

Michel Martin Maharbiz, PhD

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Professional Preparation

1997 Cornell University Electrical Engineering & Computer Science B.S.
2003 University of California at Berkeley Electrical Engineering & Computer Science Ph.D.

Appointments

2017 – present co-Founder, co-CEO, Iota Biosciences, Inc.
2017 – present Full Professor (industrial leave), EECS Dept., University of California, Berkeley
2016 – 2017 Full Professor, EECS Dept., University of California, Berkeley
2010 – 2016 Associate Professor, EECS Dept., University of California, Berkeley
2010 – 2011 Vice-President of Product Development, Quswami, Inc.
(on industrial leave from U.C Berkeley, 7/2010 – 6/2011)
2008 – 2010 Assistant Professor, EECS Dept., University of California, Berkeley
2003 - 2007 Assistant Professor, EECS Dept., University of Michigan, Ann Arbor

Professional Activities and Honors

2017 McKnight Technological Innovations in Neuroscience Award
2017 Chan Zuckerberg BioHub Investigator
2013 National Instruments *Excellence in Engineering Education Award*
2013 - present Founder, *Cortera Neurotechnologies, Inc.*
2012 - present IP expert witness (see below)
2012 - present Bakar Fellow
2009 NSF CAREER Award
2009 MIT Technology Review, TR 10
2009 Time Magazine's Top 50 Inventions of the Year
2007-present Founder, *TweedleTech*
2005-2006 President, *University of Michigan Latino Faculty-Staff Association (LFSA)*, University of Michigan.
2005-2006 Chair of Educational Activities for the IEEE Sensor Council
2005 National Science Foundation Workshop Co-chair, "From Macro to Nano: Challenges and Opportunities in Integrative Complex Systems Engineering," sponsored by the National Science Foundation, co-chairs: Rajinder Khosla and Kensall D. Wise, Arlington, VA, March 7-8, 2005.
2003 Stanford's Vertex Innovator's Challenge, 2nd place
2003 USF Business Plan Competition, Finalist
2003 Merck Best Paper Award, Biochemical Engineering, Boulder, CO
1999-2001 Intel Masters Award Program (IMAP) Fellowship
1997-1998 Graduate Opportunity Award Program

TPC

- Sensors 2012-2014
- ISQED 2014-2016
- Transducers 2009
- ISCAS 2015-2016

Editorial Boards

- Journal of Experimental Biology and Medicine (2011-2013)

Reviewer

- Nature
- Nature Biotechnology
- Neuron
- Proc Nat Acad Sci
- J of Neurosci Methods
- Royal Soc's Interface Focus
- Bioinspiration & Biomimetics
- Caltech Beckman Institute
- J of Applied Physics
- PLoS One
- Lab on a Chip
- Phys Chem Chem Phys
- Biotechnology and Bioengineering
- Smart Materials and Structures
- J of Exp Biol and Med
- Sensors and Actuators A
- J of Micro/Nanolithography
- IEEE J MEMS
- MOEMS
- IEE Proc on Nanobiotech
- IEEE Trans on Electron Dev
- Canadian J of Microbiology
- Army Research Office
- National Science Foundation
- National Research Foundation, Singapore
- Int J of Nanosys and Tech (IJNST)

Publications

Books

Fawwaz P. Ulaby, Michel M. Maharbiz and Cynthia Furse, *Circuits*, 3rd Ed, NTS Press, 2015

Fawwaz P. Ulaby and Michel M. Maharbiz, *Circuits*, 2nd Ed, NTS Press, 2012

Fawwaz P. Ulaby and Michel M. Maharbiz, *Circuits*, 1st Ed, NTS Press, 2009

Book Chapters

1. M. M. Maharbiz with Dongjin Seo, Jose Carnena, Jan Rabaey and Elad Alon, "Neural Dust: An Untethered Approach to Chronic Brain Machine Interfaces," Marcus, Gary, and Jeremy Freeman, eds. *The Future of the Brain: Essays by the World's Leading Neuroscientists*. Princeton University Press, 2014.
2. Cohen, Daniel J., and Michel M. Maharbiz. "A Do-It-Yourself (DIY) Guide to Using Carbon Nanotubes for Stretchable Electronics and Sensors." *Nanoscale Sensors*. Springer International Publishing, 2013. 225-244.
3. Amol Jadhav, M. M. Maharbiz, "Untethered insect interfaces," in *Implantable Bioelectronics - Devices, Materials and Applications*, ed: Evgeny Katz, Wiley-VCH, 2013.
4. Ruba Borno and M.M. Maharbiz, "Surface Tension Driven Actuation," in *Surface Tension in Microsystems – Engineering Below the Capillary Length*, ed: Pierre Lambert, Series: Microtechnology and MEMS, Springer-Verlag, 2013.
5. H. Sato, D. Cohen, and M. M. Maharbiz, "Building Interfaces to Developing Cells and Organisms: From Cyborg Beetles to Synthetic Biology," in *CMOS Biomicrosystems*, John Wiley & Sons, Inc., 2011, pp. 325-354.
6. M.M. Maharbiz, Christopher L. Muhlstein, Olav Solgaard, "Chapter 13: Micro and Nano Electromechanical Systems," *National Nanotechnology Infrastructure Network (NNIN) Open Textbook*, Ch. 13 editor: Roger T. Howe, 2006.

Preprint Server Publications

1. Ghanbari MM, Piech DK, Shen K, Alamouti SF, Yalcin C, Johnson BC, Carmena JM, Maharbiz MM, Muller R. A Sub-mm Ultrasonic Free-floating Implant for Multi-mote Neural Recording. arXiv preprint arXiv:1905.09386. 2019 May 19.

