. Yager, One-dimensional surface plasmon resonance imaging system using wavelength interrogation, *Review of Scientific Instruments* 77, 076106 (2006). Cited by 10.
39. P. Yager, T. Edwards, **E. F**u, K. Helton, K. Nelson, M. Tam, and B. Weigl, Microfluidic diagnostic technologies for global public health, *Nature* 442, 412-418 (2006). Cited by 1319.
40. M. S. Munson, M. S. Hasenbank, **E. Fu**, and P. Yager, Suppression of non-specific adsorption using sheath flow, *Lab on a Chip* 4, 438-445 (2004). Cited by 41.
41. **E. Fu**, T. Chinowsky, J. Foley, J. Weinstein, and P. Yager, Characterization of a wavelength-tunable surface plasmon resonance microscope, *Review of Scientific Instruments* 75, 2300-2304 (2004). Cited by 46.
42. **E. Fu**, J. Foley, and P. Yager, Wavelength-tunable surface plasmon resonance microscope, *Review of Scientific Instruments* 74, 3182-3184 (2003). Cited by 47.
43. **E. S. Fu**, X. S. Wang, and E. D. Williams, Characterization of structures fabricated by atomic force microscope lithography, *Surface Science* 438, 58-67 (1999). Cited by 7.
44. C. J. Lanczycki, R. Kotlyar, **E. Fu**, Y.-N. Yang, E. D. Williams, and S. Das Sarma, Growth of Si on the Si(111) surface, *Physical Review B* 57, 13132-13148 (1998). Cited by 23.
45. **E. S. Fu**, D.-J. Liu, M. D. Johnson, J. D. Weeks, and E. D. Williams, The effective charge in surface electromigration, *Surface Science* 385, 259-269 (1997). Cited by 57.

46. D.-J. Liu, **E. S. Fu**, M. D. Johnson, J. D. Weeks, and E. D. Williams, Relaxation of the step profile for different microscopic mechanisms, *Journal of Vacuum Science and Technology B* 14, 2799-2808 (1996). Cited by 32.
47. **E. S. Fu**, M. D. Johnson, D.-J. Liu, J. D. Weeks, and E. D. Williams, Size-scaling in the decay of metastable structures, *Physical Review Letters* 77, 1091-1094 (1996). Cited by 53.
48. Y.-N. Yang, **E. S. Fu**, and E. D. Williams, An STM study of current-induced step bunching on Si(111), *Surface Science* 356, 101-111 (1996). Cited by 145.
49. E. D. Williams, **E. Fu**, Y.-N. Yang, D. Kandel, and J. D. Weeks, Measurement of the anisotropy ratio during current-induced step bunching, *Surface Science* 336, L746-L752 (1995). Cited by 47.

[1]*undergraduate student in the Fu lab*
[2]*graduate student in the Fu lab*
Citation counts obtained from Google Scholar

