

Tzeno Galchev

Marie Curie Fellow

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Business Contact

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Education

University of Michigan, Ann Arbor, Michigan

Ph.D. in Electrical Engineering 2010

Thesis Title: *“Energy Scavenging From Low Frequency Vibrations”*

Advisor: Khalil Najafi

M.S. in Electrical Engineering 2006

B.S. in Electrical Engineering 2004

Magna Cum Laude

B.S. in Computer Engineering 2004

Magna Cum Laude

Academic Experience

Research Fellow, University of Freiburg, Freiburg, Germany 2012 – present

Marie Curie Research Fellow 2014 – present

Alexander von Humboldt Research Fellow 2012 – 2013

Department of Microsystems Engineering – IMTEK

- Researching integrated microsystems for medicine, energy harvesting for wearable devices, analog interface electronics for electrophysiology, and power management. Authored 8 papers (1 more in review)
- Invented new technology for harvesting multi-axial motion for body-worn and implantable applications. Won 3 Best Paper awards at international conferences
- Secured 1.4 M€ worth of funding by writing and budgeting 4 competitive national and international grants, 2 as principle investigator (PI) and 2 as co-PI
- Coordinated wafer manufacturing with commercial foundry and in-house post-processing of MEMS on CMOS wafers
- Managed students directly (average of 5 at any given time) and their projects (lab. assistants, M.S. and Ph.D. dissertations)
- Held lectures on CMOS process technology, test, and characterization methods
- Gave more than 11 invited talks worldwide on renewable energy sources for mobile and wearable devices

Research Fellow, University of Michigan, Ann Arbor, Michigan 2010 – 2011
 Department of Electrical and Computer Engineering
 NSF ERC for Wireless Integrated Microsystems (WIMS)

- Led team of 2 in developing a 3D wafer-level packaging technology with integrated vibration isolation for an automotive OEM
- Managed NIST sponsored effort on developing autonomous structural health monitoring (SHM) sensors while supervising a PhD student and continuing research in the area of low-frequency energy harvesting. Resulted in 8 papers, 1 best paper award, and the longest published field test of an energy harvester to date

Research Assistant, University of Michigan, Ann Arbor, Michigan 2005 – 2010

- Researching MEMS, inertial sensors, fabrication, and energy harvesting
- Invented and patented a new technology for harvesting non-periodic and low-frequency motion. Demonstrated efficiency is still state-of-the-art, many years later.
- Assisted in the teaching of the MEMS curriculum
- Authored 11 publications and won a Best Paper award
- Elected as president of student council 2 years in a row (additional year as vice-president). Duties involved, fundraising, acting as liaison between students and faculty, and organizing networking events

Industrial Experience

Senior Sensor Platform Develop. Engineer, Analog Devices, Wilmington, MA From 1/2016

Intern, General Dynamics, Ypsilanti, Michigan 2003

Intern, Lockheed Martin, Rockville, Maryland 2001

Entrepreneurship and Consulting

co-Founder, Enertia Energy Systems LLC, Ann Arbor, MI 2010 – present

- Co-founded start-up based on technology developed during doctoral thesis
- Defined product, market and commercialization strategy and received 12 national and international business development awards
- Developed financial model and raised \$168,000 in seed funding

Consultant, Engineering, IP, Technology due diligence 2010 – present

- Advised technical clients on demanding engineering challenges. Served as expert consultant for legal firms in IP disputes

Teaching Experience

University of Freiburg, Freiburg, Germany

- **Instructor**, *Advanced Silicon Technology* 2014-present
- **Instructor**, *Test Structures and Methods for ICs and MEMS* 2013-present

University of Michigan, Ann Arbor, Michigan

- **Teaching Assistant**, *EECS 515: Integrated Microsystems* WS 2005
- **Teaching Assistant**, *EECS 514: Intr. to Microelectromech. Systems (MEMS)* FS 2004