2. Lin, M. C., Hu, D., Marmor, M., Herfat, S. T., Bahney, C. S., & Maharbiz, M. M. (2018). Smart bone plates can monitor fracture healing. *bioRxiv*, 366039.
3. Zoll, R. S., Schindler, C. B., Massey, T. L., Drew, D. S., Maharbiz, M. M., & Pister, K. S. (2018). MEMS-Actuated Carbon Fiber Microelectrode for Neural Recording. *bioRxiv*, 385153.
4. Piech, D. K., Johnson, B. C., Shen, K., Ghanbari, M. M., Li, K. Y., Neely, R. M., Kay JE, Carmena JM, Maharbiz MM, Muller, R. (2018). StimDust: A 2.2 mm³, precision wireless neural stimulator with ultrasonic power and communication. *arXiv preprint arXiv:1807.07590*.
5. Massey, T. L., Kuo, L. S., Fan, J. L., & Maharbiz, M. M. (2018). An actuated neural probe architecture for reducing gliosis-induced recording degradation. *bioRxiv*, 380006.
6. Ferreira, A. S. R., Hsia, J., Arcak, M., Maharbiz, M., & Arkin, A. (2014). Pattern Formation with a Compartmental Lateral Inhibition System. *arXiv:1407.6426*.
7. Adam H. Marblestone, Bradley M. Zamft, Yael G. Maguire, Mikhail G. Shapiro, Thaddeus R. Cybulski, Joshua I. Glaser, P. Benjamin Stranges, Reza Kalhor, David A. Dalrymple, Dongjin Seo, Elad Alon, Michel M. Maharbiz, Jose M. Carmena, Jan M. Rabaey, Edward S. Boyden, George M. Church, Konrad P. Kording, "Physical Principles for Scalable Neural Recording," *arXiv*, 1306.5709
8. Seo, Dongjin; Carmena, Jose M.; Rabaey, Jan M.; Alon, Elad; Maharbiz, Michel M., "Neural Dust: An Ultrasonic, Low Power Solution for Chronic Brain-Machine Interfaces," *arXiv*, 1307.2196

Journal Publications

1. Zoll, R.S., Schindler, C.B., Massey, T.L., Drew, D.S., Maharbiz, M.M. and Pister, K.S., 2019. MEMS-Actuated Carbon Fiber Microelectrode for Neural Recording. *IEEE Transactions on Nanobioscience*, 18(2), pp.234-239.
2. Massey, T.L., Kuo, L.S., Fan, J.L. and Maharbiz, M.M., 2019. An actuated neural probe architecture for reducing gliosis-induced recording degradation. *IEEE Transactions on Nanobioscience*, 18(2), pp.220-225.
3. Ghanbari, M. M., Li, K. Y., Neely, R. M., Kay JE, Carmena JM, Maharbiz MM, Muller, R. "StimDust: A 2.2 mm³, wireless implantable precision neural stimulator with ultrasonic power and communication," *in press*

4. Lin MC, Hu D, Marmor M, Herfat ST, Bahney CS, Maharbiz MM. Smart bone plates can monitor fracture healing. *Scientific reports*. 2019 Feb 14;9(1):2122. Piech, D. K., Johnson, B. C., Shen, K.,
5. Chamanzar M, Scopelliti MG, Bloch J, Do N, Huh M, Seo D, Iafrazi J, Sohal VS, Alam MR, Maharbiz MM. Ultrasonic sculpting of virtual optical waveguides in tissue. *Nature communications*. 2019 Jan 9;10(1):92.
6. Massey, Travis, Samantha Rose Santacruz, Jason Hou, Kristofer SJ Pister, Jose M. Carmena, and Michel Martin Maharbiz. "A high-density carbon fiber neural recording array technology." *Journal of neural engineering* (2018).
7. Chamanzar, M., Garfield, D. J., Iafrazi, J., Chan, E. M., Sohal, V., Cohen, B. E., ... & Maharbiz, M. M. (2018). Upconverting nanoparticle micro-lightbulbs designed for deep tissue optical stimulation and imaging. *Biomedical Optics Express*, 9(9), 4359-4371.
8. Lu, B., & Maharbiz, M. M. (2018). Germanium as a scalable sacrificial layer for nanoscale protein patterning. *PloS one*, 13(4), e0195062.
9. Neely, Ryan M., David K. Piech, Samantha R. Santacruz, Michel M. Maharbiz, and Jose M. Carmena. "Recent advances in neural dust: towards a neural interface platform." *Current opinion in neurobiology* 50 (2018): 64-71.
10. Liao, A., Harris, H. W., & Maharbiz, M. M. (2018). A Coupled Magnetoelastic Strain Sensor Array for Guiding and Monitoring Hernia Repairs. *IEEE Transactions on Biomedical Engineering*.
11. Zhou, A. Y., Baruch, M., Ajo-Franklin, C. M., & Maharbiz, M. M. (2017). A portable bioelectronic sensing system (BESSY) for environmental deployment incorporating differential microbial sensing in miniaturized reactors. *PloS one*, 12(9), e0184994.
12. Diaz-Botia, Camilo, Lunet Luna, Ryan Neely, Maysam Chamanzar, Carlo Carraro, Jose Carmena, Philip Sabes, Roya Maboudian, and Michel Maharbiz. "A silicon carbide electrode technology for the central and the peripheral nervous system." *Journal of Neural Engineering* (2017).
13. Maharbiz, Michel M., Rikky Muller, Elad Alon, Jan M. Rabaey, and Jose M. Carmena. "Reliable Next-Generation Cortical Interfaces for Chronic Brain–Machine Interfaces and Neuroscience." *Proceedings of the IEEE* 105, no. 1 (2017): 73-82.

