

Anja Kunze, Ph.D.

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Research Interests

- Engineering neuronal network development and neuronal cell morphology, Neurodegenerative diseases (Tauopathies, Alzheimer's Disease, Amyotrophic Lateral Sclerosis), Developmental disorders, Cell polarity, Synapse formation, Vesicle dynamics and Exosome transport
- Engineering *in-vivo* like bio-microsystems, 2D and 3D cell culture assays, Highly parallelized (high-throughput) cell analysis platforms (Microfluidics, BioMEMS), Magnetic field gradients, Magnetic nanoparticles, Biocompatible hydrogels, Biomolecular gradients

Employment

08/2016 – present	Montana State University (MSU), Bozeman, Montana, United States Assistant professor (Tenure Track) – Department of Electrical & Computer Engineering – College of Engineering
04/2012 – 06/2016	University of California, Los Angeles (UCLA), Los Angeles, California, United States Assistant adjunct professor – Department of Mathematics
07/2015 – 06/2016	Post-doctoral researcher/Assistant project scientist– Department of Bioengineering
04/2012 – 06/2016	Post-doctoral researcher/Assistant project scientist– Department of Bioengineering
06/2007 – 03/2012	École Polytechnique Fédérale de Lausanne (EPFL), Microsystems Laboratory (LMIS4), Lausanne, Switzerland
06/2006 - 10/2006	Paul Scherrer Institut (PSI, Switzerland), Laboratory for Micro- and Nanotechnology

Education

02/2008 – 03/2012	École Polytechnique Fédérale de Lausanne (EPFL), Microsystems Laboratory (LMIS4), Lausanne, Switzerland Docteur ès science (Ph.D.)
09/2001 - 05/2007	Dresden University of Technology (TUD), Electrical Engineering - Microelectronics, Dresden, Germany Dipl.-Ing. Electrical and Electronics Engineering (MSc. EE.)

Publications (see list of publication in the appendix below – page: 5)

19 (5 since MSU)	Peer-Reviewed Journal Publications (Research papers & Reviews)
30 (10 since MSU)	Peer-Reviewed Conference Publications (Abstracts & Proceedings)
2	Peer-Reviewed Book Chapters / Ph.D. Thesis
5 (5 since MSU)	Non-refereed Technical Presentations

25 (15 since MSU) Invited Presentations / Talks

Awards

06/2019 NSF CAREER Award
06/2013 UC Systemwide Bioengineering Award for Best Oral Presentation at UC Bioengineering Symposium, San Diego, CA, USA
11/2010 Nominated for the Art in Science Award, Lab Chip, 2011, 11, 993-994 DOI:10.1039/C1LC90007B
11/2007 ALA Award for Best Poster at NanoBioTech-Montreux, Switzerland
03/2005 Erasmus Fellowship, TU Dresden, 6-month Study Exchange
09/2004 Femtec Network Fellowship, TU Berlin, Two-year Career Building Program

Grant activity

Current

06/2019 – 05/2020 Project Title: Advancing on-chip exosome profiling for the Montana health care and biomedical community. Agency: Thorson Excellence in Engineering Research (TEER) Grant, Role: P.I., Co-P.I. McCalla
06/2019 – 05/2024 Project Title: CAREER: Understanding calcium communication in neurons with nanomagnetic forces and engineered network patterns. Agency: National Science Foundation (NSF), Role: P.I.
08/2016 – 06/2020 Project Title: MSU start-up funding, Sponsor: VPRED, COE, Role: P.I.
01/2017 – 12/2018 Project Title: Nanotechnology for Emerging Research in Bio-Nano-Systems and Advanced Energy, Sponsor: Murdock Charitable Trust, Role: Research Participant, P.I.: Dickensheets

Teaching and student-supervision

Instructor (MSU)

01/2019 – present ELEE 418 The Art of Biochips – Spring (20 students)
01/2017 – present ELEE 261 Introduction to Digital Logic – Fall (100 students, 2 TAs)
ELEE 261 Introduction to Digital Logic – Spring (50 students, 1 TA)