Honors and Awards

- Marie Curie Postdoctoral Research Fellowship, 2013
- Best Student Paper Award “Circuits” Track, IEEE Sensors Conference, Baltimore, USA, 2013
- Top 10 outstanding oral presentations, IEEE MEMS Conference, Taipei, Taiwan, 2013
- Best Student Paper Award, PowerMEMS Workshop, Atlanta, GA, 2012
- Alexander von Humboldt Postdoctoral Research Fellowship, 2012
- Outstanding Student Leadership Award, awarded to 1 student annually at the Wireless Integrated Microsystems Center (WIMS ERC), 2009
- John Atanasoff Certificate (runner-up to John Atanasoff Award), annual national recognition given to a young scientists under the age of thirty-six for significant contributions in the development of information technologies by the President of the Republic of Bulgaria, 2008
- Best Paper Award, International Conference On Commercialization of Micro and Nano Systems, 2008
- Sandia National Laboratories/University of Michigan Excellence in Engineering Fellowship, 2006
- 2nd Place Analog Devices/UM Analog Circuit Design Contest, 2004
- James B. Angell Scholar, University of Michigan, 2003
- University Honors, University of Michigan, 2003
- Invited Member, Eta Kappa Nu Electrical Engineering Honor Society, 2001
- Dean’s List, University of Michigan, College of Engineering, 2001-2004

Research Interests

- Microsystems, integrated sensors, actuators, and packaging
- Ultra-low power analog and digital integrated circuits
- Power electronics for mobile applications
- Microsystem tools for neuroscience
- Microsystems for medicine, wearables, flexible electronics, and body area networks
- Energy harvesting and storage technologies

Professional Activities and Service

- Technical Program Committee member:
 - The 16th International Conference on Micro and Nanotechnology for Power Generation and Energy Conversion Applications (PowerMEMS 2016)
 - IEEE Conf. on PhD Research in Microelectronics and Electronics (PRIME), 2011, 2013
- Session chair:
 - Int. Conf. on Micro and Nanotechnology for Power Generation and Energy Conversion (PowerMEMS), 2014
- Journal reviewer:
 - IEEE/ASME Journal of Microelectromechanical Systems
 - IEEE Journal of Solid-State Circuits
 - IEEE Transactions on Circuits and Systems II
 - IEEE Transaction on Magnetics
 - IEEE Sensors Journal
 - Sensors and Actuators
 - ACM Transactions on Embedded Computing Systems
- President, Student Leadership Council, NSF ERC for WIMS, 2007-2009

- Vice-President, Student Leadership Council, NSF ERC for WIMS, 2006-2007

University Service

- Graduate Student Mentor, EECS Circuits & Microsystems, University of Michigan, 2005-2011
- Graduate Student Research Mentor, WIMS, University of Michigan, 2005-2011
- Undergraduate Student Mentor, WIMS, University of Michigan, 2009
- Volunteer, Detroit Area Pre-College Engineering Program (DAPCEP), 2006-2009
- Volunteer, EECStravaganza, University of Michigan, 2007-2008
- Volunteer, Campus Day, University of Michigan, 2008
- Volunteer, UM Tech Day, University of Michigan, 2006-2011
- Volunteer, Ann Arbor Hands-On Museum, Ann Arbor MI, 1998-2002

Grants and Contracts

- German Research Foundation (DFG) Cluster of Excellence BrainLinks-BrainTools, “Advanced Intracortical Neural Probes with Electronic Depth Control,” co-PI (lead PI Oliver Paul), 5/1/2014 – 2/26/2017, 800,727€
- German Research Foundation (DFG) Cluster of Excellence BrainLinks-BrainTools, “Smart Energy Autonomous Wireless Transceiver for Implantable Neural Interfaces,” co-PI (lead PI Yiannos Manoli), 5/1/2014 – 2/26/2017, 392,780€
- EU FP7 People Action, Marie Curie IIF, “Proximity Enhanced Energy harvesting of multi-axis motion,” scored 91.7%, 1/1/2014 - 12/31/2015, (acceptance rate 13.2%), 161,968€
- Alexander von Humboldt Foundation, “Harvesting energy from human motion: Springless Proximity Inertial Harvester”, 1/1/2012 - 12/31/2013, (acceptance rate 25%), 80,000€
- Business Development Awards from National and International Business Plan Competitions including the DTE Clean Energy Prize, Colorado Clean Tech Venture Challenge, Wake Forrest Elevator Pitch Competition and others, 2007-2010, \$168,000
- Sandia National Laboratories/University of Michigan Excellence in Engineering Fellowship, 2006-2009, \$120,000
- Schlumberger, to support U. of Michigan EECS Department Faculty/Student Mixers, 2008, \$1,000
- General Dynamics Land Systems, “Power Generation from Vehicle Vibration, 6/2005-12/2005, \$60,000