14. Lin MC, Yang F, Herfat ST, Bahney CS, Marmor M, Maharbiz MM. New Opportunities for Fracture Healing Detection: Impedance Spectroscopy Measurements Correlate to Tissue Composition in Fractures. *Journal of Orthopaedic Research*. 2017 Apr 1.
15. Levy ES, Tajon CA, Bischof TS, Iafrati J, Fernandez-Bravo A, Garfield DJ, Chamanzar M, Maharbiz MM, Sohal VS, Schuck PJ, Cohen BE. Energy-Looping Nanoparticles: Harnessing Excited-State Absorption for Deep-Tissue Imaging. *ACS nano*. 2016 Sep 7;10(9):8423-33.
16. Seo D, Neely RM, Shen K, Singhal U, Alon E, Rabaey JM, Carmena JM, Maharbiz MM. Wireless Recording in the Peripheral Nervous System with Ultrasonic Neural Dust. *Neuron*. 2016 Aug 3;91(3):529-39.
17. Do, U.P., Seland, F., Maharbiz, M.M., Wang, K., Johannesen, Ø. and Johannesen, E.A., 2016. Thin film nanoporous electrodes for the selective catalysis of oxygen in abiotically catalysed micro glucose fuel cells. *Journal of Materials Science*, 51(19), pp.9095-9107.
18. Tang HY, Seo D, Singhal U, Li X, Maharbiz MM, Alon E, Boser BE. Miniaturizing Ultrasonic System for Portable Health Care and Fitness. *IEEE transactions on biomedical circuits and systems*. 2016 Jan.
19. Chen, Sisi, Andrew W. Bremer, Olivia J. Scheideler, Yun Suk Na, Michael E. Todhunter, Sonny Hsiao, Prithvi R. Bomdica, Michel M. Maharbiz, Zev J. Gartner, and David V. Schaffer. "Interrogating cellular fate decisions with high-throughput arrays of multiplexed cellular communities." *Nature Communications* 7 (2016).
20. Hsia, Justin, William J. Holtz, Michel M. Maharbiz, Murat Arcaç, and Jay D. Keasling. "Modular Synthetic Inverters from Zinc Finger Proteins and Small RNAs." *PloS one* 11, no. 2 (2016): e0149483.
21. Yazdan-Shahmorad, Azadeh, Camilo Diaz-Botia, Timothy L. Hanson, Viktor Kharazia, Peter Ledochowitsch, Michel M. Maharbiz, and Philip N. Sabes. "A Large-Scale Interface for Optogenetic Stimulation and Recording in Nonhuman Primates." *Neuron* (2016).
22. Y. Khan, F. J. Pavinatto, M. C. Lin, A. Liao, S. L. Swisher, K. Mann, V. Subramanian, M. M. Maharbiz, and A. C. Arias, "Inkjet-Printed Flexible Gold Electrode Arrays for Bioelectronic Interfaces," *Adv. Funct. Mater.*, 2015.
23. Ledochowitsch, P., Yazdan-Shahmorad, A., Bouchard, K.E., Diaz-Botia, C., Hanson, T.L., He, J.W., Seybold, B.A., Olivero, E., Phillips, E.A.K., Blanche, T.J. and Schreiner, C.E., 2015. Strategies for optical control and simultaneous electrical readout of extended cortical circuits. *Journal of*

neuroscience methods, 256, pp.220-231.

24. Muller, Rikky, Hanh-Phuc Le, Wen Li, Peter Ledochowitsch, Simone Gambini, Toni Bjorninen, Aaron Koralek et al. "A Minimally Invasive 64-Channel Wireless μ ECoG Implant." *Solid-State Circuits, IEEE Journal of* , no. 1 (2015): 344-359.
25. Tu, Jonathan H., Murat Arcak, and Michel M. Maharbiz. "Decoupling translational and rotational effects on the phase synchronization of rotating helices." *Physical Review E* 91.2 (2015): 023018.
26. Sarah L. Swisher, Monica C. Lin, Amy Liao, Elisabeth J. Leeflang, Yasser Khan, Felipe J. Pavinatto, Kaylee Mann, Agne Naujokas, David Young, Shuvo Roy, Michael R. Harrison, Ana Claudia Arias, Vivek Subramanian and Michel M. Maharbiz (2015) Impedance sensing device enables early detection of pressure ulcers in vivo. *Nature Communications*, 6.
27. Hirotaka Sato, Tat Thang Vo Doan, Svetoslav Kolev, Ngoc Anh Huynh, Chao Zhang, Travis L. Massey, Joshua van Kleef, Kazuo Ikeda, Pieter Abbeel, and Michel M. Maharbiz (2015). Deciphering the Role of a Coleopteran Steering Muscle via Free Flight Stimulation. *Current Biology*, vol. 25, no. 6, pp. 798–803, Mar. 2015. (cover)
28. Seo, D., Carmena, J. M., Rabaey, J. M., Maharbiz, M. M., & Alon, E. (2014). Model Validation of Untethered, Ultrasonic Neural Dust Motes for Cortical Recording. *Journal of neuroscience methods*. doi: 10.1016/j.jneumeth.2014.07.025.
29. Cao F, Zhang C, Vo Doan TT, Li Y, Sangi DH, et al. (2014) A Biological Micro Actuator: Graded and Closed-Loop Control of Insect Leg Motion by Electrical Stimulation of Muscles. *PLoS ONE* 9(8): e105389. doi: 10.1371/journal.pone.0105389
30. Cohen DJ, Nelson WJ, Maharbiz MM. Galvanotactic control of collective cell migration in epithelial monolayers. *Nature materials*. 2014 Apr 1;13(4):409-17.
31. V. G. Krishnan, V. Romanin, V. P. Carey, and M. M. Maharbiz, "Design and scaling of microscale Tesla turbines," *J. Micromechanics Microengineering*, vol. 23, no. 12, p. 125001, 2013. doi:10.1088/0960-1317/23/12/125001
32. Bjorninen, T.; Muller, R.; Ledochowitsch, P.; Sydanheimo, L.; Ukkonen, L.; Maharbiz, M. M.; Rabaey, J. M.; , "Design of Wireless Links to Implanted Brain–Machine Interface Microelectronic Systems," *Antennas and Wireless Propagation Letters, IEEE* , vol.11, no., pp.1663-1666, 2012. doi: 10.1109/LAWP.2013.2239252