Instructor (UCLA)

09/2015 – 06/2016 MA 142 Mathematical Modeling (40 students, 1 TA)
MA 3A Calculus for Life sciences (100 students, 4 TAs)

Guest Lecture (UCLA)

04/2013 – 05/2013 BE 167L Bioengineering Laboratory: 3D cell cultures (20 students)

Teaching Assistant (EPFL)

05/2007 – 02/2011 MICRO-434 Microsystems and Sensors: design, cleanroom fabrication and bench characterization of silicon oxide microcantilevers

Graduate student mentoring

Ph.D. and Master Student Mentoring or Advising (MSU)

01/2020 – present Travis Van Leeuwen: Material Sci Graduate Student, Topic: *Tissue Engineering*
01/2020 – present Elizabeth Andreas: Math Sci Master Student, NSF MT PEAKS, Topic: *Modeling*
09/2019 – present Zeynep Malkoc: ChemE Graduate Student, Topic: *Neurofluidics*
09/2019 – present Mackenna Landis: ECE Graduate Student, Topic: *Tissue Engineering*
09/2019 – present Connor Beck: ECE Graduate Student, Topic: *Calcium signaling*

01/2019 – present	Catherine Potts: Math Sci Graduate Student, NSF MT PEAKS, <i>Signal Processing</i>
09/2017 – 09/2018	Trevor Gahl: ECE Graduate Student, EELE 592 (3cr) Independent Study – Topic: <i>MEA Recordings</i> .
01/2018 – 05/2018	Uche Osahor: ECE Graduate Student, EELE 592 (2cr) Independent Study – Topic: <i>Vesicle Tracking</i> .
PhD Student Mentoring (UCLA)	
09/2014 – 06/2016	Andy Tay: BE Graduate student – Topic: <i>Neuronal Cell Mechanics</i> .
Master Project Co-supervision (EPFL)	
09/2009 – 02/2010	Serena Brando: <i>Characterization of A Microfluidic Device for 2D Cell Patterning and Perfusion System to Reproduce an Artificial Alzheimer's Model</i> .
02/2009 – 08/2009	Marc-Olivier Schwartz: <i>Microfluidic Filters to Perfuse Cell Cultures in Hydrogels</i> .
09/2008 – 02/2009	Simon Riniker: <i>Three-Dimensional Electrodes for Neuronal Cell Cultures in Hydrogels</i> .

Undergraduate student mentoring

Undergraduate Student Mentoring (MSU)	
11/2019 – present	Abigail Girardot: – FYRE, Topic: <i>Exosomes</i> .
09/2019 – present	Carly Teska: – USP, ELEE 490R (3 cr) Topic: <i>Neurofluidics</i> .
11/2019 – present	Jesse Rector: ELEE 490R (3 cr) – Topic: <i>Nanomaterials</i> .
11/2019 – present	Makenna Gales: ELEE 490R (3 cr) – Topic: <i>Exosomes and anti-gravity</i> .
10/2018 – 05/2019	Jordan Milks: – Topic: <i>Exosomes and anti-gravity</i> .
10/2018 – present	Andy Kirby: INBRE, ELEE 490R (3 cr) – Topic: <i>Signal processing for electrophysiology</i> .
09/2018 – 12/2018	Xingzi Xu: ELEE 490R (3 cr) – Topic: <i>Modeling vesicle trafficking</i> .
09/2018 – present	Hammad Khan: INBRE, ELEE 490R (3 cr) – Topic: <i>Hydrogel lithography</i> .
09/2018 – 05/2019	Kennan Hooker: INBRE, ELEE 490R (3 cr) – Topic: <i>Tau-Probe</i> .
06/2018 – 08/2018	Jack Vincent: ECE REU Student – Topic: <i>Lightening Subcellular communication – Integration</i> .
06/2018 – 08/2018	Julia Smyth: ECE REU Student – Topic: <i>Lightening Subcellular communication – Image Analysis</i> .
01/2018 – 05/2018	Nada Abdelfattah: Internship – Topic: <i>Simulating Magnetic Gradient</i> .
09/2017 – 05/2108	Siri Orser: USP, ELEE 490R (3 cr) – Topic: <i>Agarose Barriers in Neuronal Cultures</i> .
06/2017 – 08/2017	Clark Hickman: ECE REU Student – Topic: <i>Lightening Subcellular Communication – The Setup</i> .
02/2017 – 05/2019	Connor Beck: INBRE, ELEE 490R (3 cr) – Topic: <i>Graph-based Neural Networks in Culture</i> .
01/2017 – 05/2019	Kendra Hergett: INBRE, ELEE 490R (3 cr) – Topic: <i>Neurofluidics</i> .
09/2016 – 05/2019	Derek Judge: McNair, INBRE, ELEE 490R (6 cr) – Topic: <i>Magnetic Gradient Design</i> .
09/2016 – 05/2018	Hunter Peterson: FYRE, INBRE – Topic: <i>Nanoparticle Interaction in Human Cells</i> .
09/2017 – present	Electrical Engineering Capstone, Design I + II, ELEE 488/489 (3 cr) – Topic: <i>Magnetic Gradient Devices, Neurofluidics</i> .
Undergraduate Student Mentoring (UCLA)	
03/2016 – 06/2016	Sneha Belkhale: MATH 199* – Topic: <i>Optimization of Object Tracking Algorithm for Intracellular Vesicle Dynamics</i> . *in collaboration with D. Zosso and M. Roper