Conference Proceedings and Other Non-journal Articles

1. **E. Fu** and B. Lutz, Diagnostics for Global Health, Global Health & Development Section, Project Syndicate, November 7, 2013.
2. **E. Fu**, P. Yager, P. N. Floriano, N. Christodoulides, and J. McDevitt, Perspective on Diagnostics for Global Health, *IEEE Pulse* November/December issue (2011). Cited by 8.
3. **E. Fu**, T. Chinowsky, K. Nelson, K. Johnston, T. Edwards, K. Helton, M. Grow, J. W. Miller, and P. Yager, An SPR imaging-based salivary diagnostics system for the detection of small molecule analytes, *Annals of the New York Academy of Sciences* 1098, 335-344 (2007). Cited by 34.
4. M. Hasenbank, **E. Fu**, and P. Yager, Spreading small signals over large areas: electrochemical amplification in an SPR imaging sensor array, in Micro Total Analysis Systems 2006, T. Kitamori, H. Fujita, and S. Hasebe, eds., Society for Chemistry and Micro-Nano Systems, 1286-1288 (2006).
5. **E. Fu**, J. Foley, J. Chen, B. Wiley, Y. Xia, and P. Yager, Wavelength-dependent signal amplification potential of gold nanocage tags for surface plasmon resonance (SPR) imaging, in Micro Total Analysis Systems 2005, K. F. Jensen, J. Han, D. J. Harrison, and J. Voldman, eds., Transducer Research Foundation, 1510-1512 (2005).
6. M. Hasenbank, **E. Fu**, and P. Yager, Investigation of a rapid microfluidic surface plasmon resonance imaging (SPRI) signal amplification scheme based on the rate of formation of an enzyme-catalyzed precipitate, in Micro Total Analysis Systems 2005, K. F. Jensen, J. Han, D. J. Harrison, and J. Voldman, eds., Transducer Research Foundation, 485-487 (2005).
7. M. Blaylock, **E. Fu**, and P. Yager, Parallel microfluidic processing of protein assembly quantified using SPR microscopy, in Micro Total Analysis Systems 2004, T. Laurell, J. Nilsson, K. Jensen, D. J. Harrison, and J. Kutter, eds., The Royal Society of Chemistry, 354-356 (2004).
8. T. M. Chinowsky, T. Mactutis, **E. Fu** and P. Yager, Optical and electronic design for a high performance surface plasmon resonance imager, Proceedings SPIE 5261, 173-182, Smart Medical and Biomedical Sensor Technology, B. Cullum, ed. (2004).
9. J. Foley, **E. Fu**, and P. Yager, T-sensor generated refractive index gradients: calibration of a SPR microscope, in Micro Total Analysis Systems 2003, M. A. Northup, K. F. Jensen, and D. J. Harrison, eds., Mesa Monographs, 967-970 (2003).

10. E. D. Williams, **E. Fu**, and B. Li, Evolution of Morphology During Etching of Si, Materials Research Society Symposium Proceedings 466, 157-166, (1997).
11. J. Schneir, T. McWaid, R. Dixson, V. Tsai, J. Villarrubia, E. D. Williams, and **E. Fu**, Progress on Accurate Metrology on Pitch, Height, Roughness, and Width Artifacts Using an Atomic Force Microscope, Proceedings SPIE 2439, 401-415, (1995).

Chapters in Edited Books

1. **E. Fu**, B. Lutz, and P. Yager, Two-dimensional paper networks for automated multi-step processes in point-of-care diagnostics, in Microfluidics and Nanotechnology for Biosensing to the Single Molecule Limit, E. Lagally and K. Iniewski, ed., CRC Press, Boca Raton, FL, 151-165 (2014).
2. **E. Fu**, B. Lutz, and P. Yager, Two-dimensional paper networks for automated multi-step processes in point-of-care diagnostics, in Technologies for Smart Sensors and Sensor Fusion, K. Yallup and K. Iniewski, ed., CRC Press, Boca Raton, FL, 47-60 (2014).
3. D. Stevens, K. Nelson, **E. Fu**, J. Foley, and P. Yager, Microfluidic Immunoassays, in Methods in Bioengineering: Microfabrication and Microfluidics, J. Zahn, ed., Artech House, Boston, MA, 225-244 (2010).
4. **E. Fu**, T. Chinowsky, K. Nelson, and P. Yager, SPR Imaging for Clinical Diagnostics, in SPR Handbook, R. Schasfoort and A. Tudos, eds., The Royal Society of Chemistry, Cambridge, UK, 313-331 (2008).

Patents

1. Sequential delivery of fluid volumes and associated devices, systems, and methods, U.S. patent application, WO2014116756 A1, submitted in 2014 (with P. Yager, B. Lutz, P. Kauffman, and 11 others).
2. Reagent patterning in capillarity-based analyzers and associated systems and methods; U.S. Patent No. 9,528,987 (with P. Yager, B. Lutz, G. Fridley, H. Le, and P. Kauffman).
3. Chemical sensor enhanced by direct coupling of redox enzyme to conductive surface; U.S. Patent No. 7,364,886, 2010 (with M. Hasenbank and P. Yager).
4. Signal amplification method for surface plasmon resonance-based chemical detection; U.S. Patent No. 7,405,054, 2008 (with M. Hasenbank, K. Nelson, and P. Yager).
5. Wavelength tunable surface plasmon resonance sensor; U.S. Patent No. 7,030,989, 2006 (with P. Yager).

