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Principal Scientist Amazon.com
Founder and CEO SmartGait LLC
Professor of Electrical and Computer Engineering, Purdue University
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ADDRESSES:

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RESEARCH INTERESTS:

Biomedical microdevices, BioMEMS, Mobile healthcare, Microfluidics, Lab-on-a-chip, Wearable health monitoring devices, Soft robotics, Flexible low-cost sensors and microsystems.

EDUCATION:

- Ph.D. (April 1994) Electrical and Computer Engineering, University of Michigan, Ann Arbor.
Thesis: A single channel microstimulator for functional neuromuscular stimulation (Advisor: Prof. Khalil Najafi)
- M.S. (May 1992) Electrical and Computer Engineering, University of Michigan, Ann Arbor.
- B.S. (June 1986) Electrical and Computer Engineering, University of Tehran, Tehran, Iran.

WORK EXPERIENCE:

- Aug. 2017-present Principal Scientist, Amazon Inc.
- Oct. 2015-present Founder and CEO, SmartGait LLC
- Aug. 2009-present Professor, School of Electrical and Computer Engineering, Purdue University.
- Jan. 2005-Aug. 2009 Associate Professor, School of Electrical and Computer Engineering, Purdue University.
- Oct.-1999-Dec. 2004 Assistant Professor, Department of Electrical and Computer Engineering, University of Minnesota.
- Feb. 1996-Sep. 1999 Assistant Research Scientist, Center for Integrated Microsystems, University of Michigan.

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March 1995-Feb. 1996 Research Fellow, Center for Integrated Microsystems, University of Michigan.

May 1994-Mar. 1995 Postdoctoral Research Fellow, Cardiac Rhythm Management Laboratory, University of Alabama at Birmingham.

Jan. 1989 –April 1994 Graduate Student Research Assistant, University of Michigan.

HONORS AND AWARDS:

- Purdue University Innovator Hall of Fame.
- Purdue University Discovery Park Fellow.
- One of the four professors recognized by Purdue University for making innovative solutions to everyday problems across the world.
- McKnight Endowment Fund for Neuroscience Technological Innovations Awards in Neuroscience.
- National Science Foundation CAREER Award in Biomedical Engineering.

EDITORIAL ACTIVITIES:

- Associate editor, Nature Scientific Reports, 2015-2017
- Associate editor Nature Microengineering and Nanosystems, 2015-present
- Associate editor, IEEE Transactions of Biomedical Engineering, 2013-2017
- Associate editor, IEEE Sensors, 2003-2009
- Editorial Board, Sensor Letters, 2003-2004

PROFESSIONAL SERVICES:

- 1) Chair Micro/Nano area School of Electrical and Computer Engineering, Purdue University (2013-2017)
- 2) University of Michigan WIMS² industrial advisory board, 2017-2020.
- 3) National Science Foundation, review panel, 2015.
- 4) National Institute of Health review panel, 2012.
- 5) National Science Foundation review panel, 2012.
- 6) National Science Foundation ECS Career Program review panel, 2009.
- 7) National Science Foundation ECS Sensors Program review panel, 2009.
- 8) Panel/Workshop on “MNS Horizon 2040,” National Science Foundation, Denver, Co, 2009.
- 9) Panel/Workshop on Basic Sciences Issues in MEMS, DARPA, Santa Barbara, 2005.
- 10) National Science Foundation ECS Sensors Program review panel, 2005.
- 11) Panel/Workshop on the Control and System Integration of Micro- and Nano-Scale Systems, National Science Foundation, Arlington, Va., 2004.
- 12) National Science Foundation Biomedical Engineering CAREER Awards review panel, 2003.
- 13) National Institute of Health review panel, 2002.
- 14) National Science Foundation Biomedical Engineering CAREER Awards review panel, 2001.
- 15) The Wellcome Trust Foundation, United Kingdom review panel, 2000.

Meeting Organization and technical committees

- 1) Member of the program technical committee IEEE Sensors 2013
- 2) Member of the program technical committee IEDM 2012

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- 3) Member of the program technical committee IEDM 2011
- 4) Member of the program technical committee IEEE Transducers 2010
- 5) Member of the program technical committee IEEE MEMS 07
- 6) Member of the program technical committee IEEE MEMS 06
- 7) Member of the program technical committee IEEE MEMS 04
- 8) Chairman and organizer, IEEE Solid-State Circuits and Technology Committee (SSCTC) Workshop on Biomedical Electronics, October 12-13 2000, Arlington VA
- 9) Animator and session organizer for the first European Medical and Biological Engineering Conference, 1999 Vienna Austria (the Micro and Nano technology in Medicine session)

PROFESSIONAL SOCIETIES:

- 1) Senior member of the IEEE
- 2) Member of the American Association for the Advancement of Science
- 3) Member of the American Physical Society
- 4) Member of the American Chemical Society

PUBLICATIONS:

Journal Publications

1. M. Ochoa, R. Rahimi, J. Zhou, H. Jiang, C. K. Yoon, D. Maddipatla, B. B. Narakathu, V. Jain, M. Oscari, T. J. Morken, R. H. Oliviera, G. L. Campana, O. W. Cummings, M. A. Zieger, R. Sood, M. Z. Atashbar and **B. Ziaie**. "Integrated sensing and delivery of oxygen for next-generation smart wound dressings." *Microsystems & Nanoengineering* 6, no. 1, 1-16, 2020.
2. H. Jiang, M. Ochoa, R. Rahimi, W. Yu, and **B. Ziaie**. "Laser-treated glass platform for rapid wicking-driven transport and particle separation in bio microfluidics." *RSC advances* 9, no. 34, 19531-19538. 2019.
3. V. Jain, M. Ochoa, H. Jiang, R. Rahimi, and **B. Ziaie**. "A mass-customizable dermal patch with discrete colorimetric indicators for personalized sweat rate quantification." *Microsystems & Nanoengineering* 5, no. 1, 1-12, 2019.
4. D. Maddipatla, B. B. Narakathu, M. Ochoa, R. Rahimi, J. Zhou, C. K. Yoon, H. Jiang, **B. Ziaie**, and M. Z. Atashbar "Rapid prototyping of a novel and flexible paper based oxygen sensing patch via additive inkjet printing process." *RSC advances* 9, no. 39, 22695-22704, 2019.
5. H. Jiang, M. Ochoa, J. F. Waimin, R. Rahimi, and **B. Ziaie**. "A pH-regulated drug delivery dermal patch for targeting infected regions in chronic wounds." *Lab on a Chip* 19, no. 13, 2265-2274, 2019.
6. C. J. Compton, A. T. Melson, J. A. Sokol, W. R. Nunery, M. Ochoa, **B. Ziaie**, and H. Lee. "Early experience with nonporous polyethylene barrier sheet in orbital fracture repair." *Ophthalmic Plastic & Reconstructive Surgery* 35, no. 1, 67-70, 2019.