03/2016 – 06/2016	Mellisa Waltzer: MATH 99 – Topic: <i>Modeling Random Walk Effects in Vesicle Dynamics</i> .
09/2013 – 12/2014	Chanya Godzich: BE 199 – Topic: <i>Mechanotransduction via Fluorescent Magnetic Nanoparticles – An Exploration of Factors at Play</i> .
04/2013 – 03/2014	Bioengineering Capstone Design I & II – Topic: <i>Organ-on-a-Chip</i> .
	Bachelor Project Co-supervision (EPFL)
02/2009 – 06/2009	Clara Fausta Moldovan: <i>Perfusion of Hydrogel Pattern and Cell Cultures in Microenvironments</i> .
02/2008 – 06/2008	Tojo Razafiarison: <i>Characterization of Hydrogel Mixture for Electrophysiology</i> .
02/2008 - 06/2008	Barbara Muriene: <i>Influence of Viscosity on Flow in Chips</i> .

Public & Scientific Outreach

11/2019	MSU News, November 11 th , 2019: in “For MSU electrical engineering undergraduate, brain research offers a new path” by Marshall Swearingen
03/2019	Bozeman Daily Chronicle & MSU News, March 15 th , 2019: in “MSU professor wins prestigious award from National Science Foundation” by Marshall Swearingen
12/2018 – present	Engineering Brain Art Competition, Virtual Art Gallery
04/2018	Organizer and session chair: Biomedical Engineering Research at the Montana Bench and Beyond, Undergraduate Research Symposium at MSU
02/2018	MSU’s Innovation Road Show: Faculty Symposium
12/2017	Bozeman Daily Chronicle & MSU News, December 29 th , 2017: in “MSU Researchers Explore Cures for Brain Diseases Like Alzheimer’s” by Marshall Swearingen
10/2017	Conference session co-chairing at BMES: Micro/Nano Tools in Neurosciences, Mechanobiology of the Vascular and Nervous System.
02/2017 – present	MSU’s NanoDays / Family Science Days
01/2014	Le Monde de l’Intelligence – N° 34 – Janvier/Février 2014: Featured in “Des Mini-Cerveaux Reconstitués en Laboratoire” by Sabine Sasalonga, p. 36 -40
08/2013	MIT Technology Review: Interviewed for comment about “Miniature Human Brains Grown in Petri Dish”