STUDENTS

Graduate Advisees (completed)

Student	Degree	Thesis	Graduated
1. Robert Robinson (student at OSU)	M.S.	*Development of a Paper-based Whole Blood Phenylalanine Assay for PKU Diagnosis and Monitoring in Low-Resource Settings*	Spring 2016
2. Tinny Liang (student at UW)	M.S.	*Investigation of Reagent Delivery Formats and Implications for Higher-sensitivity Detection*	Fall 2014

		for Paper-based Diagnostics	
3. Greg Thiessen (student at UW)	M.S.	*Development of a Field-use Paper-based PKU Test using Colorimetric Readout*	Summer 2014

Graduate Advisees (current)

Student	Degree	Expected Graduation
1. Lael Wentland	Ph.D.	Spring 2022
2. Mike Rodriguez	Ph.D.	Spring 2021
3. Corey Downs	Ph.D.	Spring 2020

RESEARCH ACTIVITIES

Funding Agency	***Title***	**Role**	**Dates**
NIH/NICHD R01	*Creating a paper-based phenylalanine test for personalized therapy monitoring by patients with phenylketonuria*	PI	9/1/17–5/31/20
UW Subcontract (from NIH to B. Lutz)	*Enabling infant HIV diagnosis in remote settings: a highly-sensitive test with an ASSURED design*	PI	4/1/17–3/31/18
UW Subcontract (from NIH to P. Yager)	*A high-sensitivity low-cost multiplexed immunoassay platform based on 2-dimensional paper networks; demonstration using influenza*	PI	9/16/13–6/30/16
NPKUA via Innocentive (gift)	*Home phenylalanine monitor*	PI	7/2014–6/2016
OSU Agricultural Research Foundation	*Development of a milk-based rapid field test for the high-sensitivity detection of Salmonella dublin infected dairy cattle to expedite disease control on endemically infected dairies*	PI	2/1/14–1/31/16
NIH/NIAID R01	*A high-sensitivity low-cost multiplexed immunoassay platform based on 2-dimensional paper networks*	Co-I (at UW) (PI Yager)	7/15/11–9/3/13
DARPA Defense Sciences Office	*Multiplexable autonomous disposables for nucleic acid amplification tests (MADNAATs) for limited-resource settings*	Co-I (at UW) (PI Yager)	3/1/13–9/3/13
Coulter Foundation/ UW Bioengineering	*Sensitive field-use diagnostic for impairment due to THC from saliva*	PI (at UW)	4/1/2012–9/3/2013
NIH/NIBIB ARRA	*A sensitive multiplexed diagnostic platform using disposable 2D paper networks*	Collaborator (at UW) (PI Yager)	9/1/2009–8/31/2012

TEACHING

OSU
Instructor for HEST 399, Spring 2016, 2017

Instructor for CBEE 414 Laboratory, Fall 2015, 2016, 2017
Tutorial Facilitator for Veterinary Integrated Problem Solving, VMB 742, Spring 2015
Studio Instructor for Energy Balances, CBEE 212, Winter 2014
Guest Lecturer for Bioengineering Product Design, BIOE 390, Spring 2014, Spring 2015

Teaching with the UW Physics Education Group
University of Washington, Director: Lillian McDermott

- Co-teaching Physics 410 (for pre-service teachers)
- Co-teaching the Summer Institute in Physics and Physical Science (for in-service teachers)
- Co-teaching Tutorials in Physics 121, 122, 123
- Training of teaching assistants for Tutorials in Physics 121, 122, 123

Teaching Assistant

- Lab section of Bioengineering 455, University of Washington
- Recitation section of Physics 162 and 122, University of Maryland

Tutoring Experience

- English for adults (Literacy Source, Seattle, WA)
- Science/math for high school students (Volunteers in Providence, Providence, RI)

