

Patrick P. Mercier

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Professional Highlights

- Currently leading a ~20-person group undertaking high-impact research spanning multiple domains, from near-zero-power integrated circuits, power management, energy harvesting, neural interfaces, wearable physiochemical sensors, RFICs and RF systems, and beyond
- Over 220 peer-reviewed publications, including 30 *ISSCC* papers, 37 *JSSC* papers, and several papers in high-impact journals such as *Science*, *Nature Biotechnology*, *Nature Biomedical Engineering*, *Nature Electronics*, *Nature Communications*, *Advanced Science*, *Energy and Environmental Science*, and more
- Recognized as one of the top contributors of all time at the 2023 *IEEE International Solid-State Circuits Conference (ISSCC)*
- Co-founder and co-director of the successfully industry-supported UCSD Center for Wearable Sensors
- Site Director of the successfully industry/NSF-supported IUCRC Power Management Integration Center, partnered with Dartmouth College
- Multiple young investigator awards: DARPA YFA, NSF CAREER, Beckman YIA
- ISSCC Jack Kilby Award for Outstanding Student Paper
- Over \$40MM in research fundraising to date
- UCSD-wide Academic Senate Teaching Award, and two ECE department teaching awards
- IEEE Fellow, Class of 2025
- ISSCC Executive Committee member; former ISSCC, VLSI, and CICC TPC member
- Startup co-founder (Traq), board member (QuantalRF), and scientific advisory board member (Nanovision and NeuroVigil)
- 24 issued US patents

Education

Ph.D. **Massachusetts Institute of Technology**, Electrical Engineering, June 2012
Thesis title: *Communication and Power Delivery Architectures for Personal Medical Devices* (GPA: 5.0/5.0)
Advisor: Anantha P. Chandrakasan

- S.M. **Massachusetts Institute of Technology**, Electrical Engineering, June 2008
Thesis title: *An All-Digital Transmitter for Pulsed Ultra-Wideband Communication* (GPA: 5.0/5.0)
Advisor: Anantha P. Chandrakasan
- B.Sc. **University of Alberta**, Electrical and Computer Engineering, May 2006
GPA: 4.0/4.0

Related Experience

University of California, San Diego

Vice Chair, Electrical and Computer Engineering (2024-present)
Professor, Electrical and Computer Engineering (2023-present)
Site Director, Power Management Integration Center (2021-present)
Associate Professor, Electrical and Computer Engineering (2018-2023)
Co-Founder/Co-Director, Center for Wearable Sensors (2014-present)
Assistant Professor, Electrical and Computer Engineering (2012-2018)

Expert Witness

Providing expert technical advice, reports, and depositions on a variety of patent litigation cases (2020-present)

NeuroVigil

Scientific Advisory Board Member (2020-present)

Nanovision

Scientific Advisory Board Member (2019-present)

Quantal RF

Board Member (2018-2024)

Traq / Mouthsense Inc.

Co-Founder/Scientific Advisor (2016-present)

Mercier Engineering

Owner, providing engineering and technical expertise to technology companies. (2013-present)

Massachusetts Institute of Technology, Microsystems Technology Laboratory, *Research Assistant* (2006-2012)

Intel Corporation, Circuits Research Lab, *Graduate Technical Intern* (2008)

Selected Honors and Awards

- **IEEE Fellow** – awarded to less than 0.1% of voting members in the IEEE Solid-State Circuits Society – Class of 2025
- **Teacher of the Year Award** – Jacobs School of Engineering at UC San Diego Annual Best Teacher Award Selected by Ballot of the Students – 2023