Professional Service

	Committee
09/2019 – present	ECE Strategy Committee (MSU)
2017/2018	ECE Hiring Committee (MSU)
09/2016 – present	ECE Graduate School Committee (MSU)
2013	Jury: Undergraduate Dean’s Prize (UCLA)
	Grant Reviewer
10/2019 – present	Human Frontier Science Program, Research Grant Review
10/2019 – present	NIH Review Panelist
01/2018 – present	HotWater Workshop (MSU)
09/2017 – present	INBRE Program, Proposal Reviewer (MSU)
2016	NASA EPSCoR Research Initiation review (MSU)
2014	Stein Oppenheimer Endowment Award / The Spitzer Grant Research Program (UCLA)

Journal Reviewer

Lab on a Chip, Frontiers in Neuroscience, PLoS ONE, Biomedical Microdevices, Biomaterials, Advanced Functional Materials, ACS Applied Materials & Interfaces, Small, Journal of Vacuum Science and Technology, Biomedical Microdevices

Memberships

Biomedical Engineering Society: Member

MSU Center for Faculty Excellence: Member, Women in STEM, Writing Group

Appendix: Anja Kunze's Publication list

(April 2020)

Peer-Reviewed Journal Articles (**most important)

19. *Soft Matter Neuropatterning for Biomechanical Modulation of Calcium Signals*. H. Khan, C. L. Beck, and A. Kunze, XXX, 2020, p. X-X. *in preparation*
18. *Archetypal Analysis for Clique Detection in Calcium Fluorometry*. G. Potts, A. Kunze, and D. P. Zosso XXX, 2020, p. X-X. *in preparation*
17. *Low-cost calcium nano fluorometry for long-term nanoparticle studies in living cells*. C. L. Beck, C. J. Hickman, and A. Kunze, XXX, 2020, p. X-X. *submitted*
16. *Force-Mediating Magnetic Nanoparticles to Engineer Neuronal Cell Function*. T. Gahl and A. Kunze, *Front. Neurosci.* 12:299, 2018, p. 1-16. (IF: 3.877)**
15. *Modulating Motility of Intracellular Vesicles in Cortical Neurons with Nanomagnetic Forces On-Chip*. **A. Kunze**, C. Murray, C. Godzich, K. Owsley, J. Lin, A. Tay and D. Di Carlo, *Lab Chip* 17(5), 2017, p. 842-854. (IF: 5.995)
14. *The Age of Cortical Neural Networks Affects their Interactions with Nanoparticles*. A. Tay, A. Kunze, D. Jun, E. Hoek and D. Di Carlo, *Small*, 2016, DOI: 10.1002/sml.201600673. (IF: 9.598)
13. *Induction of Calcium Influx in Cortical Neural Networks by Nanomagnetic Forces*. A. Tay*, **A. Kunze***, C. Murray and D. Di Carlo, *ACS Nano* 10(2), 2016, p. 2331-2341. *equally contributed (IF: 13.3)**
12. *Engineering Cortical Neuron Polarity with Nanomagnets on a Chip*. **A. Kunze**, P. Tseng, C. Godzich, C. Murray, A. Caputo, F. E. Schweizer and D. Di Carlo, *ACS Nano* 9(4), 2015, p. 3664-3676. (IF: 13.7)**
11. *Research Highlights: Cell Separation at the Bench and Beyond*. **A. Kunze**, J. Che, A. Karimi, D. Di Carlo, *Lab on a Chip* 15, 2015, p. 605-609.
10. *Flexible and Stretchable Micromagnet Arrays for Tunable Biointerfacing*. P. Tseng, J. Lin, K. Owsley, J. Kong, **A. Kunze**, C. Murray, and D. Di Carlo, *Advanced Materials* 27 (6), 2015, p. 1083-1089. (IF: 21.950)
9. *Research Highlights: Measuring and Manipulating Cell Migration*. **A. Kunze**, I. Pushkarsky, H. Kittur and D. Di Carlo, *Lab on a Chip* 14(21), 2014, p. 4117-4121.
8. *Research Highlights: Microtechnologies for Engineering the Cellular Environment*. P. Tseng, **A. Kunze**, H. Kittur and D. Di Carlo, *Lab on a Chip* 14(7), 2014, p. 1226-1229
7. *Advances in High-Throughput Single-Cell Microtechnologies*, W. M. Weaver. P. Tseng, **A. Kunze**, M. Masaeli, A. Chung, J. S. Dudani, H. Kittur, R. P. Kulkarni and D. Di Carlo, *Curr. Op. in Biotechn.* 25, 2014, p. 114-123 – author of neuroscience section (IF: 8.3)
6. *Astrocyte Neuron Co-Culture in Microchips Based on the Model of SOD Mutation to Mimic ALS*. **A. Kunze**, S. Lengacher, E. Dirren, P. Aebischer, P. J. Magistretti, Ph. Renaud, *Integr. Biol.* 5(7), 2013, p. 964-975. (IF: 3.294)**
5. *Synergistic NGF/B27 Gradients Position Synapses Heterogeneously in 3D Micropatterned Neural Cultures*. **A. Kunze**, A. Valero, D. Zosso and Ph. Renaud, *PLoS ONE* 6(10): e26187. 2011 (IF: 3.1)**
4. *Co-Pathological Connected Primary Neurons in a Microfluidic Device for Alzheimer Studies*. **A. Kunze***, R. Meissner*, S. Brando and Ph. Renaud, *Biotechnology and Bioengineering* 108(9), 2011, p. 2241-2245. - selected Spotlight (IF: 4.2)** , *equally contributed
3. *Micropatterning Neural Cell Cultures in 3D with a Multi-Layered Scaffold*. **A. Kunze**, M. Giugliano, A. Valero and Ph. Renaud, *Biomaterials* 8 (32) 2011, p. 2088-2098. (IF: 8.806)**
2. *A Virtual Valve for Smooth Contamination-Free Flow Switching*. T. Braschler, J. Theytaz, R.