7. A. Kim, J. Zhou, S. Samaddar, S.- H. Song, B. D. Elzey, D. H. Thompson, and **B. Ziaie**. "An Implantable Ultrasonically-powered Micro-Light-source (μ Light) for photodynamic therapy." *Scientific reports* 9, no. 1, 1-9, 2019.
8. C. K. Yoon, M. Ochoa, A. Kim, R. Rahimi, J. Zhou, and **B. Ziaie**, "Yeast metabolic response as an indicator of radiation damage in biological tissue," *Advanced Biosystems*: 1800126, 2018.
9. R. Rahimi, S. Shams Esqahghi, S. Chittiboyina, Z. Mutlu, S. A. Lelièvre, M. Cakmak, and **B. Ziaie**, "Laser-enabled processing of stretchable electronics on a hydrolytically degradable hydrogel," *Advanced Healthcare Materials*, 1800231, 2018.
10. T. Parupudi, R. Rahim, M. Ammirati, R. Sundararajan, A. L. Garner, and **B. Ziaie**, "Fabrication and characterization of implantable flushable electrodes for electric field-mediated drug delivery in a brain tissue-mimic agarose gel," *Electrophoresis*, 2018.
11. J. Zhou, A. Kim, and **B. Ziaie**, "An ultrasonically controlled switching system for power management in implantable devices," *Biomedical microdevices*, 20(2), p.42, 2018.
12. P. Mostafalu, A. Tamayol, R. Rahimi, M. Ochoa, A. Khalilpour, G. Kiaee, I. K. Yazdi, S. Bagherifard, M. R. Dokmeci, **B. Ziaie**, and S. R. Sonkusale, "Smart bandage for monitoring and treatment of chronic wounds," *Small*, 14(33), p.1703509, 2018.
13. R. Rahimi, U. Brener, S. Chittiboyina, T. Soleimani, D. A. Detwiler, S. A. Lelièvre, and **B. Ziaie**, "Laser-enabled fabrication of flexible and transparent pH sensor with near-field communication for in-situ monitoring of wound infection," *Sensors and Actuators B: Chemical* 267, 198-207, 2018.
14. H. Jiang, W. Yu, M. Ocai, and **B. Ziaie**, "A smart capsule with a hydrogel-based pH-triggered release switch for GI-tract site-specific drug delivery," *IEEE Transactions on Biomedical Engineering* (2018).
15. S. Chittiboyina, R. Rahimi, F. Atrian, M. Ochoa, **B. Ziaie**, and S. Lelievre, "Gradient-on-a-chip with reactive oxygen species reveals thresholds in the nucleus response of cancer cells depending on the matrix environment," *ACS Biomaterials Science & Engineering*, 4 (2), 432–445, 2018.
16. R. Rahimi, W. Yu, M. Ochoa, and **B. Ziaie**. "Directly embroidered microtubes for fluid transport in wearable applications," *Lab on a Chip* 17, no. 9, 1585-1593, 2017.
17. W. Seo, W. Yu, T. Tan, **B. Ziaie**, and B. Jung "Diaper-embedded urinary tract infection monitoring sensor module powered by urine-activated batteries," *IEEE Transactions on Biomedical Circuits and Systems* 11, no. 3, 681-691, 2017.
18. M. A. J. Zieger, M. Ochoa, R. Rahimi, G. Campana, S. Tholpady, **B. Ziaie**, and R. Sood, "Skin regeneration using dermal substrates that contain autologous cells and silver nanoparticles to promote antibacterial activity: in vitro studies," *Military Medicine*, 182, 3/4:376, 2017.

19. M. Ochoa, C. K. Yoon, and **B. Ziaie**, "Laser-fabricated, self-forming swimmers with catalytic propulsion and magnetic navigation," *IEEE Journal of Microelectromechanical Systems*, 2017
20. R. Rahimi, M. Ochoa, A. Tamayol, S. Khalili, A. Khademhosseini, and **B. Ziaie**, "A highly stretchable potentiometric pH sensor fabricated via direct laser-writing/machining of carbon-polyaniline composite," *ACS Applied Materials & Interfaces*, vol. 9, no. 10, 9015-9023, 2017.
21. N. Race, G. Acosta, S. Vega-Alvarez, E. Lungwitz, T. Zhang, W. Truitt, **B. Ziaie**, and R. Shi. "Psychosocial learning deficits after mild blast injury are induced by intracranial deformation and oxidative stress," *Journal of Neurotrauma*, vol. 33, no. 13, pp. A24-A25, 2016.
22. R. Rahimi, S. S. Htwe, M. Ochoa, A. Donaldson, M. Zieger, R. Sood, A. Tamayol, A. Khademhosseini, A. M. Ghaemmaghami, and **B. Ziaie**, "A paper-based in vitro model for on-chip investigation of the human respiratory system," *Lab on a Chip* 16(22), 4319-4325, 2016.
23. R. Rahimi, M. Ochoa, T. Parupudi, X. Zhao, I. K. Yazdi, M. R. Dokmeci, A. Tamayol, A. Khademhosseini, and **B. Ziaie**, "A low-cost flexible pH sensor array for wound assessment," *Sensors and Actuators B: Chemical* 229, 609-617, 2016.
24. A. Kim, C. R. Powell, and **B. Ziaie**, "A universal packaging technique for low-drift implantable pressure sensors." *Biomedical Microdevices*, 18, 2, 1-8, 2016.
25. R. Rahimi, M. Ochoa, and **B. Ziaie**, "Direct laser writing of porous-carbon/silver nanocomposite for flexible electronics," *ACS Applied Materials & Interfaces*. 8, 16907-16913, 2016.
26. M. Ochoa, H. Jiang, J. H. Park, A. Otte, R. Pinal, and **B. Ziaie**, "Nanoparticle-enabled wireless monitoring and characterization of physical degradation kinetics in pharmaceutical gelatin films," *Sensors and Actuators A: Physical* 241, 238-244, 2016.
27. J. Roth, A. Kim, M. Alloosh, **B. Ziaie**, M. Sturek, and C. R. Powell, "Detrusor underactivity is seen in an animal model for metabolic syndrome," *The Journal of Urology* 195, no. 4, e799, 2016.
28. J. Roth, A. Kim, M. Alloosh, M. Sturek, **B. Ziaie**, and C. R. Powell, "Wireless urodynamic device demonstrates submucosal sensor is comparable to urodynamic catheter," *The Journal of Urology* 195, no. 4, e798, 2016.
29. N. Cao, S. H. Song, T. Maleki, M. Shaffer, K. M. Stantz, M. Cao, C. Kao, M. S. Mendonca, **B. Ziaie**, and S.-C. Ko, "Radiosensitizing pancreatic cancer xenografts by an implantable micro-oxygen generator," *Radiation Research*, 185(4), pp.431-437, 2016.
30. S. H. Song, A. Kim, M. Brown, C. Jung, S. Ko, and **B. Ziaie**, "An implantable wireless interstitial pressure sensor with integrated Guyton chamber," *IEEE Trans. on Biomed. Eng.*, 63, 2273-2277, 2016.
31. S. Song, N. S. Race, A. Kim, T. Zhang, R. Shi, and **B. Ziaie**, "A wireless intracranial brain deformation sensing system for blast-induced traumatic brain injury," *Scientific Reports* 5, 2015.