- **IEEE International Solid-State Circuits Conference (ISSCC) Author-Recognition Award** – Awarded to authors who have contributed more than 20 papers to ISSCC – 2023
- **San Diego County Engineering Council Outstanding Engineer Award** – Awarded annually to a single local engineer who has made significant technical contributions to their society – 2020
- **National Academy of Engineering Frontiers of Engineering Speaker** – A competitive invitation-only event for those who have demonstrated accomplishment in engineering research and technical work with recognizable contributions to advancing the frontiers of engineering – 2019
- **IEEE Solid-State Circuits Society Distinguished Lecturer** – Nominated to deliver invited lectures at local chapters and regional meetings across the world for a two-year term – 2019
- **NSF CAREER Award** – The National Science Foundation’s most prestigious awards in support of early-career faculty – 2018
- **Biocom Catalyst Award** – Awarded to ten academics, entrepreneurs, investors, corporate leaders, and business advisers under 40 years old who are igniting innovation and growth in the San Diego and Los Angeles life sciences industry – 2017
- **IEEE Senior Member** – Elected for showing significant performance over a 10+ year career – 2017
- **Moore Inventor Fellow Finalist** – Selected as a top-10 fellow amongst >200 other applicants at top US universities; received \$25k award – 2017
- **UCSD Academic Senate Distinguished Teaching Award** – Awarded yearly to five distinguished teachers across all departments at UCSD (totaling ~2200 senate members – i.e., the top 0.2% of teachers). First winner in the ECE department since Jack Wolf in 1999. Received 2016
- **DARPA Young Faculty Award** – Awarded to young faculty members who propose high-impact, high-risk research programs – 2015
- **Beckman Young Investigator Award** – Awarded to eight junior faculty members across the US for innovating research within the chemical and biological sciences – 2015
- **Hellman Fellowship Award** – Awarded to junior faculty members who show capacity for great distinction in their research and creative activities – 2014
- **Graduate Teaching Award** – Awarded annually to one (of ~50) faculty in the UCSD ECE department for outstanding teaching and service – 2013
- **Jack Kilby Award** – One awarded per year for outstanding student paper at the *International Solid-State Circuits Conference (ISSCC)* – received 2010
- **Intel Foundation Ph.D. Fellowship** – awarded to 26 applicants across the US – 2009
- **Post Graduate Scholarship** – Natural Sciences and Engineering Council of Canada (NSERC) – 2007, 2009
- **Best Presentation Award**, Microsystems Technology Lab Annual Research Conference – 2008, 2010
- **Julie Payette Postgraduate Research Fellowship** – Awarded to the top 24 Master’s NSERC applicants in Canada – 2006
- **APEGGA Medal** – Highest undergraduate GPA in Electrical Engineering – 2006
- **Atco Electric Centennial Award** – March 2005
- **Schlumberger Scholarship** in Electrical Engineering – 2004, 2005

Other Awards and Recognitions

- **IEEE Custom Integrated Circuits Conference (CICC) 2025** – Best Paper Award Finalist
- **IEEE International Solid-State Circuits Conference (ISSCC) Student Research Preview Poster Award** – 2024
- **IEEE Solid-State Circuits Society (SSCS) Outstanding Reviewer Reward** – 2024.
- **IEEE ISCAS Women in Circuits and Systems (WiCAS)** – Runner Up Paper Award – 2023.
- **IEEE International Symposium on Circuits and Systems (ISCAS)** – Best Runner Up Paper – 2023.
- **Qualcomm Innovation Fellowship (QIF) 2023** – Winner
- **IEEE Applied Power Electronics Conference (APEC)** – Outstanding Presentation Award 2023 – “A Series/Parallel Magnetic-Less Step-Down Converter Based on Piezoelectric Resonators”
- **IEEE Brain Technical Community and IEEE Solid-State Circuits Society** – Brain-Related Best Paper Award 2021 – “An Optically-Addressed Nanowire-Based Retinal Prosthesis with 73% RF-to-Stimulation Power Efficiency and 20nC-to-3°C Wireless Charge Telemetry” presented at ISSCC 2021.
- **IEEE Symposium on Very Large Scale Integration (VLSI Symposium) 2020** – Best Student Paper Award Nominee – “A -105dB THD 87dB-SNDR VCO-based Sensor Front-end Enabled by Background-Calibrated Differential Pulse Code Modulation”
- **IEEE Symposium on Very Large Scale Integration (VLSI Symposium) 2020** – Best Student Paper Award Nominee – “A 4.4μW -92/-90.3dBm Sensitivity Dual-mode BLE/Wi-Fi Wake-up Receiver”
- **Qualcomm Innovation Fellowship (QIF) 2020** – Winner
- **IEEE EMBS Workshop on Brain, Mind and Body – Cognitive Neuroengineering for Health and Wellness 2019** – Third place poster award
- **IEEE Custom Integrated Circuits Conference (CICC) 2019** – Outstanding Student Paper Award Nominee
- **IEEE Custom Integrated Circuits Conference (CICC) 2018** – Outstanding Student Paper Award Nominee
- **IEEE Custom Integrated Circuits Conference (CICC) 2015** – Outstanding Student Paper Award Nominee
- **Qualcomm Innovation Fellowship (QIF) 2014** – Finalist