OTHER SCHOLARLY ACTIVITY

Oral Presentations

1. **E. Fu**, "Engineering paper microfluidic sensors for point-of-care applications in low-resource settings", Plenary Session of the AES Electrophoresis Society, San Francisco, CA, November 2016.
2. **E. Fu**, "Paper microfluidic sensors for point-of-care diagnostic applications in low-resource settings", Invited presentation at SELECTBIO Point-of-care Diagnostics, Madrid, Spain, March 15, 2016.
3. **E. Fu**, "Paper microfluidic sensors for point-of-care diagnostic applications in low-resource settings", Veterinary Medicine Seminar, Oregon State University, Corvallis, OR, January 26, 2016.
4. **E. Fu**, "Paper microfluidic sensors for point-of-care diagnostic applications in low-resource settings", Pharmacy Seminar, Oregon State University, Corvallis, OR, December 3, 2015.
5. R. Robinson[2], G. Thiessen[2], L. Wong[1], K. De Los Reyes[1], R. Monnat, and **E. Fu**, "Paper microfluidics for the conversion of lab-based testing to the home; example of phenylalanine monitoring", Invited presentation at IEEE NanoMed, Honolulu, HI, November 18, 2015.
6. R. Robinson[2], L. Wong[1], R. Monnat, and **E. Fu**, "Paper-based device for home phenylalanine monitoring from a sample of whole blood", Presentation at the AVS Annual Meeting, San Jose, CA, October 19, 2015.
7. R. Robinson[2], L. Wong[1], R. Monnat, and **E. Fu**, "Home phenylalanine monitoring for PKU therapy in a paper-based device from whole blood", Presentation at the BMES Annual Meeting, Tampa, FL, October 9, 2015.
8. **E. Fu**, "Paper microfluidic sensors for point-of-care diagnostic applications in low-resource settings", Physics SSO Seminar, Oregon State University, Corvallis, OR, May 27, 2015.
9. **E. Fu**, "Engineering paper networks for point-of-care diagnostic applications in low-resource settings", CBEE Seminar, Oregon State University, Corvallis, OR, March 12, 2015.

10. G. Thiessen[2], K. De Los Reyes[1], R. Robinson[2], R. Monnat, and **E. Fu**, "Conversion of a laboratory-based colorimetric assay to a field-use paper-based test for the detection of phenylketonuria in newborns", Presentation at the BMES Annual Meeting, San Antonio, TX, October 25, 2014.
11. **E. Fu**, "Engineering paper networks for point-of-care diagnostic applications in low-resource settings", CBEE Seminar, Oregon State University, Corvallis, OR, January 27, 2014.
12. **E. Fu**, "Engineering paper networks for point-of-care diagnostic applications in low-resource settings", Invited presentation for the Point-of-Care Diagnostics Seminar Series, Berkeley, CA, October 10, 2013.
13. B. Toley, B. McKenzie[1], T. Liang[2], J. Buser, P. Yager, and **E. Fu**, "Tunable time-delays for paper microfluidic devices", Presentation at the BMES Annual Meeting, Seattle, WA, September 27, 2013.
14. **E. Fu**, "Paper microfluidic bioassays for point-of-care diagnostics", Invited presentation at CMOS Emerging Technologies Research, Whistler, British Columbia, July 19, 2013.
15. **E. Fu**, "Engineering paper networks for point-of-care diagnostic applications in low-resource settings", Invited presentation (Host Jianping Fu in Mechanical Engineering), University of Michigan, Ann Arbor, MI, June 18, 2013.
16. **E. Fu**, "Microfluidics for point-of-care diagnostic applications in low-resource settings", Invited presentation at the Microwave Sensors and Biochips for Biomolecules and Cells Characterization Workshop, IEEE International Microwave Symposium 2013, Seattle, WA, June 7, 2013.
17. **E. Fu**, "Engineering paper networks for point-of-care diagnostic applications in low-resource settings", Bioengineering 299 Seminar, University of Washington, Seattle, WA, June 4, 2013.
18. **E. Fu**, "Engineering paper networks for point-of-care diagnostic applications in low-resource settings", Invited presentation (Host Brett Tyler in Center for Genome Research and Biocomputing), Oregon State University, Corvallis, OR, May 31, 2013.
19. **E. Fu**, "Engineering paper networks for point-of-care diagnostics in low-resource settings", Analytical Chemistry Seminar, University of Washington, Seattle, WA, May 20, 2013.
20. **E. Fu**, "Point-of-care diagnostics for low-resource settings", Lecture to GHDx Center Course 1: Point-of-care diagnostics for global health, Seattle, WA, June 28, 2012.
21. **E. Fu**, B. Lutz, and P. Yager, "Introduction to paper microfluidics", Joint presentation at GE Global Research, Niskayuna, NY, June 1, 2012.
22. **E. Fu**, B. Lutz, and P. Yager, "Diagnostics for reducing cervical cancer and HPV infections", Seminar Series sponsored by Coulter and the University of Washington Center for Integrated Health of Women, Children and Adolescents, Seattle, WA, March 1, 2012.
23. **E. Fu**, T. Liang[1], J. Houghtaling[1], S. Ramachandran, S. Ramsey, B. Lutz, and P. Yager, "Two-dimensional paper network format for amplified lateral flow assays", Presentation at BMES Annual Meeting, Hartford, CT, October 15, 2011.
24. **E. Fu**, B. Lutz, and P. Yager, "Two-dimensional paper networks for high performance multi-step assays at the point-of-care", Presentation at Capillarity-based Microfluidics for Bioanalysis, Seattle, WA, October 1, 2011.
25. B. Lutz and **E. Fu, "**Point-of-care diagnostics for limited-resource settings", Lecture to GHDx Center Course 1: Point-of-care diagnostics for global health, Seattle, WA, July 1, 2011.
26. **E. Fu**, B. Lutz, and P. Yager, "Microfluidics 2.0", Joint presentation to HANC and the Malaria Laboratory Working Group, Webinar, June 28, 2011.