Business Development Awards

- Runner-Up, McGinnis Venture Competition hosted by the Tepper School of Business at Carnegie Mellon, Pittsburgh PA, March 2010. (*Selected as 1 of 8 invited nationwide teams to participate in the finals*)
- Runner-Up Pryor-Hale Award, Michigan Business Challenge hosted by the Ross School of Business at the University of Michigan, Ann Arbor MI, February 2010. (\$10,000 prize) (*Competed with 32 teams in 4 rounds spanning 4 months*)
- 1st Place, Clean Energy Prize hosted by the Ross School of Business at the University of Michigan, Ann Arbor MI, February 2010. (\$50,000 prize + \$30,000 services) (*Competed with 32 teams from throughout the state in 4 rounds spanning 4 months*)
- Semifinalist, MOOTCORP Business Plan Competition hosted by the McCombs School of Business at the University of Texas Austin, Austin TX, April 2008. (\$2,000 prize). (*Selected as*

one of 8 semifinalists from among 38 international teams eligible to compete only by winning a qualifying competition)

- Runner-Up Sustainability Award, Rice Business Plan Competition hosted by the Jesse H. Jones Graduate School of Management at Rice University, Houston TX, April 2008. (\$5,000 prize). *(Selected as one of 36 participating teams amongst 280 applicants from invited international MBA programs)*
- 1st Place, Wake Forest University Elevator Pitch Competition, Winston-Salem NC, March 2008. (\$36,000 prize) *(Selected as 1 of 12 nationwide teams to participate in the semi-finals and finals)*
- 1st Place, Colorado Cleantech Venture Challenge hosted by the Leeds School of Business at the University of Colorado, Denver CO, March 2008. (\$15,000 prize) *(Selected as one of 8 international teams to participate in the finals)*
- Runner-Up Pryor-Hale Award, Winner of Sustainability Award, Winner of Best Cross-Disciplinary Team, Michigan Business Challenge hosted by the Ross School of Business at the University of Michigan, Ann Arbor MI, February 2008. (\$15,000 prize) *(Competed with 32 teams over 4 rounds spanning 4 months)*
- 1st Place, FuturTech Quick Pitch hosted by the Ross School of Business at the University of Michigan, Ann Arbor MI, January 2008. (\$1,250 prize) *(1 of 10 university-wide finalists)*
- Runner-Up, Business Idea Competition at the College of Engineering University of Michigan, Ann Arbor MI, January 2008. (\$500 prize) *(Selected from 1 of over 40 participants)*
- 3rd Place, Idea to Product Global Competition hosted by the Murchison Chair of Free Enterprise at the University of Texas Austin, Austin TX, November 2007. (\$2,500 prize) *(1 of 13 invited international teams)*
- Dare to Dream Grant Recipient, Zell-Lurie Institute for Entrepreneurial Studies University of Michigan, Ann Arbor MI, 2007. (\$500 award) *(1 of 19 recipients from 31 applicants)*

Selected Invited Talks and Seminars

- Université Paris Sud / JNRSE'15, "Non-linear motion harvesters for wearables and the internet of things," Orsay, France, May 2015.
- Technical University of Sofia, "Tools for neuroscientific research realized using silicon MEMS technologies," Sofia, Bulgaria, May 2015
- PowerMEMS School, "Frequency up-converting motion harvesters for wearables and the Internet of Things," Kobe, Japan, November 2014.
- Middle East Technical University, "Renewable energy sources for medicine, structural health, and environmental monitoring," Ankara, Turkey, November 2013.
- Nano and Micro Systems (NAMIS) International Autumn School, "Microsystems for energy harvesting with a focus on converting low-frequency motion," Tokyo, Japan, September 2012
- Alexander von Humboldt Network Meeting, "Harvesting energy from human motion and the environment," Aachen, Germany, April 2012
- ETH Zurich Micro and Nanosystems Friday Talks, "Status of mechanical energy harvesters and developments in converting non-periodic vibrations," Zurich, Switzerland, December 2010
- University of Freiburg Micro Energy Harvesting Research Group Seminar, "Development of vibration harvesting technologies at WIMS," Freiburg, Germany, December 2010.
- General Dynamics Lunch Seminars, "Energy harvesting from arbitrary vibrations," Sterling Heights, Michigan, October 2010
- High Efficiency Energy Conversion, Energy Management, and Low Power Systems for Aerospace/Military Electronics Workshop, "Energy harvesting from low frequency and arbitrary vibrations," Redstone Arsenal, Alabama September 2010

- Sensors Expo, “Scavenging energy from low frequency and arbitrary vibrations,” Rosemont, Illinois, June 2010
- U. of Michigan College of Engineering Graduate Symposium, “A parametric frequency increased power generator for scavenging low-frequency ambient vibrations,” Ann Arbor, MI, November 2009
- Sandia National Laboratories, “MEMS-based energy scavenging from ambient vibrations,” Albuquerque, NM, October 2009

Patent

Patent filed 1; Invention disclosures 2

- T. Galchev, H. Kim, K. Najafi “Increased Frequency Power Generation Using Low Frequency Ambient Vibrations,” US Patent No: US 8,796,907.