List of Publications

BOOKS

- [1] S. Ha, C. Kim, P.P. Mercier, G.C. Cauwenberghs, **High-Density Integrated Electrocortical Neural Interfaces**, Elsevier Academic Press, 2019, 187 pages.
- [2] M.M. Hella and P.P. Mercier (eds), **Power Management Integrated Circuits**, CRC Press, 2016, 329 pages.
- [3] P.P. Mercier and A.P. Chandrakasan (eds), **Ultra-low-power Short-Range Radios**, Springer, 2015, 394 pages.

BOOK CHAPTERS

- [1] F. Laiwalla, V.W. Leung, J. Lee, P. Mercier, P. Asbeck, R. Rao, L. Larson, A. Nurmikko, “Next Generation Microscale Wireless Implant System for High-Density, Multi-areal, Closed-Loop Brain Computer Interfaces,” in **Brain-Computer Interface Research**, C. Guger et al. (eds.), Springer Nature Switzerland, 2021.
- [2] S. Ha, C. Kim, H. Wang, Y.M. Chi, P.P. Mercier, G. Cauwenberghs, “Low-power integrated circuits for wearable electrophysiology,” in **Wearable Sensors – Fundamentals, Implementation and Applications 2nd Edition**, E. Sazonov, Ed., Academic Press, 2021.
- [3] L.G. Salem and P.P. Mercier, “Recursive Switched-Capacitor DC-DC Converters,” in **Power Management Integrated Circuits**, M.M. Hella and P.P. Mercier, Eds., CRC Press, 2016.
- [4] D. Lee and P.P. Mercier, “Introduction to Ultra Low Power Transceiver Design,” in **Ultra-low-power Short-Range Radios**, P.P. Mercier and A.P. Chandrakasan, Eds., Cham, Switzerland: Springer, 2015.
- [5] P.M. Nadeau, A. Paidimarri, P.P. Mercier, and A.P. Chandrakasan, “Architectures for Ultra-Low-Power Multi-Channel Resonator-Based Wireless Transceivers,” in **Ultra-low-power Short-Range Radios**, P.P. Mercier and A.P. Chandrakasan, Eds., Cham, Switzerland: Springer, 2015.
- [6] P.P. Mercier, D.C. Daly, F.S. Lee, D.D. Wentzloff, and A.P. Chandrakasan, “Pulsed Ultra-Wideband Transceivers,” in **Ultra-low-power Short-Range Radios**, P.P. Mercier and A.P. Chandrakasan, Eds., Cham, Switzerland: Springer, 2015.
- [7] P.P. Mercier and A.P. Chandrakasan, “Near-Field Wireless Power Transfer,” in **Ultra-low-power Short-Range Radios**, P.P. Mercier and A.P. Chandrakasan, Eds., Cham, Switzerland: Springer, 2015.