27. **E. Fu**, B. Lutz, P. Kauffman, T. Liang, and P. Yager, "Engineering paper networks for improved assay performance", Presentation at BMES Annual Meeting, Austin, TX, October 7, 2010.
28. **E. Fu**, "Engineering paper networks for point-of-care diagnostics in low resource settings", Invited presentation, University of Washington, Bioengineering Department, Seattle, WA, September 14, 2010.
29. **E. Fu**, B. Lutz, and P. Yager, "Microfluidics 2.0", Joint presentation at Naval Research Labs, Chemistry Division, Washington D.C., August 4, 2010.
30. **E. Fu**, B. Lutz, and P. Yager, "Microfluidics 2.0", Joint presentation at National Institute of Biomedical Imaging and Bioengineering, Bethesda, MD, August 3, 2010.
31. **E. Fu**, T. Chinowsky, K. Nelson, K. Johnston, T. Edwards, K. Helton, M. Grow, and P. Yager, "An SPR Imaging-Based Salivary Diagnostics System for the Detection of Small Molecule Analytes", Presentation at Oral-based Diagnostics Conference, Lake Lanier Islands, GA, October 2006.
32. **E. Fu**, D.-J. Liu, M. D. Johnson, J. D. Weeks, and E. D. Williams, Study of the Decay of Metastable Structures on Silicon. Presentation at American Vacuum Society National Meeting, Minneapolis, MN, October 1995.

[1]*undergraduate student in the Fu lab*
[2]*graduate student in the Fu lab*

Scholarly Reviewing

- Journal article reviewing:
  ACS Sensors, Analytical and Bioanalytical Chemistry, Analytical Chemistry, Analytical Methods, Analytica Chimica Acta, Bioanalysis, Biomicrofluidics, Globalization and Health, Lab on a Chip, Nature Nanotechnology, Proceedings of the National Academy of Sciences, Review of Scientific Instruments, Sensors and Actuators B, Trends in Biotechnology
- Biomedical Engineering Society Annual Symposium Abstracts for the Nano to Micro Technologies and New Frontiers and Special Topics (Global Health Technologies) Tracks (2014)
- Biomedical Engineering Society Annual Symposium Undergraduate Abstracts for the Biomaterials Track (2014)