Students

PhD Students Supervised

Name	Project	Graduation/Status
Abdallahman Herbawi	Stimulating intracortical neural probes	Candidate (Exp. 2015)
James D. McCullagh	Energy harvesting system for bridge SHM	1/2010 – 1/2014

Master Students Supervised

Name	Project	Graduation/Status
Khurram Chohan	Ultra-thin CMOS-based neuralprobes	Candidate (Exp. 6/2015)
Manu Tom	Switching converters for energy harvesting	9/2014 – 4/2015
Adrián Enríquez Aguayo	Power management for low-power applications	6/2013 – 5/2014
Doğa Barutçu	Modeling of magnetic fluid-based harvesters	6/2013 – 1/2014
Abdallahman Herbawi	Integrated rectifiers for energy harvesting	4/2012 – 12/2012
Jialiang Yan	3D packaging for vibration isolation - Toyota	9/2010 – 4/2011
Hang An	Testing of vibration isolation - Toyota	9/2010 – 4/2011

Bachelor Students and Laboratory Assistants Supervised

Name	Project	Graduation/Status
Ali Riza Durmaz	On-chip integration of passives	7/2015 –
Hamideh Jafarpoor	Process development for electrodeposition of Cu	5/2015 –
Fabio Velarde	IC Characterization	1/2014 – 8/2014
Khurram Chohan	Signal processing for neuroscience	4/2014 – 1/2015
Poulomi Das	Process development for hermetic packaging	10/2012 – 6/2013
Roiy Raz	Multi-axis motion harvester testing	6/2012 – 2/2015
Brennan Crispin	Electromagnetic harvester optimization	6/2009/ – 8/2009

Professional and Honor Societies

- Member, Institute of Electrical and Electronics Engineers (IEEE)
- Member, SPIE
- Invited Member, Eta Kappa Nu Electrical Engineering Honor Society (HKN)

Languages

- Bulgarian – Native
- English – Native
- French – Basic
- German - Basic

Publications

h-index = 9, total citations = 354 (Google Scholar, August 2015)

Books and book chapters

1. M. Maharbiz, R. Borno, M. Lam, and **T. Galchev** (equal contribution by authors), “Chapter 12. Implantable and Non-implantable NanoBiosystems,” in NNIN Nanotechnology Open Source Textbook, K. Najafi, Editor, 2006, http://www.nano.umn.edu/assets/pdf/textbook/ch_12.pdf.

Journal publications

2. A. Herbawi, F. Velarde, O. Paul, and **T. Galchev**, “An efficient self-powered synchronous rectifier suitable for sub-600 mV operation.” (*submitted*)
3. J. McCullagh, **T. Galchev**, R. L. Peterson, R. Gordenker, Y. Zhang, J. Lynch, and K. Najafi, “Long-term testing of a vibration harvesting system for the structural health monitoring of bridges,” in *Sensors & Actuators A: Physical*, vol. 217, p. 139-150, 2014.
4. **T. Galchev**, E. Aktakka, and K. Najafi, “A piezoelectric frequency increased generator for harvesting low-frequency vibrations,” in *IEEE/ASME Journal of Microelectromechanical Systems*, vol. 21, p. 1311-1320, 2012.
5. **T. Galchev**, J. McCullagh, R. Peterson, and K. Najafi, “Harvesting traffic-induced vibrations for structural health monitoring of bridges,” in *IOP Journal of Micromechanics and Microengineering*, vol. 21, p. 104005, 2011
6. **T. Galchev**, H. Kim, and K. Najafi, “Micro power generator for harvesting low-frequency and non-periodic vibrations,” in *IEEE/ASME Journal of Microelectromechanical Systems*, vol. 20, p. 852-866, 2011
7. **T. Galchev**, W.C. Welch III, and K. Najafi, “A new low temperature high aspect-ratio MEMS process using plasma activated wafer bonding,” in *IOP Journal of Micromechanics and Microengineering*, vol. 21, p. 045020, 2011