JOURNAL PAPERS

- [1] N.S.K. Fathy, R. Vatsyayan, A.M. Bourhis, S.A. Dayeh, P.P. Mercier, “A TDMA Neural Recording SoC With IIR-RLS Adaptive Filters for 83.4 dB Artifact Suppression Across 256 Channels,” *IEEE Journal of Solid-State Circuits*, 2025.
- [2] D. Valencia, P.P. Mercier, A. Alimohammad, “An Efficient Brain-Switch for Asynchronous Brain-Computer Interfaces,” *IEEE Transactions on Biomedical Circuits and Systems*, vol. 19, no. 1, pp. 130-141, Feb. 2025.
- [3] W.-C.B. Liu, G. Pillonnet, P.P. Mercier, “An Integrated Dual-Side Series/Parallel Piezoelectric Resonator-Based DC–DC Converter,” *IEEE Journal of Solid-State Circuits*, vol. 59, no. 12, pp. 4162-4174, Dec. 2024.
- [4] H. Lu, P.P. Mercier, “Linear Periodically Time-Variant Digital PLL Phase Noise Modeling Using Conversion Matrices and Uncorrelated Upsampling,” *IEEE Transactions on Circuits and Systems I*, vol. 71, no. 12, pp. 6021-6033, Dec. 2024.
- [5] Y. Xu, A. Uppal, M.S. Lee, K. Mahato, B.L. Wuerstle, M. Lin, O. Djassemi, T. Chen, R. Lin, A. Paul, S. Jain, F. Chapotot, E. Tasali, P. Mercier, S. Xu, J. Wang, G. Cauwenberghs, “Earable Multimodal Sensing and Stimulation: A Prospective Towards Unobtrusive Closed-Loop Biofeedback,” *IEEE Reviews in Biomedical Engineering*, vol. 18, pp. 5-25, Nov. 2024.
- [6] W.-C.B. Liu, P.P. Mercier, “Design and Analysis of a Frontside Series/Parallel Piezoelectric Resonator-Based DC-DC Converter,” *IEEE Transactions on Power Electronics*, vol. 40, no. 1, pp. 1389-1403, Sep. 2024.

- [7] J. Tian, P. Mercier, C. Paolini, "Ultra low-power, wearable, accelerated shallow-learning fall detection for elderly at-risk persons," *Smart Health*, vol. 33, Sep. 2024.
- [8] N.S.K. Fathy, R. Vatsyayan, A.M. Bourhis, S.A. Dayeh, P.P. Mercier, "A 0.00179 mm²/Ch Chopper-Stabilized TDMA Neural Recording System with Dynamic EOVCancellation and Predictive Mixed-Signal Impedance Boosting," *IEEE Transactions on Biomedical Circuits and Systems*, vol. 18, no. 4, pp. 908-922, Aug. 2024.
- [9] H. Lu, A.G. Gadelkarim, J. Huang, P.P. Mercier, "A 0.69-mW Sub-Sampling NB-IoT Receiver Employing a Linearized Q-Boosted LNA," *IEEE Open Journal of the Solid-State Circuits Society*, vol. 4, pp. 57-68, Jun. 2024.
- [10] D. Valencia, P.P. Mercier, A. Alimohammad, "Efficient In Vivo Neural Signal Compression Using an Autoencoder-based Neural Network," *IEEE Transactions on Biomedical Circuits and Systems*, vol 18., no 3, pp. 691-701, Jun. 2024.
- [11] G. Pillonnet, P. Mercier, "Analytical Benchmarking of Direct Hybrid Switched-Capacitor DC-DC Converters," *IEEE Open Journal of Power Electronics*, vol. 5, pp. 664-682, May 2024.