Proposal Reviewing

- NIH Center for Scientific Review Special Emphasis Panel ZRG1 CMT-F (01) Cellular and Molecular Technologies (in progress)
- Thiel Foundation Breakout Labs (August 2016)
- NIH NHLBI Special Emphasis Review Panel, Onsite Tools and Technologies for Heart, Lung, and Blood Clinical Research Point-of-Care, ZHL1 CSR-O (O2) R, Bethesda, MD (July 13, 2015)
- NIH NHLBI Special Emphasis Review Panel, Neonatal and Pediatric Blood Testing, ZHL1 CSR-C (O1) 1, Teleconference (June 1, 2015)
- NIH Small Business: Basic and Integrative Bioengineering Special Emphasis Review Panel, ZRG1 IMST-M (13), Chevy Chase, MD (November 13–14, 2014)
- European Union Project Proposals for Horizon 2020 - Novel in vitro diagnostic tools for better health outcomes (April 2014)
- NIH NHLBI Special Emphasis Review Panel, Microfluidic Blood Assays, ZHL1 CSR-C (S1), Bethesda, MD (June 10, 2014)
- NIH NHLBI Special Emphasis Review Panel, Sickle Cell Disease Diagnostics, ZHL1 CSR-C (M1), Potomac, MD (March 26, 2014)

- NIH SBIR/STTR Proposals, Stage One, Special Emphasis Panels, ZRG1 IMST 13 (February 2013, May 2012, February 2012, October 2011)

Professional Memberships and Other Conference Activities

- Session Discussion Leader, Living Systems, Microfluidics, Physics and Chemistry of Forces, Fields, and Flows in Biological, Energy, and Manufacturing Applications of Microfluidics Gordon Research Conference, Barga, Italy, June 2017.
- Panelist at the NSF Workshop on Papertronics: Paper-based Electronics for the 21st Century, Arlington, VA, September 12-14, 2016.
- Co-Chair of Global Health II Session at the BMES Annual Meeting, San Antonio, TX, October 25, 2014.
- Co-Chair of Emerging Technologies II Session at the BMES Annual Meeting, Seattle, WA, September 27, 2013
- Co-Chair of Sensors Session at CMOS Emerging Technologies Research, Whistler, British Columbia, July 19, 2013
- Co-organizer for the Capillarity-based Microfluidics for Bioanalysis Workshop (2011)
- Member of the Local Organizing Committee for Microtas (2011)
- Member of the Biomedical Engineering Society (2010–present)

AWARDS AND HONORS

Bioengineering Special Award, Department of Bioengineering, University of Washington, 2006

National Science Foundation Post-doctoral Fellowship in Science, Mathematics, Engineering, and Technology Education, National Science Foundation, 1999–2000

SERVICE

Student Exam Committee Member
Justin Rewerts, OSU Chemistry (2015-present) – GSR
Bonan Yu, OSU Chemical Engineering (2015-present)
John Lahmann, OSU Chemical Engineering (2015-present)
Ryan Simmons, OSU Microbiology (2014-present) – GSR
Ramya Raman, OSU Chemical Engineering, Ph.D. (2017)
Jenna Gorecki, OSU Chemical Engineering, M.S. (2016)
Brian Fuchs, OSU Chemical Engineering, M.S. (2015)
Carly Holstein, UW Bioengineering, Ph.D. (2015)
Aaron Chevalier, UW Bioengineering, Ph.D. General Exam (2013)
Joseph Phan, UW Bioengineering, Ph.D. Qualifying Exam (2011)

Committee Member
OSU CBEE Bioengineering Faculty Search Committee (2016-2017)
OSU CBEE Inclusivity Taskforce (2016)
OSU CHE Graduate Student Progression Subcommittee – Chair (2015-2016)
OSU Chemical Engineering Graduate Committee (2014-2016)
OSU Strategic Planning Task Force 2 (2014)

OSU CBEE Interim Head and Head Search Committee (2014)
UW Bioengineering Student Affairs Committee Member (2011-2013)
UW Chemical Engineering Faculty Search Committee (2011)
UW Bioengineering Safety Committee (2004-2007)

Other Service Activities
OSU CBEE undergraduate advisor (2017, 2016, 2015, 2014)
OSU host lab for SESEY summer students (2017, 2016, 2015, 2014)
UW Mary Gates Scholarship reviewer (2013)
UW Levinson Scholarship reviewer (2013)
UW Undergraduate Research Symposium moderator (2013)
UW host for Board of Regents Bioengineering lab tour (2012)
UW host for Bioengineering Freshman Interest Group lab tour (2011)
UW Engineering Discovery Days participant (2011, 2010)