Refereed conference publications with proceedings

8. M. Tom, O. Paul, and **T. Galchev**, “A fully autonomous power management interface for frequency up-converting harvesters using load decoupling and inductor sharing.” (*Accepted to PowerMEMS 2015*)
9. F. Pothof, **T. Galchev**, M. Patel, A. Herbawi, O. Paul, and P. Ruther, “Heterogeneous integration of analog CMOS chips on flexible substrates for high resolution deep brain epilepsy diagnosis.” (*Accepted to Eurosensors 2015*)
10. A. Herbawi, B. Mildenerger, F. Larramendy, T. Holzhammer, **T. Galchev**, O. Paul, and P. Ruther, “CMOS-based high-density neural probes with improved scheme for addressing recording and stimulation channels.” (*Accepted to Eurosensors 2015*)
11. F. Pothof, **T. Galchev**, M. Patel, A. Herbawi, O. Paul, and P. Ruther, “128-Channel deep brain recording probe with heterogeneously integrated analog CMOS readout for focal epilepsy localization,” in *Proceedings of IEEE 18th International Conference on Solid-State Sensors and Actuators (IEEE TRANSDUCERS)*, Anchorage, Alaska, pp. 1711-14, June 2015. (*Acceptance rate: 46%*)

12. A. Herbawi, **T. Galchev**, F. Larramendy, T. Holzhammer, O. Paul, and P. Ruther, "CMOS-based neural probe with enhanced electronic depth control," in *Proceedings of IEEE 18th International Conference on Solid-State Sensors and Actuators (IEEE TRANSDUCERS)*, Anchorage, Alaska, pp. 1723-26, June 2015. (*Acceptance rate: 46%*)
13. A. E. Aguayo, O. Paul, and **T. Galchev**, "Integrated synchronous electric charge extraction system for piezoelectric energy harvesters," in *Proceedings of IEEE International Symposium on Circuits and Systems (ISCAS)*, p. 1090-93, May 2015. (*Oral presentation; Oral acceptance rate: ~30%*)
14. **T. Galchev**, D. Barutçu, and O. Paul, "A gap-varying electrostatic transducer utilizing ferrofluid-based actuation for motion harvesting," in *Proceedings of IEEE International Conference on Micro Electro Mechanical Systems (IEEE MEMS)*, San Francisco, USA, p. 350-353, January 2014. (*Acceptance rate: 36%*)
15. A. S. Herbawi, O. Paul, and **T. Galchev**, "An ultra-low-power active AC-DC CMOS converter for sub-1V integrated energy harvesting applications" in *Proceedings of IEEE Sensors Conference*, Baltimore, USA, p. 1912-1915, November 2013. (*Oral presentation; Acceptance rate for oral: 26%; Overall: 54%*) (**Best Student Paper Award "Circuits" Track**)
16. **T. Galchev**, R. Raz, and O. Paul, "An electrostatic springless inertial harvester for converting multi-dimensional low-frequency motion," in *Proceedings of IEEE International Conference on Micro Electro Mechanical Systems (IEEE MEMS)*, Taipei, Taiwan, p. 102-105, January 2013. (*Oral presentation; Acceptance rate for oral: 8.5%; Overall: 40%*) (**Top 10 Outstanding Oral Papers**)
17. **T. Galchev**, R. Raz, and O. Paul, "A new multi-dimensional low-frequency springless proximity inertial harvester for converting human and environmental motion," in *Proceedings of PowerMEMS 2012 Workshop*, Atlanta, USA, p. 117-120, December 2012. (*Oral presentation; Acceptance rate for oral: 32%; Overall: 78%*)
18. J. McCullagh, R. L. Peterson, **T. Galchev**, R. Gordenker, Y. Zhang, J. Lynch, and K. Najafi, "Short-term and long-term testing of a vibration harvesting system for bridge health monitoring," in *Proceedings of PowerMEMS 2012 Workshop*, Atlanta, USA, p. 109-112, December 2012. (*Oral presentation; Acceptance rate for oral: 32%; Overall: 78%*) (**Best Student Paper Award**)
19. K. Najafi, **T. Galchev**, E. Aktakka, R.L. Peterson, and J. McCullagh, "Microsystems for energy harvesting," in *Proceedings of IEEE International Conference on Solid-State Sensors and Actuators (IEEE TRANSDUCERS)*, Beijing, China, p. 1845-48, June 2011. (*invited*)
20. **T. Galchev**, J. McCullagh, R.L. Peterson, and K. Najafi, "Harvesting traffic induced bridge vibrations," in *Proceedings of IEEE International Conference on Solid-State Sensors and Actuators (IEEE TRANSDUCERS)*, Beijing, China, pp. 1661-1664, June 2011. (*Acceptance rate: 45%*)
21. **T. Galchev**, J. McCullagh, R.L. Peterson, K. Najafi, A. Mortazawi, "Energy harvesting of radio frequency and vibration energy to enable wireless sensor monitoring of civil infrastructure," in *Proc. SPIE Smart Structures/NDE*, San Diego, CA, v 7983, p 798314, March 2011. (*Oral presentation*)
22. **T. Galchev**, J. McCullagh, R.L. Peterson, and K. Najafi, "A vibration harvesting system for bridge health monitoring applications," in *Proceedings of PowerMEMS 2010 Workshop*, Leuven, Belgium, pp. 179-182, December 2010. (*Oral presentation; Acceptance rate for oral: 35%*)
23. M. Kurata, J.P. Lynch, **T. Galchev**, M.P. Flynn, P. Hipley, V. Jacob, G. van der Linden, A. Mortazawi, K. Najafi, R.L. Peterson, L.-H. Sheng, D. Sylvester, E. Thometz, "Two-tiered self-powered wireless monitoring system architecture for bridge health management," in *Proc. of the SPIE Smart Structures and Materials*, San Diego, CA, v 7649, p 76490K (12 pp.), March 2010. (*Oral presentation*)
24. **T. Galchev**, E. Aktakka, H. Kim, and K. Najafi, "A piezoelectric frequency-increased power generator for scavenging low-frequency ambient vibration," in *Proceedings of IEEE International Conference on Micro Electro Mechanical Systems (IEEE MEMS)*, Hong Kong, China, pp. 1203-6, January 2010. (*Acceptance rate: 34%*)