- [12] J. Wu, A. Akinin, J. Somayajulu, M.S. Lee, A. Paul, H. Lu, Y. Park, S.-J. Kim, P.P. Mercier, G. Cauwenberghs, "A Low-Noise Low-Power 0.001Hz-1kHz Neural Recording System-on-Chip with Sample-Level Duty-Cycling," *IEEE Transactions on Biomedical Circuits and Systems*, vol. 18, no. 2, pp. 263-273, Apr. 2024.
- [13] E.H. Shinn, A.S. Garden, S.K. Peterson, D.J. Leupi, M. Chen, R. Blau, L. Becerra, T. Rafeedi, J. Ramirez, D. Rodriguez, F. VanFossen, S. Zehner, P.P. Mercier, J. Wang, K. Hutcheson, E. Hanna, D.J. Lipomi, "Iterative Patient Testing of a Stimuli-Responsive Swallowing Activity Sensor to Promote Extended User Engagement During the First Year After Radiation: Multiphase Remote and In-Person Observational Cohort Study", *JMIR Cancer*, 2024.
- [14] H. Lu, H.R. Kooshkaki, P.P. Mercier, "A Mixer-First Receiver with On-Demand Passive Harmonic Rejection," *IEEE Solid-State Circuits Letters*, vol. 7, pp. 46-49, Jan. 2024.
- [15] S.-H. Kuo, M. Dunna, D. Bharadia, P.P. Mercier, "A WiFi and Bluetooth Low Energy Backscatter Combo Chip with Beam Steering Capabilities," *IEEE Open Journal of the Solid-State Circuits Society*, vol. 3, pp. 239-248, Sep. 2023.
- [16] Y. Xu, E. De la Paz, A. Paul, K. Mahato, J.R. Sempionatto, N. Tostado, M. Lee, G. Hota, M. Lin, A. Uppal, W. Chen, S. Dua, L. Yin, B.L. Wuerstle, S. Deiss, P. Mercier, S. Xu, J. Wang, G. Cauwenberghs, "In-ear integrated sensor array for the continuous monitoring of brain activity and of lactate in sweat," *Nature Biomedical Engineering*, Sep. 2023.
- [17] M. Meng, M. Dunna, S.-K. Kuo, P.-H.P. Wang, D. Bharadia, P.P. Mercier, "A Fully-Reflective WiFi-Compatible Backscatter Communication System with Retro-Reflective MIMO Gain for Improved Range," *IEEE Journal of Solid-State Circuits*, vol. 58, no. 9, pp. 2501-2512, Sep. 2023.
- [18] S.-K. Kuo, M. Dunna, H. Lu, A. Agarwal, D. Bharadia, P.P. Mercier, "LTE-Powered BLE-to-WiFi Backscattering Chip Toward Single-Device Interrogation RFID-Like Systems," *IEEE Solid-State Circuits Letters*, vol. 6, no. 8, pp. 225-228, Aug. 2023.
- [19] W.-C. Liu, C.-H. Cheng, P.P. Mercier, C.C. Mi, "Small Signal Analysis and Design of Constant On-Time Controlled Buck Converters with Duty-Cycle-Independent Quality Factors," *IEEE Transactions on Power Electronics*, vol. 38, no. 7, pp. 8379-8393, Jul. 2023.
- [20] E. Wen, D.F. Sievenpiper, P.P. Mercier, "Analysis of Coil Coupling in the Near-Field Far-Field Hybrid Region," *IEEE Antennas and Wireless Propagation*, vol. 22, no. 7, pp. 1771-1775, Jul. 2023.