33. Michel M. Maharbiz, "Synthetic multicellularity," *Trends in Cell Biology*, online 4 October 2012, doi: 10.1016/j.tcb.2012.09.002.
34. Gabriel J. Lavella, Amol D. Jadhav, and Michel M. Maharbiz, "A Synthetic Chemomechanical Machine Driven by Ligand–Receptor Bonding," *Nano Letters*, 2012, 12 (9), pp 4983–4987 DOI: 10.1021/nl3026136
35. Gabriel J. Lavella, R. Morfino, and M. M. Maharbiz, "A synthetic Brownian ratchet architecture for creating tailorable chemomechanical nanomachines," *Appl. Phys. Lett.* 101, 013703 (2012); <http://dx.doi.org/10.1063/1.4732154>
36. Daniel C Huang, William J Holtz and Michel M Maharbiz, "A genetic bistable switch utilizing nonlinear protein degradation," *Journal of Biological Engineering* (2012) 6:9 doi:10.1186/1754-1611-6-9
37. Hsia J , Holtz WJ , Huang DC , Arcak M , Maharbiz MM , "A Feedback Quenched Oscillator Produces Turing Patterning with One Diffuser," *PLoS Comput Biol* 8(1), 2012. e1002331. doi:10.1371/journal.pcbi.1002331
38. Toley, B. J., Park, J., Kim, B.-J., Venkatasubramanian, R., Maharbiz, M. M. and Forbes, N. S. (2012), Micrometer-scale oxygen delivery rearranges cells and prevents necrosis in tumor tissue in vitro. *Biotechnology Progress*. doi: 10.1002/btpr.1510
39. D. Cohen, D. Mitra, K. Peterson and M. M. Maharbiz, "A highly elastic, capacitive strain gauge based on percolating nanotube networks," *Nano Letters, 2012 (Communication)*, DOI: 10.1021/nl204052z
40. S Chen, N Patel, D Schaffer and M M Maharbiz, "Trap and corral: a two-step approach for constructing and constraining dynamic cell contact events in differentiating progenitor cell populations," *J. Micromech. Microeng.*, 21 (2011). 054027 doi: 10.1088/0960-1317/21/5/054027.
41. H. Sato, M.M. Maharbiz "Recent Developments in the Remote Radio Control of Insect Flight" *Frontiers in Neuroscience*, 4:199 (2010). *Invited Review*.
42. M.M. Maharbiz and H. Sato "Cyborg Beetles: Tiny flying robots that are part machine and part insect may one day save lives in wars and disasters" *Scientific American*, Vol. 303, Number 6, 94-99 (December 2010).

43. Sato H, Berry CW, Peeri Y, Baghoomian E, Casey BE, Lavella G, VandenBrooks JM, Harrison JF and Maharbiz MM, "Remote radio control of insect flight," *Front. Integr. Neurosci.* 3:24, 2009.
doi:10.3389/neuro.07.024.2009
44. Daniel J. Cohen, Roberto Morfino, Michel M. Maharbiz, "Spatiotemporal Control of Gene Expression via Inkjet Printing," *PLoS ONE*, Sep 18;4(9), 2009,:e7086.
45. Ruba T. Borno, Joseph D. Steinmeyer, Michel M. Maharbiz, "Charge-pumping in a synthetic leaf for harvesting energy from evaporation-driven flows," *Applied Physics Letters*, 95, 2009, 013705.
46. Meng-Ping Chang and Michel M. Maharbiz, "Electrostatically-driven elastomer components for user-reconfigurable high density microfluidics," *Lab on a Chip*, vol 9, pp. 1274 – 1281, 2009.
47. T. Bansal, J. Lenhart, T. Kim, C. Duan and M. M. Maharbiz, 'Patterned delivery and expression of gene constructs into developing zebrafish embryos using microfabricated interfaces', *IEEE Biomedical Microdevices*, Jan 2009, no.1, vol. 11.
48. T.K. Kim, M Pinelis, M. M. Maharbiz, "Generating Steep, Sheer-free Gradients of Small Molecules for Cell Culture," *IEEE Biomedical Microdevices*, Dec 2008, 10(6), pp. 807-11.
49. M. Pinelis, T. Kim, M. M. Maharbiz, "A high-yield method for generating mass-transfer gradients in elastomer microfluidics using impermeable capillaries," *IEEE Biomedical Microdevices*, Dec 2008, 10(6), pp. 807-11.
50. R. F. Ismagilov and M. M. Maharbiz, "Can we build synthetic, multicellular systems by controlling developmental signaling in space and time?" *Current Opinion in Chemical Biology*, 11 (6), pg. 604-611, 2008.
51. T. Bansal, M.P. Chang, M. M. Maharbiz, "A class of low voltage, PDMS-gold 'wet' actuators for use in high-density microfluidics," *Lab on a Chip*, 7, pg. 164-166, 2007.
52. R.T. Borno, J.D. Steinmeyer, and M. M. Maharbiz, "Transpiration actuation: the design, fabrication, and characterization of biomimetic microactuators driven by the surface tension of water," *Journal of Micromechanics and Microengineering*, 16, pg. 2375-2383, 2006.
53. J. H. Park, T. Bansal, M. Pinelis, M. M. Maharbiz, "Electrolytic patterning of dissolved oxygen microgradients during cell culture," *Lab on a Chip*, 6, pg. 611-622, 2006.