25. **T. Galchev**, H. Kim, and K. Najafi, "A parametric frequency increased power generator for scavenging low-frequency ambient vibrations," in *Proceedings of Eurosensors XXIII*, Lausanne, CH, pp. 1439-1442, September 2009. (*Oral presentation*)
26. **T. Galchev**, H. Kim, and K. Najafi, "Non-resonant bi-stable frequency-increased power generator for low-frequency ambient vibration," in *Proceedings of IEEE 15th International Conference on Solid-State Sensors and Actuators (IEEE TRANSDUCERS)*, Denver, Colorado, pp. 632-5, June 2009. (*Oral presentation; Acceptance rate for oral: 17%*)
27. E. Romero, **T. Galchev**, E. Aktakka, N. Ghafouri, M. Neuman, R. Warrington, H. Kim, and K. Najafi, "Micro energy harvesters," in *Proceedings of 13th International Commercialization of Micro and Nano Systems Conference*, Puerto Vallarta, Mexico, September 2008. (*Oral presentation*) (**Best Paper Award**)
28. **T. Galchev**, W. C. Welch III, and K. Najafi, "Low-temperature MEMS process using plasma activated Silicon-On-Silicon (SOS) bonding," in *Proceedings of IEEE International Conference on Micro Electro Mechanical Systems (IEEE MEMS)*, Kobe, Japan, pp. 309-312, January 2007. (*Acceptance rate: 37%*)
29. **T. Galchev**, W. C. Welch III, and K. Najafi, " Silicon-On-Silicon (SOS): A new CMOS compatible low-temperature MEMS process using plasma activated fusion bonding," in *Proceedings of Solid State Sensor, Actuator and Microsystems Workshop (Hilton Head)*, Hilton Head, SC, pp. 100-102, June 2006. (*Oral presentation; Acceptance rate for late-news oral: 10%*)

Refereed conference publications without proceedings

30. O. Paul, **T. Galchev**, A. Herbawi, F. Larramendy, and P. Ruther, "Active Neural Probes in CMOS Technology with Dense Electrode Arrangement for High-resolution Intracerebral Recording," in *48th Annual Conference of the German Society of Biomedical Engineering*, Hannover, 2014.
31. **T. Galchev**, J. McCullagh, R.L. Peterson, and K. Najafi, "Energy harvesting from low frequency and arbitrary vibrations," in *High Efficiency Energy Conversion, Energy Management, and Low Power Systems for Aerospace/Military Electronics Workshop*, Redstone Arsenal, AL, September 2010. (*Oral presentation*)