- [21] H.A. Zadeh, H.R. Kooshkaki, K.-Y. Lee, P.P. Mercier, "An Adaptive Constant-On-Time-Controlled Hybrid Multilevel DC-DC Converter Operating from Li-ion Battery Voltages with Low Spurious Output," *IEEE Transactions on Power Electronics*, vol. 38, no. 5, pp. 5763-5776, May 2023.
- [22] C.B. Gungor, P.P. Mercier, H. Toreyin, "A 2.2 nW Analog Electrocardiogram Processor based on Stochastic Resonance Achieving a 99.94% QRS Complex Detection Sensitivity," *IEEE Transactions on Biomedical Circuits and Systems*, vol. 17, no. 1, Feb. 2023.
- [23] A. Nikoofard, H. Givehchian, N. Bhaskar, A. Schulman, D. Bharadia, P.P. Mercier, "Protecting Bluetooth User Privacy through Obfuscation of Carrier Frequency Offset," *IEEE Transactions on Circuits and Systems II*, vol. 70, no. 2, pp. 541-545, Feb. 2023.
- [24] D. Valencia, G. Leone, N. Keller, P.P. Mercier, A. Alimohammad, "Power-Efficient In Vivo Brain-Machine Interfaces via Brain-State Estimation," *Journal of Neural Engineering*, 20, 016032, Jan. 2023.
- [25] B. Polat, T. Rafeedi, L. Becerra, A.X. Chen, K. Chiang, V. Kaipu, R. Blau, P.P. Mercier, C.-K. Cheng, D.J. Lipomi, "External Measurement of Swallowed Volume During Exercise Enabled by Stretchable Derivatives of PEDOT:PSS, Graphene, Metallic Nanoparticles, and Machine Learning," *Advanced Sensor Research*, 2200060, Jan. 2023.
- [26] B.H. Lam, H. Lu, A.G. Gadelkarim, N. Fathy, P. Gudem, P.P. Mercier, "A 0.11mW 2.4GHz Receiver Employing a Q-Boosted Impedance Transformer and Regenerative Amplifier Achieving a -101dBm Sensitivity and -28dB SIR," *IEEE Solid-State Circuits Letters*, vol. 6, Jan. 2023.
- [27] H.R. Kooshkaki, P.P. Mercier, "A 36 uW 2.8–3.4 dB Noise Figure Impedance Boosted and Noise Attenuated LNA for NB-IoT," *IEEE Transactions on Circuits and Systems I*, vol. 70, no. 1, pp. 101-113, Jan. 2023.
- [28] E. De La Paz, N.H. Maganti, A. Trifonov, I. Jeerapan, K. Mahato, L. Yin, T. Sonsa-ard, N. Ma, W. Jung, R. Burns, A. Zarrinpar, J. Wang, P.P. Mercier, "A self-powered ingestible wireless biosensing system for real-time in situ monitoring of gastrointestinal tract metabolites," *Nature Communications*, vol. 13, 7405, Dec. 2022.
- [29] P.P. Mercier, B.H. Calhoun, P.-H.P. Wang, A. Dissanayake, L. Zhang, D.A. Hall, S.M. Bowers, "Low-Power RF Wake-Up Receivers: Analysis, Trade-Offs, and Design," *IEEE Open Journal of the Solid-State Circuits Society*, vol. 2, pp. 144-164, 2022.
- [30] D. Valencia, P.P. Mercier, A. Alimohammad, "In Vivo Neural Spike Detection with Adaptive Noise Estimation," *Journal of Neural Engineering*, 19, 046018, Jul. 2022.
- [31] B.H. Lam, P. Gudem, P.P. Mercier, "Analysis and Measurement of Noise Suppression in Nonlinear Regenerative Amplifier," *IEEE Transactions on Circuits and Systems I*, vol. 69, no. 10, pp. 4117-4127, Oct. 2022.
- [32] S. Chamanian, P.P. Mercier, "MIPSIMO: A Multi-Input Piezo-Adaptive Single-Inductor Multi-Output Energy Harvester Achieving using a Shared Inductor with an Integrated Analog Computer Achieving 95% MPPT Efficiency," *IEEE Solid-State Circuits Letters*, vol. 5, pp. 222-225, Sep. 2022.
- [33] A. Nikoofard, P.P. Mercier, "A 900MHz GFSK and 16-FSK TX Achieving up to 63.9% TX Efficiency and 76.2% PA Efficiency via a DC-DC-Powered Class-D VCO and a Class-EE PA," *IEEE Transactions on Circuits and Systems II*, vol. 69, no. 9, pp. 3739-3743, Sep. 2022.
- [34] C.B. Gungor, P.P. Mercier, H. Toreyin, "A Stochastic Resonance Electrocardiogram Enhancement Algorithm for Robust QRS Detection," *IEEE Journal of Biomedical and Health Informatics*, vol. 26, no. 8, pp. 3743-3754, Aug. 2022.