Zvitov-Marabi, H. van Lintel, G. Loche, **A. Kunze**, N. Demierre, R. Tornay, M. Schlund and Ph. Renaud, *Lab Chip* 9 (7) 2007, p. 1111-1113.

1. *Influence of Solvent Viscosity on Surface Graft-Polymerization*. P. Farquet, **A. Kunze**, C. Padeste, H. H. Solak, S. A. Gürsel, G. G. Scherer and A. Wokaun, *Polymer* 48 (17) 2007, p. 4936-4942. (IF: 3.483)

Peer-Reviewed Book Chapters / PhD Thesis

2. *Compartmentalized Microfluidics for In Vitro Alzheimer's Disease Studies*. In *Microfluidic and Compartmentalized Platforms for Neurobiological Research*. Y. Ren, **A. Kunze**, P. Renaud; Ed. E. Biffi; Springer New York: 2015; Vol. 103, pp 197-215.

1. *Micro-engineering the Cerebral Cortical Cell Niche: A new Cell Culture Tool for Neuroscience Research*. **A. Kunze**, Lausanne, EPFL, 2012 Thèse École polytechnique fédérale de Lausanne EPFL, n° 5290 (2012)

Peer-Reviewed Conference Proceedings & Abstracts (*online available)

30. *Soft-gel Microchannels to Study Curvature Effects in Neuronal Calcium Signaling*. H. Khan, C. Beck, **A. Kunze**, In: Proceedings of the BMES, Philadelphia, Pennsylvania, USA, 2019.

29. *Activating Calcium Firing Rates with Macro-Scaled Symmetric Magnetic Force Patterns*. C. Beck, **A. Kunze**, In: Proceedings of the BMES, Philadelphia, Pennsylvania, USA, 2019.

28. *Archetypal Analysis of Nanoparticle-mediated Cellular Signaling*. C. Potts, D. Zosso, and **A. Kunze**, In: Proceedings of the BMES, Philadelphia, Pennsylvania, USA, 2019.

27. *Quantifying Magnetic Nanoparticle Movement Under Micromagnetic Field Patterns*. J. Jaber, H. Khan, **A. Kunze**, In: Proceedings of the BMES, Philadelphia, Pennsylvania, USA, 2019.

26. *Nanomagnetic force stimulation and its impact on local field potential recording from primary cortical neurons*. **A. Kunze**, In: Gordon Research Conference, Bioelectronics in Andover, New Hampshire, USA, 2019.