54. M.M. Maharbiz, W. J. Holtz, J.D. Keasling, R.T. Howe, "Microbioreactor arrays with parametric control for high-throughput experimentation," *Biotechnology & Bioengineering*, vol. 85, no. 4, pp. 376 – 381, 20 February 2004.
55. M.M. Maharbiz, W. J. Holtz, S. Sharifzadeh, J.D. Keasling, R.T. Howe, "A Microfabricated Electrochemical Oxygen Generator for High- Density Cell Culture Arrays," *J MicroElectroMechanical Sys*, vol. 12, no. 5, pp. 590-599, October 2003.
56. V. Milanovic, M. M. Maharbiz, and K. Pister, "Batch Transfer Integration of RF Microrelays," *IEEE Microwave and Guided Wave Letters*, vol. 10, no. 8, pp. 313-315, Aug. 2000.

Peer-reviewed Conference Publications with Archival Papers

57. Chen, O. and Maharbiz, M.M., 2019, March. Hydrogel-actuated carbon fiber neural probe. In 2019 9th International IEEE/EMBS Conference on Neural Engineering (NER) (pp. 879-882). IEEE.
58. Shen, K. and Maharbiz, M.M., 2019, March. Ceramic Packages for Acoustically Coupled Neural Implants. In 2019 9th International IEEE/EMBS Conference on Neural Engineering (NER) (pp. 847-850). IEEE.
59. Ghanbari, Mohammad Meraj, et al. "17.5 A 0.8 mm 3 Ultrasonic Implantable Wireless Neural Recording System With Linear AM Backscattering." *2019 IEEE International Solid-State Circuits Conference-(ISSCC)*. IEEE, 2019.
60. Bertrand, Alexander, Dongjin Seo, Jose M. Carmena, Michel M. Maharbiz, Elad Alon, and Jan M. Rabaey. "Blind Parallel Interrogation of Ultrasonic Neural Dust Motes Based on Canonical Polyadic Decomposition: a Simulation Study."
61. Zhou AY, Maharbiz MM. Charge pumping with finger capacitance for body sensor energy harvesting. Proceedings of the Annual International Conference of the IEEE Engineering in Medicine and Biology Society, EMBS. IEEE; 2017. pp. 775–778.
62. Ozilgen BA, Maharbiz MM. Ultrasonic thermal dust: a method to monitor deep tissue temperature profiles. Proceedings of the Annual International Conference of the IEEE Engineering in Medicine and Biology Society, EMBS. IEEE; 2017. pp. 865-868
63. Liao A, Harris H, Maharbiz MM. Integrating Coupled Magnetoelastic Sensors onto a Flexible Hernia Mesh for High Dynamic Range Strain Measurements. Proceedings of the Annual International Conference of the IEEE Engineering in Medicine and Biology Society, EMBCS. IEEE; 2017, 2017. pp. 1736-1739
64. Lu B, Maharbiz MM. Protein patterning using germanium as a sacrificial layer. Proceedings of the Annual International Conference of the IEEE Engineering in Medicine and Biology Society, EMBS. IEEE; 2017. pp. 1865-1868

65. Lin MC, Hu D, Yang F, Herfat ST, Bahney CS, Marmor M, Maharbiz MM. Using Impedance to Track Fracture Healing Rates in Mice In Vivo: A Pilot Study. Proceedings of the Annual International Conference of the IEEE Engineering in Medicine and Biology Society, EMBS. IEEE; 2017. pp. 1724-1727.
66. Massey, Travis L., Joong Hwa Lee, Mitas Ray, Nikhil S. Sathe, Xing Liu, Kristofer SJ Pister, and Michel M. Maharbiz. "Open-source automated system for assembling a high-density microwire neural recording array." In *Manipulation, Automation and Robotics at Small Scales (MARSS), International Conference on*, pp. 1-7. IEEE, 2016.
67. Bertrand, Alexander, Dongjin Seo, Jose M. Carmena, Michel M. Maharbiz, Elad Alon, and Jan M. Rabaey. "Application of canonical polyadic decomposition for ultrasonic interrogation of neural dust grids: a simulation study." In *Proc. Workshop on Tensor Decompositions and Applications*, pp. 1-1. 2016.
68. Dongjin Seo, Hao-Yen Tang, Jose M. Carmena, Jan M. Rabaey, Elad Alon, Bernhard Boser, Michel Maharbiz, "Ultrasonic Beamforming System for Interrogating Multiple Implantable Motes," *37th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBS) MiCo – Milano Conference Center; Milan, Italy August 25 – 29, 2015*
69. Maysamreza Chamanzar, David Garfield, Jillian Iafrati, Vikaas Sohal, Emory Chan, Bruce Cohen, P. James Schuck, Michel Maharbiz, "Deep Tissue Targeted Near-infrared Optogenetic Stimulation using Fully Implantable Upconverting Light Bulbs," *37th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBS) MiCo – Milano Conference Center; Milan, Italy August 25 – 29, 2015*
70. Alyssa Zhou, Michel Maharbiz, "A Miniaturized Monitoring System for Electrochemical Biosensing using *Shewanella Oneidensis* in Environmental Applications," *37th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBS) MiCo – Milano Conference Center; Milan, Italy August 25 – 29, 2015*
71. Amy Liao, Hobart Harris, Michel Maharbiz, "Full-Field Strain Sensor for Guiding Hernia Repairs," *37th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBS) MiCo – Milano Conference Center; Milan, Italy August 25 – 29, 2015*
72. Amy Liao, Monica Lin, Lauren Ritz, Sarah Swisher, David Ni, Kaylee Mann, Shuvo Roy, Michael Harrison, Ana Arias, Vivek Subramanian, David Young, Michel Maharbiz, "Impedance Sensing Device for Monitoring Ulcer Healing in Human Patients," *37th Annual International Conference of the*