32. M. Ammirati, Mario, Tariq Lamki, G. Chitnis, X. Yang, D. Russell, D. Coble, B. Kaur, M. Knopp, S. Moore, and **B. Ziaie**, "In vivo brain electrophoresis-a novel method for chemotherapy of CNS diseases," *Expert Opinion on Drug Delivery*, 12, 727-734, 2015.
33. R. Rahimi, M. Ochoa, A. Donaldson, T. Parupudi, M. R. Dokmeci, A. Khademhosseini, A. Ghaemmaghami, and **B. Ziaie**, "A janus-paper PDMS platform for air-liquid interface cell culture applications," *Journal of Micromechanics and Microengineering*, 25, 055015, 2015.
34. R. Rahimi, M. Ochoa, W. Yu, and **B. Ziaie**, "Highly stretchable and sensitive unidirectional strain sensor via laser carbonization," *ACS Applied Materials & Interfaces*, 7, 4463-4470, 2015.
35. S. Song, A. Kim, and **B. Ziaie**, "Omni-directional ultrasonic powering for millimeter-scale implantable devices," *IEEE Trans. on Biomed. Eng.*, 62, 11, 2717-2723, 2015.
36. A. Kim, J. Kim, S. Rietdyk, and **B. Ziaie**, "A wearable smartphone-enabled camera-based system for gait assessment," *Gait & Posture*, 42, 138-144, 2015.
37. W. Yu, R. Rahimi, M. Ochoa, R. Pinal, and **B. Ziaie**, "A smart capsule with GI-tract-location-specific payload release," *IEEE Trans. on Biomed. Eng.*, 62, 2289-2295, 2015.
38. A. Kim, M. Ochoa, R. Rahimi, and **B. Ziaie**, "New and emerging energy sources for implantable wireless microdevices," *Access, IEEE* 3, 89-98, 2015.
39. C. T. Cantwell, P. Wei, **B. Ziaie**, and M. P. Rao, "Modular reservoir concept for MEMS-Based Transdermal Drug Delivery Systems," *J. Micromech. Microeng.*, 24 117001, 2014.
40. A. H. Najafabadi, A. Tamayol, N. Annabi, M. Ochoa, P. Mostafalu, M. Akbari, M. Nikkhah, R. Rahimi, M. R. Dokmeci, S. Sonkusale, **B. Ziaie** and A. Khademhosseini, "Biodegradable nanofibrous polymeric substrates for generating elastic and flexible electronics," *Advanced Materials*, 26, 5823-5830, 2014.
41. S.H. Song, J.H. Park, G. Chitnis, R.A. Siegel, and **B. Ziaie**, "A wireless chemical sensor with iron oxide nanoparticles embedded hydrogel," *Sensors and Actuators B*, 193, 925-930, 2014.
42. R. Rahimi, M. Ochoa, W. Yu, and **B. Ziaie**, "A sewing-enabled stitch-and-transfer method for robust, ultra-stretchable, conductive interconnects," *Journal of Micromechanics and Microengineering*, 24(9), 095018, 2014.
43. M. Ochoa, R. Rahimi, N. Alemdar, M. R. Dokmeci, A. Khademhosseini, and **B. Ziaie** "A paper-based oxygen generating platform with spatially-defined catalytic regions for chronic wound treatment," *Sensors and Actuators B*, 198, 472-478, 2014.
44. M. Ochoa, R. Rahimi, and **B. Ziaie**, "Flexible sensors for chronic wound management," *IEEE Reviews in Biomedical Engineering*, 7, 73-86, 2014.
45. A. Kim, C. R. Powell, and **B. Ziaie**, "An implantable pressure sensing system with electromechanical interrogation scheme," *IEEE Trans. on Biomed. Eng.*, 61, 2209-2215, 2014.
46. G. Chitnis and **B. Ziaie**, "A ferrofluid-based wireless pressure sensor," *Journal of Micromechanics and Microengineering*, 23, 125031, 2013.

47. C. K. Yoon, G. Chitnis and **B. Ziaie**, "Impact-triggered thermoelectric power generation," *Journal of Micromechanics and Microengineering*, 23, 114004, 2013.
48. G. Chitnis, T. Tan, and **B. Ziaie**, "Laser-assisted fabrication of batteries on wax paper," *Journal of Micromechanics and Microengineering*, 23, 114016, 2013.
49. M. Ochoa, G. Chitnis, and **B. Ziaie**, "Laser-micromachined cellulose acetate adhesive tape as a low-cost smart material," *Journal of Polymer Science Part B: Polymer Physics*, 2013.
50. M. Ochoa, P. Wei, A. J. Wolley, K. J. Otto, and **B. Ziaie**, "A hybrid PDMS-parylene subdural multi-electrode array," *Biomedical Microdevices*, 15, 437-443, 2013.
51. C. Mousoulis, T. Maleki, **B. Ziaie**, and C. P. Neu, "Atomic force microscopy-coupled microcoils for cellular-scale nuclear magnetic resonance spectroscopy," *Applied Physics Letters*, 102, 143702, 2013.
52. G. Chitnis, T. Maleki, B. S. Samuels, L. B. Cantor, and **B. Ziaie**, "A minimally invasive implantable wireless pressure sensor for continuous IOP monitoring," *IEEE Trans. on Biomed. Eng.*, 60, 250-256, 2013.
53. G. Chitnis and **B. Ziaie**, "Waterproof active paper via laser surface micropatterning of magnetic nanoparticles," *ACS Applied Materials and Interfaces*, 4(9), 4435-4439, 2012.
54. M. Ochoa, C. Mousoulis, **B. Ziaie**, "Polymeric microdevices for transdermal and subcutaneous drug delivery," *Advanced Drug Delivery Reviews*, 64(14), pp. 1603-1616, 2012.
55. M. Ochoa and **B. Ziaie**, "A fermentation-powered thermopneumatic pump for biomedical applications," *Lab-on -a-Chip*, 12(20), 4044-4048, 2012.
56. C.-L. Chang, Z. Ding, V. N. L. R. Patchigolla, **B. Ziaie**, and C. Savran, "Reflective diffractive gratings from hydrogels as biochemical sensors," *IEEE Sensors Journal*, 12, 2374-2379, 2012.
57. G. Chitnis, A. Kim, S. H. Song, A. M. Jessop, J. S. Bolton, and **B. Ziaie**, "A thermophone on porous polymeric substrate," *Appl. Phys. Lett.*, 101, 021911, 2012.
58. T. Maleki, G. Chitnis, A. Kim, and **B. Ziaie**, "A batch-fabricated single-layer elastomeric actuator with corrugated surface," *IEEE/ASME J. Microelectromech. Systems*, 21, 859-866, 2012.
59. T. Maleki, G. Chitnis, J. Park, L. B. Cantor, and **B. Ziaie**, "Biodegradable microfabricated plug-filter for glaucoma drainage devices," *IEEE Trans. on Biomed. Eng.*, 59, 1507-1513, 2012.
60. T. Maleki, N. Cao, S. H. Song, C. Cao, S. C. Ko, and **B. Ziaie**, "An ultrasonically powered implantable micro-oxygen generator," *IEEE Trans. on Biomed. Eng.* 58, 3104-3111, 2011.
61. C. Mousoulis, M. Ochoa, D. Papageorgiou, and **B. Ziaie**, "A skin-contact-actuated dispenser/pump for transdermal drug delivery," *IEEE Trans. on Biomed. Eng.* 58, 1492-1498, 2011.

62. G. Chitnis, Z. Ding, C. L. Change, C. Savran, and **B. Ziaie**, "Laser-treated hydrophobic paper: an inexpensive microfluidic platform," *Lab-on -a-Chip*, 11, 1161-1165, 2011.
63. P. H. Wei, R. Taylor, Z. Ding, C. Chung, O. J. Abilez, G. Higgs, B. L. Pruitt, and **B. Ziaie**, "A stretchable microelectrode array using room temperature liquid alloy interconnects," *Journal of Micromechanics and Microengineering*, 21, 054015, 2011.
64. T. Maleki, G. Chitnis, and **B. Ziaie**, "A batch-fabricated laser-micromachined elastomeric actuator," *Journal of Micromechanics and Microengineering*, 21, 027002, 2011.
65. T. Maleki, B. Fogle, and **B. Ziaie**, "A batch fabricated capacitive pressure sensor with an integrated Guyton capsule for interstitial fluid pressure measurement," *Journal of Micromechanics and Microengineering*, 21, 054005, 2011.
66. Z. Ding, P. Wei, G. Chitnis, and **B. Ziaie**, "Ferrofluid impregnated paper actuators," *IEEE/ASME J. Microelectromech. Systems*, 20, 59-64, 2011.
67. M-F Wang, T. Maleki, and **B. Ziaie**, "A self-Assembled 3D microelectrode array," *Journal of Micromechanics and Microengineering*, 20, 035013, 2010.
68. T. Maleki and **B. Ziaie**, "A corona-charged self-biased radiation dosimeter," *IEEE Electron Device Letters*, 31, 767-769, 2010.
69. W.-E. Loke, T.-Y. Choi, T. Maleki, L. Papiez, **B. Ziaie**, and B. Jung, "Magnetic tracking system for radiation therapy," *IEEE Trans. on Biomed. Circuits and Systems*, 4, 223-231, 2010.
70. Z. Ding, W. B. Song, and **B. Ziaie**, "Sequential droplet manipulation via vibrating ratcheted microchannels," *Sensors and Actuators B*, 142, 362-368, 2009.
71. Z. Ding, A. Salim, and **B. Ziaie**, "Selective nanofiber deposition through field-enhanced electrospinning," *Langmuir*, 25(17), 9648-9652, 2009.
72. A. Salim, Z. Ding and **B. Ziaie**, "A micromachined hydrogel stamper for soft printing of biomolecules with adjustable feature dimensions," *Analytical Chemistry*, 81, 4551-4554, 2009.
73. M. Lei, A. Bladi, E. Nuxoll, R. A. Siegel, and **B. Ziaie**, "Hydrogel-based microsensors for wireless chemical monitoring," *Biomedical Microdevices*, 11, 529-538, 2009.
74. Y. Gu, A. P. Dhanarajan, S. L. Hruby, A. Baldi, **B. Ziaie**, and R. A. Siegel, "An interpenetrating glass-thermosensitive hydrogel construct gated flow control and thermofluidic oscillations," *Sensors and Actuators B*, 138, 631-636, 2009.
75. T. Maleki, S. Mohammadi, and **B. Ziaie**, "A nanofluidic channel with embedded transverse nanoelectrodes," *Nanotechnology*, 20, 105302, 2009.
76. Z. Ding and **B. Ziaie**, "A pH-tunable hydrogel microlens array with temperature-actuated light-switching capability," *Applied Physics Letters*, 94, 081111, 2009.