25. *Neural network growth under heterogenous magnetic gradient patterns*.

D. Judge and **A. Kunze**, In: Proceedings of the 9th International IEEE EMBS Conference on Neural Engineering (NER), San Francisco, CA, USA, 2019. pp 191 - 194*

24. *Intracellular Calcium and Mitochondrial Dynamics in Confined Environments*. K. Hergett, C. Beck, **A. Kunze**, In: Proceedings of the BMES, Atlanta, Georgia, USA, 2018.*

23. *Environmental Influence on Cellular Uptake in Micro-Scaled Cell Models*. K. Hergett, D. Judge, H. Peterson, **A. Kunze**, In: Proceedings of the BMES, Phoenix, Arizona, USA, 2017.*

22. *A Portable, Low-Cost Imaging System to Study Long-Term Live Cell Fluorescent Dynamics*. C. Beck, C. Hickman, H. Peterson, **A. Kunze**, In: Proceedings of the BMES, Phoenix, Arizona, USA, 2017.*

21. *Superimposing Nanomagnetic Forces on Intracellular Transport Mechanism in Neurons*. **A. Kunze**, In: Gordon Research Conference, Neurotrophic Factors in Newport, Rhode Island, USA, 2017.

20. *Controlling Vesicle Motion in Cortical Neurons with Magnetic Forces*. **A. Kunze**, C. Murray, A. Tay and D. Di Carlo, In: Proceedings of the Biophysical Society, Los Angeles, 110(3), Supplement 1, p. 466a, 2016.*

19. *The Age of Cortical Neural Networks Affects their Interactions with Nanoparticles*. A. K. Tay, **A. Kunze**, D. Di Carlo, In: Biology of Aging Scientific Conference, Singapore, 2015.

18. *Nanoparticle Surface Charge Impacts Vesicle Motion in Cortical Neurons*. C. Godzich, D. Di Carlo, **A. Kunze**, In: Proceedings of the BMES, Texas, San Antonio, USA, 2014.*

17. *Directed Neuronal Growth Using Magnetic Gradients and Nanoparticles*. **A. Kunze**, P. Tseng, and D. Di Carlo, In: Proceedings of the BMES, Seattle, Washington, USA, 2013.*

16. *Micro Magnet Chips to Study Nanoparticle Force-Induced Neural Cell Migration*.