IEEE Engineering in Medicine and Biology Society (EMBS) MiCo – Milano Conference Center; Milan, Italy August 25 – 29, 2015

73. Monica Lin, Safa Herfat, Chelsea Bahney, Meir Marmor, Michel Maharbiz, "Impedance Spectroscopy to Monitor Fracture Healing," *37th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBS) MiCo – Milano Conference Center; Milan, Italy August 25 – 29, 2015*
74. Chamanzar, Maysamreza, Minyoung Huh, NINH DO, M. Reza Alam, and Michel Maharbiz. "Virtual Acousto-optic Beam Paths for Steerable Deep-tissue Optical Stimulation and Imaging." In *CLEO: Applications and Technology*, pp. JW2A-90. Optical Society of America, 2015.
75. Chamanzar, Maysamreza, David Garfield, Vikaas Sohal, Bruce Cohen, P. James Schuck, and Michel Maharbiz. "Tether-less Implantable Upconverting Microscale Light Bulbs for Deep Brain Neural Stimulation and Imaging." In *CLEO: Applications and Technology*, pp. AM2J-8. Optical Society of America, 2015.
76. Orsborn, A. L., Wang, C., Chiang, K., Maharbiz, M. M., Viventi, J., & Pesaran, B. (2015, April). Semi-chronic chamber system for simultaneous subdural electrocorticography, local field potentials, and spike recordings. *In Neural Engineering (NER), 2015 7th International IEEE/EMBS Conference on* (pp. 398-401). IEEE.
77. Tu, Jonathan H., Murat Arcak, and Michel M. Maharbiz. "Data-driven, low-order modeling of interflagella synchronization." *Bulletin of the American Physical Society* 60 (2015).
78. Yazdan-Shahmorad, Azadeh, Camilo Diaz-Botia, Tim Hanson, Peter Ledochowitsch, Michel M. Maharbiz, and Philip N. Sabes. "Demonstration of a setup for chronic optogenetic stimulation and recording across cortical areas in non-human primates." In *SPIE BiOS*, pp. 93052K-93052K. *International Society for Optics and Photonics*, 2015.
79. Chamanzar, Maysamreza, Daniel J. Denman, Timothy J. Blanche, and Michel M. Maharbiz. "Ultracompact optoflex neural probes for high-resolution electrophysiology and optogenetic stimulation." In *Micro Electro Mechanical Systems (MEMS), 2015 28th IEEE International Conference on*, pp. 682-685. IEEE, 2015.
80. Chamanzar, M., Borysov, M., Maharbiz, M. M., & Blanche, T. J. (2014, August). "High-density optrodes for multi-scale electrophysiology and optogenetic stimulation," In *Engineering in Medicine*

and Biology Society (EMBC), 2014 36th Annual International Conference of the IEEE (pp. 6838-6841). IEEE.

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87. P. Ledochowitsch, R. Tiefenauer, B. Pepin, M.M. Maharbiz, and T.J. Blanche, "Nanoflex for Neural Nanrobes", *The 18th International Conference on Solid-State Sensors, Actuators and Microsystems- Transducers & Eurosensors 2013*, Barcelona, Spain
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95. T. Kim, M. Pinelis, M. M. Maharbiz, Small molecule gradient generator for microfluidic viscous shear-free cell culture. *MicroTAS 2008*, San Diego, CA, USA. 2008, (2), 1879-1881.
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97. Meng-Ping Chang and M. M. Maharbiz, "Electrostatically-actuated Reconfigurable Elastomer Microfluidics," *Solid State Sensors, Actuators, and Microsystems Workshop 2008 (Hilton Head 2008)*, Hilton Head Island, South Carolina, June 1 – 5, 2008, pp. 122 - 125.

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100. M. P. Chang, T. Bansal and M. M. Maharbiz, "Electrically-actuated PDMS microvalves and pumps for VLSI microfluidics," *Eleventh International Conference on Miniaturized Systems for Chemistry and Life Sciences (MicroTAS 2007)*, Paris, France, October 2007.
101. T. Bansal and M. M. Maharbiz, "'Wet' AC Actuated Microfluidic Micropore Array for Patterning Diffusible Gradients During Cell Culture," *Tenth International Conference on Miniaturized Systems for Chemistry and Life Sciences (MicroTAS)*, Tokyo, Japan, November 2006.
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103. P. Padmanabhan and M. Maharbiz, "A Microelectrolytic Device for Electronically Controlled Nitric Oxide Micro-Gradient Generation," *Tenth International Conference on Miniaturized Systems for Chemistry and Life Sciences (MicroTAS)*, Tokyo, Japan, November 2006.
104. M.I. Pinelis, J.H. Park and M. M. Maharbiz, "A micro 'Flea Circus': Self-assembly of bacteria through spatio-temporal control of aerotaxis," *19th IEEE International Conference on Micro Electro Mechanical Systems (MEMS 2006)*, Lütfi Kırdar Convention and Exhibition Centre, Istanbul, Turkey, January 22 – 26, 2006.
105. T. Bansal, M. M. Maharbiz, "Diffusion Based Chemical Microgradient array for cell culture", *Ninth International Conference on Miniaturized Systems for Chemistry and Life Sciences (MicroTAS) 2005*, Boston, MA, October 2005.
106. R.T. Borno, M. M. Maharbiz, "Distributed actuation based on Young-Laplace forces," *The 13th International Conference on Sensors and Actuators (Transducers 2005)*, Coex, Seoul, Korea, June 5-9, 2005.