77. H. Kim, T. Maleki, and **B. Ziaie**, "A biaxial stretchable interconnect with liquid-alloy-covered joints on elastomeric substrate," *IEEE/ASME J. Microelectromech. Systems*, 18, 138-146, 2009.
78. A. Salim, C. Son, and **B. Ziaie**, "Selective nanofiber deposition via electrodynamic focusing," *Nanotechnology*, 19, 375303, 2008.
79. M-F Wang, T. Maleki, and **B. Ziaie**, "Enhanced three-dimensional folding of silicon microstructures via thermal shrinkage of a composite organic/inorganic bilayer," *IEEE/ASME J. Microelectromech. Systems*, 17, 882-889, 2008.
80. C. Son and **B. Ziaie**, "A wireless implantable passive micro-dosimeter for radiation oncology," *IEEE Transactions of Biomedical Engineering*, 1772-1775, 2008.
81. H. Kim, C. Son, and **B. Ziaie**, "A multiaxial stretchable interconnect using liquid-alloy-filled elastomeric microchannels," *Applied Physics Letters*, 92, 011904, 2008.
82. C. Son and **B. Ziaie**, "Pull-in instability of parallel-plate electrostatic microactuators under a combined variable charge and voltage configuration," *Applied Physics Letters*, 92, 013509, 2008.
83. W. B. Song, Z. Ding, and **B. Ziaie**, "Microdrop manipulation and mixing using ferrofluid dynamics," *Applied Physics Letters*, 90, 092501, 2007.
84. M. F. Wang, N. Raghunathan, and **B. Ziaie**, "A nonlithographic top-down electrochemical approach for creating hierarchical (micro-nano) superhydrophobic silicon surfaces," *Langmuir*, 23, 2300-2303, 2007.
85. T. Pan, A. Baldi, and **B. Ziaie**, "Remotely adjustable check-valves with an electrochemical release mechanism for implantable biomedical microsystems," *Biomedical Microdevices*, 9, 385-394, 2007.
86. H. Kim, L. Hanwoo, and **B. Ziaie**, "A wideband PVDF-on-silicon ultrasonic transducer array with microspheres embedded low melting temperature alloy backing," *Biomedical Microdevices*, 9, 83-90, 2007.
87. M. Lei, **B. Ziaie**, E. Nuxoll, K. Iván, Z. Noszticzius, and R. A. Siegel, "Integration of hydrogels with hard and soft microstructures," *Journal of Nanoscience and Nanotechnology*, 7, 780-789, 2007.
88. C. Son, **B. Ziaie**, "A micromachined electret-based transponder for *in situ* radiation measurement," *IEEE Electron Device Letters*, 27, 884-886, 2006.
89. M. Lei, A. Baldi, E. Nuxoll, R. A. Siegel, and **B. Ziaie**, "A hydrogel-based implantable micromachined transponder for wireless glucose measurement," *Diabetes Technology and Therapeutics*, 8, 112-122, 2006.
90. A. Baldi, M. Ling, Y. Gu, R. A. Siegel, and **B. Ziaie**, "Microstructured silicon membrane with entrapped environmentally-sensitive hydrogel for smart flow control," *Sensors and Actuators B*, 114, 9-18, 2006.

91. T. Pan, A. Baldi, and **B. Ziaie**, "A reworkable adhesive-free interconnection technology for integrated microfluidic systems," *IEEE/ASME J. Microelectromech. Systems*, 15, 267-272, 2006.
92. R. Venkateswaran, C. Boldt, J. Parthasarathy, **B. Ziaie**, A. G. Erdman, and A.D. Redish, "A motorized microdrive for recording of neural ensembles in awake behaving rats," *J. Biomechanical Engineering*, 127, 1035-1049, 2005.
93. M. S. Stay, T. Pan, J. D. Brown, **B. Ziaie**, and V. H. Barocas, "Thin-film coupled fluid-solid analysis of flow through the AhmedTM glaucoma drainage device," *J. Biomechanical Engineering*, 127, 776-781, 2005.
94. S. Sengupta, G. Mahmud, D. J. Chiou, **B. Ziaie**, and V. H. Barocas, "Application of the lag-after-pulsed-separation (LAPS) flow meter to different protein solutions," *Analyst*, 130, 171-178, 2005.
95. T. Pan, S. J. McDonald, E. M. Kai, and **B. Ziaie**, "A magnetically driven PDMS micropump with ball check-valves," *Journal of Micromechanics and Microengineering*, 15, 1021-1026, 2005.
96. T. Pan, A. Baldi, E. Davies-Venn, R. F. Drayton, and **B. Ziaie**, "Fabrication and modeling of silicon-embedded high-*Q* inductors," *Journal of Micromechanics and Microengineering*, 15, 1-6, 2005.
97. T. Pan, J. D. Brown, and **B. Ziaie**, "Modeling and characterization of a valved glaucoma drainage device with implications for enhanced therapeutic efficacy," *IEEE Transactions on Biomedical Engineering*, 52, 948-951, 2005.
98. R. A. Siegel, Y. Gu, A. Baldi, and **B. Ziaie**, "Novel swelling/shrinking behaviors of glucose-binding hydrogels and their potential use in insulin delivery," *Macromolecular Symposia 207*, 249-256, 2004.
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101. W. B. Song, Z. Ding, and **B. Ziaie**, "A dynamic ferrofluid platform for micromanipulation," *Proceedings 20th. Int. IEEE Conference on Microelectromechanical Systems*, pp. 505-508, Kobe, Japan, Jan. 2007.