- A. Kunze**, P. Tseng, C. Murray, A. Caputo, F. E. Schweizer and D. Di Carlo, In: Proceedings of the 17th International Conference on Miniaturized Systems for Chemistry and Life Sciences (MicroTAS), Freiburg, Germany, p. 431-433, 2013.*
15. *Microchip-Based Multi-Parameter Study of Magnetic Nanoparticle Induced Neurite Outgrowth.* **A. Kunze**, P. Tseng, A. Caputo, F. E. Schweizer and D. Di Carlo, In: 14th UC Systemwide Bioengineering Symposium, San Diego, 2013. – Oral
 14. *Locally Induced Alzheimer's Disease in 3D Microengineered Neuronal Cell Cultures.* **A. Kunze** and Ph. Renaud, In: Proceedings of Annual Meeting of Society of Neuroscience, New Orleans, 2012.*
 13. *Microenvironmental Influence on Gradient Sensing in Neural Cell Cultures.* **A. Kunze** and Ph. Renaud, 13th UC Systemwide Bioengineering Symposium, Berkeley, 2012. – Oral
 12. *A Microfluidic Based Artificial Alzheimer's Disease Model.* **A. Kunze**, R. Meissner, S. Brando and Ph. Renaud, In: Proceedings of NanoBioTech, Montreux, 2011, p. 515-517, 2011. – Oral
 11. *Co-Pathological States of Tau Proteins in a 3D Micropatterned Neural Cell Culture.* **A. Kunze**, R. Meissner, S. Brando and Ph. Renaud, In: Proceedings of the 15th International Conference on Miniaturized Systems for Chemistry and Life Sciences (MicroTAS), Seattle, p. 696- 698, 2011. – Oral*
 10. *Gradient-Engineered Synapse Formation in 3D Neural Cell Cultures,* **A. Kunze**, A. Valero and Ph. Renaud, In: Proceedings of the BMES, Hartford Connecticut, USA, 2011. – Oral*
 9. *Local Synaptic Alignment In Vitro Using Engineered Gradients of Guidance Molecules.* **A. Kunze**, A. Valero and Ph. Renaud, In: Gordon Research Conference, Les Diablerets, 2011.
 8. *Synapse Distribution in a 2D-3D Micropatterned Neural Cell Culture.* **A. Kunze** And Ph. Renaud, In: Proceedings of the 8th International Conference on Microtechnologies in Medicine and Biology (MMB), Luzern, p. 177 - 178, 2011.
 7. *Neurite Guidance Through 3D Hydrogel Layers in a Microfluidic Environment.* **A. Kunze**, R. Meissner and Ph. Renaud, In: Proceedings of the 14th International Conference on Miniaturized Systems for Chemistry and Life Sciences (MicroTAS), Groningen, p. 187-189, 2010.*
 6. *Engineering the Micro Electrode Environment with Microfluidics: A New Approach for Cell Culture Patterning or Controlled Chemical Stimulation.* **A. Kunze**, M. O. Heuschkel, M. Giugliano and Ph. Renaud, In: Proceedings of the 7th International Meeting on Substrate-Integrated Microelectrode Arrays (MEA meeting), Reutlingen, p. 316-317, 2010.*
 5. *Sequential Build-Up of Hydrogel Environments Around Single Cells.* T. Braschler, A. Valero, L. Colella, **A. Kunze**, G. Loche, R. Marabi, J. Theytaz and Ph. Renaud, In: Proceedings of the 13th International Conference on Miniaturized Systems for Chemistry and Life Sciences (MicroTAS), p. 515-517, 2009.*
 4. *Microfluidic Hydrogel Layers with Multiple Gradients to Stimulate and Perfuse Three-dimensional Neuronal Cell Cultures.* **A. Kunze**, A. Bertsch, M. Giugliano and Ph. Renaud, In: Procedia Chemistry, p. 369-372, 2009.*
 3. *PDMS Microfluidic Device for Parallel Structured 3D Neuronal Cell Culture.* **A. Kunze**, R. Marabi, T. Braschler, L. Gambazzi, M. Giugliano, H. Markram, H. van Lintel, Ph. Renaud, In: Proceedings of NanoTech, Montreux, 2007.
 2. *Process Chamber for Bio-Mobilization of Polymer Surfaces with UV Laser Treatment.* **A. Kunze**, M. Jäger, F. Sonntag and R. Poll, In: Proceedings of Gemeinsame Jahrestagung der Schweizerischen, Deutschen und Österreichischen Gesellschaft für Biomedizinische Technik, Zürich, 2006.
 1. *Technology of Localized Surface Modification.* **A. Kunze**, F. Sonntag, M. Rabenau and R. Poll, In: Biomedizinische Technik, 50(1): p. 542, 2005. – Oral

Non-refereed Technical Presentations

5. *Agarose microchannels to study curvature effects in neuronal calcium signaling.* H. Khan and

A. Kunze, NNCI REU Convocation 2019, Ithaca, New York, USA

4. *Imaging subcellular calcium signals*. M. Panipinto, C. Beck and **A. Kunze**, OpTeC Meeting 2019, Bozeman, Montana, USA
3. *Synchronous Microelectrode Array Recording and Calcium Imaging of Neuronal Activity*. J. Vincent and **A. Kunze**, OpTeC Meeting 2018, Bozeman, Montana, USA
2. *Optimizing Photolithography for Neurofluidic Devices*. K. Hergett and **A. Kunze**, NNCI REU Convocation 2018, Raleigh, North Carolina, USA
1. *Prototyping a Portable Incubator-Fluorescent Imaging System*. C. Beck, C. Hickman and **A. Kunze**, OpTeC Meeting 2017, Bozeman, Montana, USA