- [35] H. Cui, D. Yao, H. Lu, A. Calderon, Z. Xu, S. Davaria, Z. Wang, P. Mercier, P. Tarazaga, X. Zheng, “Design and printing of proprioceptive three-dimensional architecture robotic metamaterials,” *Science*, 376, 6599, pp. 1272-1272, Jun. 2022.
- [36] F. Tehrani, H. Teymourian, B. Wuerstle, J. Kavner, R. Patel, A. Furnidge, R. Aghavali, H. Hosseini-Toudeshki, C. Brown, F. Zhang, K. Mahato, Z. Li, A. Barfidokht, L. Yin, P. Warren, N. Huang, Z. Patel, P.P. Mercier & J. Wang, “An integrated wearable microneedle array for the continuous monitoring of multiple biomarkers in interstitial fluid,” *Nature Biomedical Engineering*, May 2022.
- [37] M. Meng, H.R. Kooshkaki, X. Wang, S.-H. Kuo, E. Wen, P.P. Mercier, “A GMSK/PAM4 Multi-Channel Magnetic Human Body Communication Transceiver,” *IEEE Solid-State Circuits Letters*, vol. 5, pp. 66-69, Mar. 2022.
- [38] N.S.K. Fathy, J. Huang, P.P. Mercier, “A Digitally Assisted Multiplexed Neural Recording System With Dynamic Electrode Offset Cancellation via an LMS Interference-Canceling Filter,” *IEEE Journal of Solid-State Circuits*, vol. 57, no. 3, pp. 953-964, Mar. 2022.
- [39] E. Wen, D. Sievenpiper, P.P. Mercier, “Channel Characterization of Magnetic Human Body Communication,” *IEEE Transactions on Biomedical Engineering*, vol. 69, no 2, pp. 569-579, Feb. 2022.
- [40] C. Pochet, J. Huang, P. Mercier, D. Hall, “A 174.7-dB FoM, 2nd-order VCO-based ExG-to-Digital Front-End Using a Multi-phase Gated-Inverted Ring Oscillator Quantizer,” *IEEE Transactions on Biomedical Circuits and Systems*, vol. 15, no. 6, pp. 1283-1294, Dec. 2021.
- [41] A. Akinin, J.M. Ford, J. Wu, C. Kim, H.D. Thacker, P.P. Mercier, G. Cauwenberghs, “An Optically Addressed Nanowire-Based Retinal Prosthesis With Wireless Stimulation Waveform Control and Charge Telemetry,” *IEEE Journal of Solid-State Circuits*, vol. 56, no. 11, pp. 3263-3273, Nov. 2021. **(ISSCC Special Issue)**
- [42] J. Huang, P.P. Mercier, “A 178.9-dB FoM 128-dB SFDR VCO-Based AFE for ExG Readouts With a Calibration-Free Differential Pulse Code Modulation Technique,” *IEEE Journal of Solid-State Circuits*, vol. 56, no. 11, pp. 3236-3246, Nov. 2021.
- [43] W.-C. Liu, C.-H. Cheng, C.C. Mi, P.P. Mercier, “A Novel Ultra-Fast Transient Constant On-Time Buck Converter for Multi-Phase Operation,” *IEEE Transactions on Power Electronics*, vol. 36, no. 11, pp. 13096-13106, Nov. 2021.
- [44] B. Polat, L. Becerra, P.-Y. Hsu, V. Kaipu, P. Mercier, C.-K. Cheng, D. Lipomi, “Epidermal Graphene Sensors and Machine Learning for Estimating Swallowed Volume,” *ACS Applied Nano Materials*, Aug. 2021. **(Editors’ Choice highlight)**
- [45] J. Lee, V. Leung, A. Lee, J. Huang, P. Asbeck, P.P. Mercier, S. Shellhammer, L. Larson, F. Laiwalla, A. Nurmikko, “Neural recording and stimulation using wireless networks of microimplants,” *Nature Electronics*, no 4, pp. 604-614, Aug. 2021.
- [46] J. Huang, P.P. Mercier, “A 94.2-dB SNDR 142.6- μ W VCO-based Audio ADC with a Split-ADC Differential Pulse Code Modulation Architecture,” *IEEE Solid-State Circuits Letters*, vol. 4, pp. 121-124, Jun. 2021.
- [47] C. Gungor, P. Mercier, H. Toreyin, “A 1.2nW Analog Electrocardiogram Processor Achieving a 99.63% QRS Complex Detection Sensitivity,” *IEEE Transactions on Biomedical Circuits and Systems*, vol. 15, no. 3, pp. 617-628, Jun. 2021.
- [48] C. Gungor, P.P. Mercier, H. Toreyin, “Investigating well potential parameters on neural spike enhancement in a stochastic-resonance pre-emphasis algorithm,” *Journal of Neural Engineering*, May 2021.