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105. W. B. Song, Z. Ding, C. Son, and **B. Ziaie**, "Microdrop manipulation and mixing using dynamic ferrofluid cage array," *Proceedings of IMECE06 2006 ASME International Mechanical Engineering Congress and Exposition*, November 5-10, 2006, Chicago IL, USA
106. J. Parthasarathy, J. Hogenson, A. G. Erdman, A. D. Redish, and **B. Ziaie**, "Battery-operated high-bandwidth multi-channel wireless neural recording system using 802.11b," *Proceedings of the IEEE-EMBS*, New York, September 2006.
107. T. Pan, J. D. Brown, and **B. Ziaie**, "An Artificial Nano-Drainage Implant (ANDI) for Glaucoma Treatment," *Proceedings of the IEEE-EMBS*, New York, September 2006.
108. H. Kim, and **B. Ziaie**, "Fabrication techniques for improving the performance of PVDF-on-silicon ultrasonic transducer array," *Proceedings of the IEEE-EMBS*, New York, September 2006.
109. J. Parthasarathy, A. G. Erdman, A. D. Redish, and **B. Ziaie**, "An integrated CMOS bio-potential amplifier with a feed-forward DC cancellation topology," *Proceedings of the IEEE-EMBS*, New York, September 2006.
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111. W. B. Song, H. Kim, C. Son, and **B. Ziaie**, "Fabrication of polymeric 3D microstructures using ferrofluid mold," *Proceedings 19th. Int. IEEE Conference on Microelectromechanical Systems*, pp. 334-337, Istanbul, Turkey, Jan. 2006.
112. C. Son, and **B. Ziaie**, "Electret based wireless micro-ionizing radiation dosimeter," *Proceedings 19th. Int. IEEE Conference on Microelectromechanical Systems*, pp. 610-613, Istanbul, Turkey, Jan. 2006.
113. M. Lei, W. Choi, R. Siegel, and **B. Ziaie**, "An ultrasensitive chemical microsensor based on self-aligned dry-patterned environmentally sensitive hydrogels," *Proceedings, 13th Int. Conf. on Solid-State Sensors and Actuators*, pp. 1824-1827, Seoul, Korea, June 2005.
114. A. Salim, X. Hunag, S. Humad, F. Ayazi, and **B. Ziaie**, "Adjustable-force soft-landing contact lithography for precision patterning of biomolecules," *Proceedings 18th. Int. IEEE Conference on Microelectromechanical Systems*, pp. 770-774, Miami, Florida, Jan. 2005.

115. M. Lei, A. Salim, R. A. Siegel, and **B. Ziaie**, "A hydrogel-actuated microvalve for smart flow control," *Proceedings of the IEEE-EMBS*, San Francisco, September 2004.
116. M. Lei, Y. Gu, A. Baldi, R. A. Siegel, and **B. Ziaie**, "Soft mold-dry etch: a novel hydrogel patterning technique for biomedical applications," *Proceedings of the IEEE-EMBS*, San Francisco, September 2004.
117. S. McDonald, T. Pan, and **B. Ziaie**, "A magnetically driven PDMS micropump with micro-ball valves," *Proceedings of the IEEE-EMBS*, San Francisco, September 2004.
118. T. Pan, A. Baldi, and **B. Ziaie**, "Remotely adjustable check-valves with an electrochemical release mechanism for implantable biomedical microsystems," *Proceedings of the IEEE-EMBS*, San Francisco, September 2004.
119. T. Pan, E. Kai, M. Stay, V. Barocas, and **B. Ziaie**, "A magnetically driven PDMS peristaltic micropump," *Proceedings of the IEEE-EMBS*, San Francisco, September 2004.
120. J. Guimont, and **B. Ziaie**, "A batch-manufacturable uniform current density metallic-shell hemispherical microelectrode," *Proceedings of the IEEE-EMBS*, San Francisco, September 2004.
121. T. Pan, and **B. Ziaie**, "A remotely adjustable micromachined check-valve with a variable length cantilever-beam structure for implantable biomedical microsystems," *Digest, Solid-State Sensor and Actuator Workshop*, pp. 278, 281, Hilton Head, SC, June 2004.
122. E. Kai, T. Pan, and **B. Ziaie**, "A robust low-cost PDMS peristaltic micropump with magnetic drive," *Digest, Solid-State Sensor and Actuator Workshop*, pp. 270-273, Hilton Head, SC, June 2004.
123. T. Pan, A. Baldi, E. Davies-Venn, R. F. Drayton, and **B. Ziaie**, "Fabrication and modeling of silicon-embedded high Q inductors," *Proceedings 17th. Int. IEEE Conference on Microelectromechanical Systems*, pp. 809-812, Maastricht, Netherlands, Jan. 2004.
124. W. Choi, and **B. Ziaie**, "A foldable multi-chip packaging technique with a polyimide platform and flexible PDMS assembly mold," *Proceedings 17th. Int. IEEE Conference on Microelectromechanical Systems*, pp. 701-704, Maastricht, Netherlands, Jan. 2004.
125. M. Lei, A. Baldi, T. Pan, Y. Gu, R. A. Siegel, and **B. Ziaie**, "A hydrogel-based wireless chemical sensor," *Proceedings 17th. Int. IEEE Conference on Microelectromechanical Systems*, pp. 391-394, Maastricht, Netherlands, Jan. 2004.
126. T. Pan, Z. Li, J. D. Brown, and **B. Ziaie**, "Microfluidic characterization of a valved glaucoma drainage device with implications for enhanced therapeutic efficacy," *Proceedings of the IEEE-EMBS*, pp. 3317-3320, Cancun, Mexico, September 2003.
127. W. Choi, and **B. Ziaie**, "Inductively powered implantable microcoil temperature measurements: safety implications and operational guidelines," *Proceedings of the IEEE-EMBS*, pp. 3041-3044, Cancun, Mexico, September 2003.

128. A. Salim, A. Baldi, and **B. Ziaie**, "Inductive link modeling and design guidelines for optimum power transfer in implantable wireless microsystems," *Proceedings of the IEEE-EMBS*, pp. 3368-3371, Cancun Mexico, September 2003.
129. S. Sengupta, **B. Ziaie**, and V. Barocas, "Lag after pulsed separation (LAPS) meter for complex liquids in microfluidic systems," *Proceedings of the Micro TAS*, pp. 583-586, Squaw Valley, CA, October 2003.
130. M. Lei, A. Baldi, T. Pan, Y. Gu, R. A. Siegel, and **B. Ziaie**, "Batch integration of stimuli-sensitive hydrogels in MEMS microstructures with environmental exposure," *Proceedings of the Micro TAS*, pp. 351-354, Squaw Valley, CA, October 2003.
131. A. Bayrashev and **B. Ziaie**, "Remote low frequency powering of microsystems using piezoelectric-magnetostrictive laminate composites," *Proceedings, 12th Int. Conf. on Solid-State Sensors and Actuators*, pp. 1707-1710, Boston, USA, June 2003.
132. T. Pan, W. Zheng, M. Lei, and **B. Ziaie**, "A remotely adjustable check-valve array with an electrochemical release mechanism for implantable biomedical applications," *Proceedings, 12th Int. Conf. on Solid-State Sensors and Actuators*, pp. 115-118, Boston, USA, June 2003.
133. A. Baldi, M. Lei, Y. Gu, R. A. Siegel, and **B. Ziaie**, "An environmentally responsive microflow controller with double side tethered structure for the entrapment of hydrogel," *Proceedings 16th. Int. IEEE Conference on Microelectromechanical Systems*, pp. 84-87, Jan. 2003, Kyoto, Japan.
134. T. Pan, D. J. Brown, and **B. Ziaie**, "A microfluidic testbed with nanopore membranes for in-vitro simulations of flow characteristics of glaucoma drainage devices," *Proceedings of the IEEE-EMBS*, pp. 1830-1831, Houston, TX, October 2002.
135. W. Choi, T. Pan, A. Baldi, and **B. Ziaie**, "Tissue temperature measurement and heat transfer mechanisms for inductively powered implantable microsystems," *Proceedings of the IEEE-EMBS*, pp. 1838-1839, Houston, TX, October 2002.
136. M. N. De Silva, A. Baldi, J. N. Fass, **B. Ziaie**, and D. J. Odde, "Simultaneous neurite elicitation and elongation from neurons using a microfabricated post array," *Proceedings of the IEEE-EMBS*, pp. 1706-1707, Houston, TX, October 2002.
137. A. Baldi, W. Choi, and **B. Ziaie**, "A micromachined self-resonant frequency-modulated passive pressure transducer," *Proceedings IEEE Sensors*, pp. 960-963, Orlando, FL, Jun2 2002.
138. S. Sengupta, **B. Ziaie**, and V. H. Barocas, "A separator-analyzer flowmeter for complex liquids in microfluidic systems," *Proceedings 2nd Annual Int. IEEE-EMBS Special Topic Conf. on Microtechnology in Medicine and Biology*, pp. 518-522, Madison, WS, May 2002.
139. Y. Gu, A. Baldi, **B. Ziaie**, and R. Siegel, "Modulation of drug delivery rate by hydrogel-incorporating MEMS devices," *Proceedings 2nd Annual Int. IEEE-EMBS Special Topic Conf. on Microtechnology in Medicine and Biology*, pp. 406-409, Madison, WS, May 2002.