107. J. H. Park, T. Bansal, B.H. Chueh, S. Takayama, M. M. Maharbiz, "Electrolytic patterning of dissolved oxygen microgradients during cell culture," *18th IEEE International Conference on Micro Electro Mechanical Systems (MEMS 2005)*, Fontainebleau Hilton Resort, Miami Beach, Florida, January 30 - February 3, 2005
108. M.M. Maharbiz, W.J.Holtz, S.Sharifzadeh, J.D. Keasling, R.T. Howe, "A Microfabricated Electrochemical Oxygen Generator for High-Density Cell Culture Arrays," *Solid-State Sensor, Actuator, and Microsystems Workshop*, Hilton Head Island, South Carolina, June 2-6 2002, pp. 259-264.
109. M.M. Maharbiz, R. T. Howe, J. D. Keasling, "Silicon Microbial Bioreactor Arrays," *1st Annual International IEEE-EMBS Special Topic Conference on Microtechnologies in Medicine & Biology*, Palais des Congres, Lyon, France, October 12-14, 2000, pp. 165-170.
110. M.M. Maharbiz, R.T. Howe, K.S.J. Pister, "Batch Transfer Assembly of Micro-Components Onto Surface and SOI MEMS," *Transducers '99 Conference*, Sendai, Japan, June 7-10, 1999, pp. 1478-1481.
111. M.M. Maharbiz, M.B. Cohn, R.T. Howe, R. Horowitz, A.P. Pisano, "Batch micropackaging by compression-bonded wafer-wafer transfer," *Proceedings of 12th International Workshop on Micro Electro Mechanical Systems (MEMS 1999)*, Orlando, FL, USA, 17- 21 Jan. 1999, pp. 482-489.

Papers at Other Conferences and Workshops

112. T. Kim, W. J. Holtz, J. Park, J. D. Keasling, M. M. Maharbiz, Pattern Formation in a Synthetic Microbial Pathway. *Microtechnologies in Medicine and Biology*, 2009, Quebec City, Canada.
113. T. Kim, W. J. Holtz, J. Park, J. D. Keasling, M. M. Maharbiz, Synthetic microbial pattern formation modulated by a chemical micro-interface. *Synthetic Biology 4.0*, 2008, Hong Kong.
114. R. T. Borno, J. D. Steinmeyer, and M. M. Maharbiz, "Scalable Biomimetic Self-Assembling Actuators Powered By Surface Tension," *Foundations of Nanoscience: Self-Assembled Architectures and Devices (FNANO06)*, Snowbird, Utah, April 2006.
115. M. Pinelis, J. Park and M. Maharbiz, "Bacterial Aerotaxis Assays with Spatial and Temporal Control of Oxygen Microscale Gradients," *Biomedical Engineering Society (BMES), Annual Fall Meeting*, Baltimore, Maryland, September 2005

116. J. H. Park, T. Bansal, M. M. Maharbiz, "Patterning Dissolved Oxygen Microgradients during Cell Culture," *Hypoxia and Development, Physiology and Disease (Keystone Symposia)*, Beaver Run Resort, Breckenridge, Colorado, January 16 - 21, 2006.

Papers on Education / Teaching / Class Design

117. Vincent Lee, Jennifer Monski, Winthrop Williams, Bharathwaj Muthuswamy, Tom Swiontek, Michel Maharbiz, Vivek Subramanian and Ferenc Kovac, "A Mixed-Signal EEG Interface Circuit For Use In First Year Electronics Courses," *Proceedings of the 2012 IEEE International Symposium on Circuits and Systems (ISCAS)*, pp. 2689 – 2692, May 2012.
118. L. C. McAfee, K. Najafi, Y. Gianchandani, K. D. Wise, and M. M. Maharbiz, D.M. Aslam, P. Bergstrom, C. Friedrich, "MEMS and Microsystems Courses with National and International dissemination", *Proc. ASEE Annual Conference*, Chicago, 84, 2006.
119. L. C. McAfee, K. Najafi, Y. Gianchandani, K. D. Wise, and M. M. Maharbiz, D.M. Aslam, P. Bergstrom, C. Friedrich, "A MEMS/MICROSYSTEM CURRICULUM WITH INTERNATIONAL DISSEMINATION ", *Solid State Sensors, Actuators, and Microsystems Workshop 2006 (Hilton Head 2006)*, Hilton Head Island, South Carolina, June, 2006
120. M. M. Maharbiz, "Self-Assembly of a BioMEMS Syllabus: Teaching BioMEMS through the developing organism," *Solid State Sensors, Actuators, and Microsystems Workshop 2006 (Hilton Head 2006)*, Hilton Head Island, South Carolina, June, 2006

Additional Invited Talks (excluding talks at university research groups)

121. Invited speaker, *NSF Workshop on Frontiers of Sensing for Environmental and Organismal Biology*, Oct 2014
122. **Keynote Speaker**, European Solid-State Circuits Conference (ESSCIRC), Bucharest, Romania, September, 2013
123. NIWeek, Austin, TX, August 2013
124. International Functional Electrical Stimulation Society (IFESS), San Sebastian, Spain, June 2013
125. **Keynote Speaker**, Global Forum 2045 (<http://gf2045.com/>)
126. *Cadence*, San Jose, April 2013
127. *DATE13*, "Smart Health," Grenoble, 21 March 2013
128. *EMBS Micro and Nanotechnology in Medicine Conference*, Hawaii, December 2012
129. *International Joint Conference on Neural Networks (IJCNN 2011)*, San Jose, California , July 31 - August 5, 2011
130. *VLSI 2011 Symposium*, Kyoto, June 2011