Invited Presentations

02/2020	MSU – Applied Math Seminar: Magnetic Fields and Forces for Brain-on-a-chip Technology
02/2020	MSU – Leadership MSU Presentation: Developing Neurotechnologies for Brain Cell Diagnostics in Montana
09/2019	MSU – Freshman Research Symposium: <i>Using Magnetic fields in neurons to our advantage</i> .
08/2019	MSU – ECE, REU Research Seminar: Nano-scaled forces for neurotherapeutics and diagnostics.
02/2019	MSU – Chemistry and Biochemistry Seminar: <i>Nano-Scaled Forces for Neurotherapeutics</i> .
11/2018	MSU – Physics Colloquium: <i>Brain-on-a-chip technology: Potentials and Challenges</i> .
11/2018	MSU – IEEE Professor Spotlight: <i>From artificial neural networks to brains-on-chip</i> .
10/2018	MSU – Freshman Research Symposium: <i>Understanding neuronal cell communication through light</i> . Host: L. Schultz
02/2018	MSU – Innovation Road Show: <i>How to Connect the Brain Dots at the Nanoscale</i> . Host: L. Schultz
10/2017	MSU – Freshman Research Symposium: <i>Shaping up the Brain at the Nanoscale</i> . Host: L. Schultz
08/2017	ETHZ – IBT, LBB Research Seminar: <i>Shaping up Brain Cell Function at the Nanoscale</i> . Host: J. Vörös
07/2017	MSU – ECE, REU Research Seminar: <i>How to Wire Neuronal Networks Outside of The Brain</i> . Host: K. Repasky
06/2017	MSU – MONT User Meeting: <i>Microfluidics to Engineer the Brain Cell Environment</i> . Host: D. Dickensheets
02/2017	MSU – Cross-College Mental Health Scholarship Forum: <i>Nanomagnetic Forces for Neural Tissue Engineering</i> . Host: A. Camper
12/2016	MSU – COE Seminar: <i>Shaping Up Brain Function at The Nanoscale</i> . Host: A. Camper
01/2016	UWashington – Invited Faculty Talk – BE Seminar: <i>Nanoparticle-Based Therapeutic Approaches to Engineer Brain Cell Behavior</i> . Host: M. Regnier
01/2016	MSU – Invited Faculty Talk – ECE Seminar: <i>Nanoparticle-Based Therapeutic Approaches to Engineer Brain Cell Behavior</i> . Host: R. Maher
01/2016	McGill – Invited Faculty Talk – BME/BE Seminar: <i>Engineering Brain Cell Polarity: From Microsystems to Nanoengineering Approaches</i> . Host: D. V. Nicolau

- 01/2016 RPI – Invited Faculty Talk – BME Seminar: *Nanoparticle-Based Therapeutic Approaches to Engineer Brain Cell Behavior*. Host: X. Intes
- 02/2015 UFlorida – Invited Faculty Talk – ECE Seminar: *Nanoengineered Intracellular Forces and Their Interplay with Neurons*. Host: D. Arnold
- 02/2015 GeorgiaTech – Invited Faculty Talk – BE Seminar: *Nanoengineered Intracellular Forces and Their Interplay with Neurons*. Host: C. R. Ethier
- 04/2014 UIUC – Invited Faculty Talk – BE Seminar: *Engineering the Neuronal Cell Niche Using Micro- and Nanotechnological Tools for Neurodegenerative Disease Studies*. Host: S. A. Boppart
- 03/2014 TUM – Invited Faculty Talk – Neurosymposium: *Nanoengineering Tools to Determine Mechanical Sensitivity of Cortical Neurons During Development*. Host: W. Hemmert
- 03/2012 EPFL – Public Thesis Defense: *Micro-Engineering the Cerebral Cortical Cell Niche: A New Cell Culture Tool for Neuroscience Research*. Host: Ph. Renaud
- 11/2009 EPFL – IBI Seminar: *Microfabricated Hydrogel Layers to Study Neuronal Network Formation*. Host: Ph. Renaud