140. A. Baldi, J. N. Fass, M. N. De Silva, D. Odde, and **B. Ziaie**, "A microtool for in-vitro cell array manipulation," *Proceedings 2nd Annual Int. IEEE-EMBS Special Topic Conf. on Microtechnology in Medicine and Biology*, pp. 180-183, Madison, WS, May 2002.
141. Y. Gu, A. Baldi, R. A. Siegel, and **B. Ziaie**, "A micromachined, hydrogel-gated smart flow controller," *Digest, Solid-State Sensor and Actuator Workshop*, pp. 130-133, Hilton Head, SC, June 2002.
142. S. Sengupta, V. H. Barocas, and **B. Ziaie**, "A separator-analyzer flow-meter for complex fluids in micro-fluidic systems," *Digest, Solid-State Sensor and Actuator Workshop*, pp. 321, 324, Hilton Head, SC, June 2002.
143. A. Baldi, Y. Gu, P. E. Loftness, R. A. Siegel, and **B. Ziaie**, "A hydrogel-actuated smart microvalve with a porous diffusion barrier back-plate for active flow control," *Proceedings 15th. Int. IEEE Conference on Microelectromechanical Systems*, pp. 419-422, Jan. 2002, Las Vegas, NV.
144. A. Bayrashev and **B. Ziaie**, "Silicon wafer bonding with an insulator interlayer using RF dielectric heating," *Proceedings 15th. Int. IEEE Conference on Microelectromechanical Systems*, pp. 105-108, Jan. 2002, Las Vegas, NV.
145. E. Cavusgil, Y. Gu, P. Loftness, **B. Ziaie**, and R. Siegel, "Synthesis and confinement of a hydrogel within a micromachined cavity," *28th International Symposium on Controlled release of Bioactive Materials*, June 2001, San Diego.
146. R. A. Siegel, **B. Ziaie**, Y. Gu, and A. Baldi, "Integrated sensing and delivery of insulin without the requirement of power supply," *Diabetes Technology Meeting*, Page A-53, Nov. 2001, San Francisco, CA.
147. S. Sengupta, **B. Ziaie**, and V. H. Brocas, "A separator-analyzer flow-meter for complex fluid flow in micro-channels," *Proceedings of the American Institute of Chemical Engineers Annual Meeting*, November 2001, Reno, NV.
148. **B. Ziaie**, and K. Najafi, "Implantable wireless microsystems for space applications," *NASA Bioastronautics Workshop*, January 2001, Houston Texas.
149. P. Mohseni, K. Nagarajan, **B. Ziaie**, and S. B. Crary, "Robotics at the interface of microsystems technology and biology: biobotics," *Proceeding of the Russian-Academy-Workshop on Robotics and Automation*, pp. 78-82, Moscow, Nov. 1999.
150. **B. Ziaie**, T. W. Wu, N. Kocaman, K. Najafi, and D. J. Anderson, "An implantable pressure sensor cuff for tonometric blood pressure measurement," *Digest, Solid-State Sensor and Actuator Workshop*, pp. 216-219, Hilton Head, SC, June 1998.
151. **B. Ziaie**, K. Najafi, and David J. Anderson, "A low-power miniature transmitter using a low-loss silicon platform for biotelemetry," *Proc. 19th Ann. Conf., IEEE-EMBS*, pp. 2221-2224, Chicago, 1997.
152. **B. Ziaie**, N. K. Kocaman, and K. Najafi, "A generic micromachined silicon platform for low-loss low-power transceivers," *Proceedings, 9th Int. Conf. on Solid-State Sensors and Actuators*, pp. 257-260, Chicago, USA, June 1997.

153. **B. Ziaie**, J. A. Von Arx, and K. Najafi, "A micro-fabricated planar high-current IrOx stimulating microelectrode," *Proc. 18th Ann. Conf., IEEE-EMBS*, pp. 270-271, Amsterdam, 1996.
154. T. Akin, **B. Ziaie**, and K. Najafi, "A modular Micromachined high-density connector for implantable biomedical systems," *Proceedings 9th. Int. IEEE Workshop on Microelectromechanical Systems*, pp. 497-502, Feb. 1996, San Diego, CA.
155. J. Von Arx, **B. Ziaie**, M. Dokmeci, and K. Najafi, "Hermeticity testing of glass silicon packages with high-density on-chip feedthroughs," *Proceedings, 8th Int. Conf. on Solid-State Sensors and Actuators*, 244-247, Stockholm, Sweden, June 1995.
156. M. Nardin, **B. Ziaie**, J. Von Arx, A. R. Coghlan, M. Dokmeci, and K. Najafi, "An inductively powered microstimulator for functional neuromuscular stimulation," *Proceedings 13th International Symposium on Biotelemetry*, pp. 99-104, Williamsburg, Virginia, USA, March 1995.
157. **B. Ziaie**, M. Nardin, J. Von Arx, and K. Najafi, "A hermetic packaging technology with multiple feedthroughs for integrated sensors and actuators," *Proceedings, 7th Int. Conf. on Solid State Sensors and Actuators*, pp. 450-453, Yokohama, Japan, June 1993.
158. **B. Ziaie**, M. Nardin, J. Von Arx, and K. Najafi, "A single channel implantable microstimulator for functional neuromuscular stimulation," *Proceedings, 7th Int. Conf. on Solid State Sensors and Actuators*, pp. 266-269, Yokohama, Japan, June 1993.
159. **B. Ziaie**, Y. Gianchandani, and K. Najafi, "A high-current IrOx thin-film neuromuscular microstimulator," *Proceedings, 6th Int. Conf. on Solid State Sensors and Actuators*, pp. 124-127, San Francisco, June 1991.
160. T. Akin, **B. Ziaie**, and K. Najafi, "RF telemetry powering and control of hermetically-sealed integrated sensors and actuators," *Digest, Solid-State Sensor and Actuator Workshop*, pp. 145-148, Hilton Head, SC, June 1990.

BOOK CHAPTERS:

- 1) Laser-Enabled Fabrication Technologies for Low-Cost Flexible/Conformal Cutaneous Wound Interfaces, Springer, 2016.
- 2) Biotelemetry, Encyclopedia of Medical Devices and Instrumentation, John Wiley, 2006.
- 3) Implantable Wireless Microsystems, Handbook of BioMEMS and Biomedical Nanotechnology, Springer, 2006.
- 4) Introduction to Micro/nanofabrication, Handbook of Nanotechnology, pp. 147-184, Springer, New York, 2004.

INVITED PRESENTATIONS:

Sep.-2020

- 1) Microsystems and Nano-engineering Summit, Beijing China, July 2018
Title of the talk, "Ultrasonic powering of mm-scale implantable devices,"
- 2) VA Tech, April 2018
Title of the talk, "Integrated sensing and delivery of oxygen for next-generation wound dressings,"
- 3) Building Bridges in Medical Sciences (BBMS), Cambridge UK, March 2018
Title of the talk, "Integrated sensing and delivery of oxygen for next-generation wound dressings,"
- 4) IEEE-NEMS, Los Angeles, CA, April 2017.
Title of the talk, "An autonomous diaper embedded microsystem for urinary tract infection screening,"
- 5) AVS, Nashville, TN, November 2016.
Title of the talk, "Smart drug delivery through gut,"
- 6) Adams Microsystems Distinguished Lecture, School of Mechanical Engineering, Purdue University, 2016.
Title of the talk, "Common materials for un-common microsystems,"
- 7) IEEE-EMBC, Orlando, FL, August 2016.
Title of the talk, "An autonomous diaper embedded microsystem for urinary tract infection screening,"
- 8) Microsystems and Nano-engineering Summit 2015, Chinese Academy of Sciences, August 2015
Title of the talk, "Laser-assisted fabrication techniques for low-cost flexible sensors, actuators, and microsystems,"
- 9) University of Maryland, November 2014
Title of the talk, "Laser-assisted fabrication techniques for low-cost flexible sensors, actuators, and microsystems,"
- 10) University of Michigan, Ann Arbor, September 2013
Title of the talk, "Laser-Treated Hydrophobic Paper: A Low Cost Microsystem Platform,"
- 11) "Micro- and Nanotechnologies for Medicine: Emerging Frontiers and Applications", Boston, Aug 2013
Title of the talk, "Laser-treated hydrophobic paper: a low cost microsystem platform,"
- 12) Biomedical MEMS and Sensors, Cleveland, Ohio, April 2013
Title of the talk, "BioMEMS for transdermal drug delivery,"
- 13) University of Minnesota ECE Colloquium, Nov. 2012
Title of the talk, "Biomedical microdevice research at Purdue,"
- 14) Columbia University, ME Colloquium, Oct 2012
Title of the talk, "Biomedical microdevice research at Purdue,"