131. *Science of Cyborgs*, Science and Entertainment Exchange, National Academy of Science, Hollywood, CA 2010
132. *Chip on the Dunes*, 22nd Symposium on Integrated Circuits and System Design (SBCCI), Natal, Brazil, August 31 to September 3, 2009
133. *CMOS ET*, Banff, Canada, Feb 16, 2009
134. *Center for Information Technology Research in the Interest of Society (CITRIS)*, Berkeley, CA, March 2009

Expert Witness

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| 2016-2018 | Morrison & Foerster, <i>Immersion Corporation v. Sony Interactive Entertainment America, LLC and Sony Interactive Entertainment Inc.</i> , F16-A-HM-0706 |
| 2013-2015 | Morrison & Foerster, <i>Immersion Corporation v. HTC Corporation, et al.</i> , C.A.No12-259-RGA |
| 2012 | Bracewell & Giuliani, <i>In the matter of certain integrated circuits, chipsets and products containing same including television, Inv. # 337-TA-822</i> |
| 2012-2013 | Morrison & Foerster, <i>Immersion Corporation, ITC Investigation No. 337-TA-834</i> |
| 2012 | Morrison & Foerster, <i>Apple vs. Samsung, Northern California -cv- 1846 LHK</i> |

Major Invited Talks

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| 2018 | Invited Speaker, Next Generation Neural Interfaces for Multimodal Recording and Stimulation |
| 2018 | Invited Speaker, Cell-NERF Symposium: Neurotechnologies |
| 2018 | Invited Speaker, IEEE Engineering in Medicine and Biology Society |
| 2016 | Invited Speaker, 2016 Invited 'Luncheon Talk' Speaker, <i>VLSI Symposium 2016</i> |
| 2015 | Invited Speaker, <i>Cell Symposia: Engineering the Brain</i> , 2015 |
| 2015 | Invited Speaker, <i>ICRA 2015</i> |
| 2014 | Invited Speaker, <i>EMBS MNM 2014</i> |
| 2014 | Plenary speaker, <i>NANS 2014</i> |
| 2014 | Invited speaker, <i>BioCAS 2014</i> |
| 2013 | Plenary speaker, <i>ESSCIRC 2013</i> |
| 2012 | Keynote Speaker, <i>IAS-12</i> (12th Intern. Conference on Intelligent, Autonomous Systems) |
| 2011 | Keynote Speaker, <i>Sensys 2011</i> |
| 2010 | Keynote Speaker, <i>IEEE Sensors 2010</i> |
| 2005 | Invited Speaker, <i>National Academy of Engineering, German-American Frontiers of Engineering Symposium</i> , Potsdam, May 5 – 7, 2005 |

Current Graduate students

- Alyssa Zhou (EECS, Berkeley, PhD, expected May 2020)
- Konlin Chen (EECS, Berkeley PhD, expected May 2020)
- David Piech (BioE, Berkeley, expected May 2020)
- Arda Ozligen (BioE, Berkeley, expected May 2020)
- Oliver Chen (EECS, Berkeley, expected May 2022)
- Mauricio Bustamante (EECS, Berkeley, expected May 2023)
- Wentian Mi (EECS, Berkeley, expected May 2024)
- Jordan Edmunds (EECS, Berkeley, PhD, expected May 2024)

Former Graduate students

- Monica Lin (BioE, Berkeley PhD, December 2018)
- Travis Massey (EECS, Berkeley, PhD, August 2018)

Camilo Diaz-Bhotia (BioE, Berkeley PhD, August 2017)
Tom Zadjel (EECS, Berkeley PhD, August 2018)
Amy Liao (BioE, Berkeley PhD, December 2017)
DJ Seo (EECS, Berkeley, PhD, December 2016)
Vedavalli Krishnan (EECS, Berkeley, PhD, December 2014)
Brian Pepin (EECS, Berkeley)
Daniel Cohen (Bioengineering, Berkeley, PhD, December 2013)
Peter Ledochowitsch (Bioengineering, Berkeley, PhD, December 2013)
Sisi Chen (Bioengineering, May 2012)
Gabriel Lavella (EECS, December 2011)
Jaehyun Park (EECS, Berkeley, PhD, May 2010)
Mike Pinelis (EECS, U Michigan Ann Arbor, PhD, December 2009)
Tushar Bansal (EECS, U Michigan Ann Arbor, PhD, May 2009)
Ruba T. Borno (EECS, U Michigan Ann Arbor, PhD, May 2008)
Meng-Ping Chang (EECS, U Michigan Ann Arbor PhD May 2008)
Whijae Roh (Bioengineering, U Michigan Ann Arbor, Masters, May 2007).

Current Postdocs

Soner Sonmezoglu

Former Postdocs

Wei Li (UCB, USA)
Prof. Maysam Chamanzar (CMU, USA)
Prof. Hirotaka Sato (NTU, Singapore)
Prof. Taesung Kim (UNIST, Korea)
Joshua Van Kleef (Fellow, ANU, Australia)
Siyu (Sisi) Chen (Postdoc UCSF)
Daniel Huang
Amol Jadhav (Scripps Institute, USA)

Ph.D.Thesis Committee

Roger T. Howe (Stanford)
Jay D. Keasling (UC Berkeley)
Kris J. Pister (UC Berkeley)
Luke P. Lee (UC Berkeley)