Sep.-2020

- 15) MRS Fall Meeting, Boston, MA, November 2011
Title of the talk, "Laser-treated paper: a versatile microsystem substrate,"
- 16) Northeastern University Distinguished Lecturer Seminar, May 2011
Title of the talk, "Biomedical microdevice research at Purdue,"
- 17) Tufts University ECE Seminar, May 2011
Title of the talk, "Biomedical microdevice research at Purdue,"
- 18) Harvard-MIT Division of Health Sciences and Technology, February 2011
Title of the talk, "Biomedical microdevice research at Purdue,"
- 19) IEEE EMBS, Buenos Aires, Argentina, September 2010
Title of the talk, "Microsystem technology in radiation therapy,"
- 20) MRS April Meeting, San Francisco CA, April 2010
Title of the talk, "Stretchable bioelectrodes,"
- 21) Wabash Area Lifetime Learning Association (WALLA), April 2010
Title of the talk, "Biomedical applications of micro and nanosystems,"
- 22) IEEE IEDM, Baltimore MD, December 2009
Title of the talk, "An optical microsystem for wireless neural recording,"
- 23) IEEE EMBC, Minneapolis MN, September 2009
Title of the talk, "Implantable wireless dosimeters for radiation oncology,"
- 24) IEEE EMBC, Minneapolis MN, September 2009
Title of the talk, "Stretchable bioelectrodes,"
- 25) Stanford University, Mechanical Engineering Department Seminar, April 2009.
Title of the talk, "Low cost fun at microscale".
- 26) Pennsylvania State University, ECE Department Seminar, Nov 2008.
Title of the talk, " Biomedical microsystems: challenges and opportunities".
- 27) The Glaucoma Foundation Think Thank, Sep 2008
Title of the talk, "Nanotechnology devices for continued monitoring of intraocular pressure – current status".
- 28) University of Missouri, Columbia, Department of Biological Engineering, March 2008.
Title of the talk, "Biomedical microsystems: challenges and opportunities".
- 29) NSF Bridges to Engineering Research – 2020, Foundation for National Partnerships North Carolina A&T State University, Greensboro, NC, March 2008.
Title of the talk, "An implantable wireless microdosimeter for radiation oncology,".
- 30) University of Louisville ECE Department, March 2008, Louisville KY.
Title of the talk, "Biomedical microsystems: challenges and opportunities".
- 31) Silicon Valley Purdue Alumni Seminars, September 2007, Fremont CA.

Sep.-2020

- Title of the talk, "Implantable micromachined transponders for biomedical applications".
- 32) Cancer Research Clinical Partnership, Purdue Oncological Seminars, September 2007, West Lafayette, IN.
Title of the talk, "An implantable wireless microdosimeter for radiation oncology".
- 33) ERC for Wireless Integrated Microsystems, April 2005, Ann Arbor MI.
Title of the talk, "Hydrogel-based micromachined platforms for physiological sensing and smart flow control".
- 34) Emerging Information Technology Conference, October 2004, Princeton, NJ.
Title of the talk, "Hydrogel-based MEMS platforms for smart sensing and active flow control".
- 35) Frontiers in Assessment Methods for the Environment Workshop, August 2003, Minneapolis, MN
Title of the talk, "Micromachined sensors for environmental monitoring".
- 36) University of Minnesota Medical Device Workshop, April 2003, Minneapolis, Minnesota.
Title of the talk, "Hydrogel-based microsystems for physiological sensing and active flow control".
- 37) Honeywell Technology Center, Dec 2002, Plymouth, MN.
Title of the talk, "Hydrogel-based microsystems for physiological sensing and active flow control".
- 38) Third Annual BioMEMS and Biomedical Nanotech World, Sep 2002, Columbus, Ohio.
Title of the talk, "Implantable wireless microsystems".
- 39) ASME BioMEMS Workshop, June 2002, Boston, Massachusetts.
Title of the talk, "Implantable hydrogel-based sensors and actuators for diabetes management".
- 40) ASME BioMEMS Workshop, June 2002, Boston, Massachusetts.
Title of the talk, "Biomedical microsystems for intraocular and neurological measurements".
- 41) University of Minnesota Medical Device Workshop, April 2001, Minneapolis, Minnesota.
Title of the talk, "Implantable wireless microsystems: new opportunities in medicine and biology".
- 42) Guidant Corporation, March 2001, St. Paul, Minnesota.
Title of the talk, "Micromachined transducers and microsystems for biomedical applications".
- 43) IEEE Solid-State Circuits and Technology Workshop, Oct 2000, Arlington VA.
Title of the talk, "Micromachined transducers for biomedical applications".
- 44) MESA Computer Element Workshop, IEEE Computer Society, January 2001 Mesa Arizona.
Title of the talk, "Micromachined transducers and implantable microsystems for electronic interface to the nervous system".
- 45) BME 5910: Special Topics Seminar, Biomedical Applications of MicroElectromechanical Systems (MEMS), University of Minnesota, November 1999.

Sep.-2020

Title of the talk, "Implantable wireless microsystems; new opportunities in medicine and biology".

46) Int. Semiconductor Device Research Symposium, Charlottesville Virginia, December 1995.

Title of the talk, "Biomedical microdevices: a micromachining approach".

PATENTS:

- 1) "Sensor having ferrogel with magnetic particles," US Patent 9,737,244 B2
- 2) "Wireless interstitial fluid pressure sensor." U.S. Patent 9,962,084
- 3) "Laser-scribed ferrogel sensor with magnetic particles." U.S. Patent 9,999,369
- 4) "Gait pattern analysis for predicting falls." U.S. Patent 9,801,568 B2
- 5) "AFM-coupled microscale radiofrequency probe for magnetic resonance imaging and spectroscopy" US Patent 9,500,671 B2
- 6) "Wireless magnetic tracking" US Patent 9,474,909 B2.
- 7) "Touch-actuated micropump for transdermal drug delivery and method of use" U.S. Patent 9,173,994.
- 8) "Method and apparatus for improving local hypoxicity for enhanced therapy" US Patent, 9,005,187.
- 9) "Nanofluidic channel with embedded transverse nanoelectrodes and method of fabricating" US Patent 8,907,684.
- 10) "Hydrogel diffraction gratings for biochemical detection" US Patent 8,663,563.
- 11) "Intra-ocular pressure sensor" US Patent 8,475,374 and 9,078,613 B2.
- 12) "Hydrogel compositions, devices, and microscale components", US Patent 7,988,685.

GRADUATE STUDENT SUPERVISION:

Supervised PhDs

- 1) Dr. Jiawei Zhou, Purdue University, January 2019
- 2) Dr. Hongjie Jiang, Purdue University, August 2018
- 3) Dr. Wuyang Yu, Purdue University, August 2018
- 4) Dr. Rahim Rahimi, Purdue University, 2017
- 5) Dr. Chang Yoon, Purdue University, 2017
- 6) Dr. Manuel Ochoa, Purdue University, 2016.
- 7) Dr. Seong Lee, Purdue University, 2016.
- 8) Dr. Jun Heyong Park, Purdue University, 2015.
- 9) Dr. Albert Kim, Purdue University, 2015

Sep.-2020

- 10) Dr. Seung Hyun Song, Purdue University, 2014
- 11) Dr. Girish Chitnis, Purdue University, 2013
- 12) Dr. Charilaos (Harris) Mousoulis, Purdue University, 2011
- 13) Dr. Pinghung Wei, Purdue University, 2010
- 14) Dr. Zhenwen Ding, Purdue University, 2010
- 15) Dr. Teimour Maleki, Purdue University, 2009
- 16) Dr. Amani Salim, Purdue University, 2009
- 17) Dr. Ming-Fang Wang, Purdue University, 2007
- 18) Dr. Hyunjoong Kim, Purdue University, 2007
- 19) Dr. Chulwoo Son, Purdue University, 2007
- 20) Dr. Jayant Parthasarathy, University of Minnesota, 2006
- 21) Dr. Woohyek Choi, University of Minnesota, 2006
- 22) Dr. Tingrui Pan, University of Minnesota, 2005
- 23) Dr. Ming Lei, University of Minnesota, 2005
- 24) Dr. Shramik Sengupta, University of Minnesota, 2005

Supervised MS Students

- 1) Mr. Viabhav Jain, Purdue University, 2017
- 2) Mr Junyoung Kim, Purdue University, 2017
- 3) Mr. Zacharias Hughes, Purdue University, 2015
- 4) Mr. Marcus Brown, Purdue University, 2013
- 5) Mr. Benjamin Fogle, Purdue University, 2009
- 6) Ms. Jamie Wang, Purdue University, 2008
- 7) Ms. Eleanor Kai, University of Minnesota, 2004
- 8) Mr. Joe Guimont, University of Minnesota, 2004
- 9) Andrey Bayrashev, University of Minnesota, 2003

RESEARCH FUNDING:

Completed Projects

- 1) PI, Implantable Wireless Microsystems for Diagnosis and Management of Glaucoma, National Science Foundation (NSF) CAREER Award, 2001-2006, \$375,000.
- 2) PI, Development of a Magnetostrictive-Piezoelectric power Source for Implantable Microsystems, University of Minnesota Grant-in-Aid, \$24,192, 2001-2003.
- 3) Co-PI, Micromechanical Engineering of Connectivity in Living Neural Networks, National Science Foundation (NSF), 2002-2004, \$400,000.
- 4) PI, Wireless Recording of Neural Ensembles in Awake Behaving Rats, McKnight Endowment Fund for Neuroscience, 2002-2004, \$200,000.
- 5) PI, A Hydrogel-Based Implantable Micromachined Transponder for Wireless Glucoses Measurement, US Army, 2002-2004, \$235, 864.
- 6) Co-PI, Novel MEMS and Microfluidic Platforms for Drug Delivery, National Institute of Health (NIH), 2003-2005, \$250,000.
- 7) PI, Wireless Miniature Dosimeters for In-Situ Radiation Measurement, National Science Foundation (NSF), 2004-2007, \$210,000.
- 8) PI, Electronically Reconfigurable Microfabricated Tetrodes, National Institute of Health (NIH), 2005-2007, \$304,000.
- 9) Co-PI, 3D Neural Recording System: Self-Assembly Tools and Test, National Institute of Health (NIH), 2006-2008, \$167,200.

- 10) PI, Glaucoma Research, Indiana University Foundation, 2007-2008, \$10,000 (direct costs).
- 11) PI, An Implantable Microdevice for Wireless Measurement of Intraocular Pressure, Collaborations in Biomedical Research (PU-IUPUI), 2007-2008, \$50,000 (direct costs).
- 12) Co-PI, Implantable Wireless Transponder for Glaucoma Shunt, Solx Corporation, 2007-2009, \$400,000.
- 13) Co-PI, Cyrus Drug Delivery Device Reservoir, Eli Lilly, \$139,000.
- 14) PI, Integrated Wireless Tracking and Dosimetry for Radiation Oncology, National Institute of Health (NIH), 2007-2009, \$418,000.
- 15) PI, An Intracranial Energy Harvesting Device for Treatment of Neurological Disorders, National Science Foundation (NSF), 2007-2010, \$263,000.
- 16) PI, Electrically enhanced drug deliver to brain tissue, Ohio State University, 2008-2009, \$15,000.
- 17) Co-PI, Microfabricated Implantable Glucose Sensor with Wireless Telemetry, National Institute of Health (NSF), 2008-2009, \$112,500.
- 18) PI, Implantable Micro-oxygen Generator, Alfred Mann Institute at Purdue, Phase I, 2009-2010, \$100,000.
- 19) PI, OccuTack, Alfred Mann Institute at Purdue, Phase I, 2009-2011, \$100,000.
- 20) PI, A Micropump for Cyrus Drug Delivery Device, Elli Lilly, 2009-2010, \$115,000.
- 21) PI, A Micromachined Thermophone with Engineered Thermoacoustic Response, National Science Foundation (NSF), 2009-2011, \$150,000.
- 22) PI, Implantable Micro-oxygen Generator, Alfred Mann Institute at Purdue, Phase II, 2010-2012, \$500,000.
- 23) PI, Energy Scavenging for Lilly HumaPen, Elli Lilly, 2012, \$50,000.
- 24) PI, Wireless Integrated Self-powered Electronic Dosimeters, Landauer Corporation, 2012-2013, \$150,000.
- 25) PI, An Implantable Sensor for Wireless Measurement of Interstitial Pressure, National Institute of Health (NIH), 2012-2014, \$418,000.
- 26) PI, Wireless Integrated Self-powered Electronic Dosimeters, Landauer Corporation, 2013-2014, \$700,000.
- 27) Co-PI, Combined Biophysical and Biochemical Study of Single Cells, (NIH) 2012-2014, \$418,000.
- 28) Co-PI "Progression of Diabetic Cystopathy in the Ossabaw Pig Using Long Term Wireless Ambulatory Bladder", NIH 2013-2014, \$100,000.\
- 29) PI, Laser Treated Hydrophobic Paper: An Inexpensive Microsystem Platform, National Science Foundation (NSF), 2011-2015, \$360,000.
- 30) PI, SmartGait: A Device to Assess Gait Parameters and Vital Signs, PRF TRASK 2015, \$20,000.
- 31) Co-PI, Ultrasound Triggered Cargo Release with Targeted Oxygen Nano-bubbles, PRF TRASK 2016, \$25,000
- 32) PI, A smart capsule for targeted delivery of liquid or lyophilized compounds, Eli Lilly 2016-2017, \$78,000.
- 33) PI, Autonomous Biodegradable Soil Nitrate Sensors for Field Scale Deployment, Indiana Corn Marketing Council Endowment, 2016-2017, \$50,000
- 34) PI, SBIR, A Wearable Video-Based Gait and Balance Assessment Technology. 2017-2018, \$225,000
- 35) Co-PI, EFRI Bioflex: Tissue Engineered Flexible Sensors, Actuators and Electronics for Chronic Wound Management, (NSF), 2012-2017, \$2,000,000.
- 36) Co-PI, Biomechanics of Blast Injury, NIH, 2014-2016, \$418,000.
- 37) PI, Lilly, Capacitive Sensor Sticker for Monitoring Powder Flow, 2017, \$100,000.
- 38) PI, NextFlex, A Flexible Smart Wound Dressing with Integrated On-Demand O₂-Release and Sensing Capability, 2016-2018, \$1,200,000
- 39) PI, Urine-Powered Wireless Urinary Tract Infection Monitoring Sensor for Smart Diaper Platform, Catalyst Foundation, 2014-2018, \$176,000.

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On-going Projects

40) Co-PI, DoD, Risk-on-a-chip for Primary Prevention of Breast Cancer, 2017-2019, \$564,673