- [49] J. Huang, P.P. Mercier, "A 112-dB SFDR 89-dB SNDR VCO-based Sensor Front-end Enabled by Background-Calibrated Differential Pulse Code Modulation," *IEEE Journal of Solid-State Circuits*, vol. 56, no. 4, pp. 1046-1057, Apr. 2021. **(VLSI Special Issue)**
- [50] P.-H. P. Wang, P.P. Mercier, "A Dual-Mode Wi-Fi/BLE Wake-up Receiver," *IEEE Journal of Solid-State Circuits*, vol. 56, no. 4, pp. 1288-1298, Apr. 2021. **(VLSI Special Issue)**
- [51] A. Nikoofard, H. Abbasi Zadeh, P.P. Mercier, "A 0.6-mW 116-FSK Receiver Achieving a Sensitivity of -103 dBm at 100 kb/s," *IEEE Journal of Solid-State Circuits*, vol. 56, no. 4, pp. 1299-1309, Apr. 2021. **(VLSI Special Issue)**
- [52] P.-H. Wang, P.P. Mercier, "An Interference-Resilient BLE-Compatible Wake-up Receiver Employing Single-Die Multi-Channel FBAR-Based Filtering and a 4-D Wake-Up Signature," *IEEE Journal of Solid-State Circuits*, vol. 56, no. 4, pp. 416-426, Feb. 2021.
- [53] P.-H. Wang, C. Zhang, H. Yang, M. Dunna, D. Bharadia, P.P. Mercier, "A Low-Power Backscatter Modulation System Communicating Across Tens of Meters with Standards-Compliant Wi-Fi Transceivers," *IEEE Journal of Solid-State Circuits*, vol. 55, no. 11, pp. 2959-2969, Nov. 2020. **(ISSCC Special Issue)**
- [54] D.-G. Lee, A. Nikoofard, P.P. Mercier, "A -254.1 dB FoM 2.4 GHz Sub-Sampling PLL with a -76 dBc Reference Spur by Employing a Varactor-Based Cancellation Technique," *IEEE Solid-State Circuits Letters*, vol. 3, pp. 102-105, Jul. 2020.
- [55] D.-G. Lee, P.P. Mercier, "A Sub-mW 2.4-GHz Active-Mixer-Adopted Sub-Sampling PLL Achieving an FoM of -256 dB," *IEEE Journal of Solid-State Circuits*, vol. 55, no. 6, pp. 1542-1552, Jun. 2020.
- [56] H. Jiang, P.-H. Wang, L. Gao, C. Pochet, G.M. Rebeiz, D.A. Hall, P.P. Mercier, "A 22.3-nW, 4.55 cm² Temperature-Robust Wake-Up Receiver Achieving a Sensitivity of -69.5 dBm at 9 GHz," *IEEE Journal of Solid-State Circuits*, vol. 55, no. 6, pp. 1530-1541, Jun. 2020.
- [57] P.P. Mercier, J. Wang, "Why Sweat Will Power Your Next Wearable," *IEEE Spectrum*, Jun. 2020. **(Cover article)**
- [58] A. Abdulslam, P.P. Mercier, "A Symmetric Modified Multilevel Ladder PMIC for Battery-Connected Applications," *IEEE Journal of Solid-State Circuits*, vol. 55, no. 3, pp. 767-780, Mar. 2020. **(CICC Special Issue)**
- [59] X. Wang, P.P. Mercier, "A Dynamically-High-Impedance Charge-Pump-Based LDO with Digital-LDO-Like Properties Achieving a sub-4fs FoM," *IEEE Journal of Solid-State Circuits*, vol. 55, no. 3, pp. 719-730, Mar. 2020 **(CICC Special Issue)**
- [60] H. Teymourian, C. Moonla, F. Tehrani, E. Vargas, A. Barfidokht, R. Aghavali, T. Tangkuaram, P.P. Mercier, E. Dassau, J. Wang, "Microneedle-Based Detection of Ketone Bodies along with Glucose and Lactate: Toward Real-Time Continuous ISF Monitoring of Diabetic Ketosis/Ketoacidosis," *Analytical Chemistry*, Dec. 2019.
- [61] C. Kim, J. Park, S. Ha, A. Akinin, R. Kubendran, P.P. Mercier, G.C. Cauwenberghs, "A 3 mm × 3 mm Fully Integrated Wireless Power Receiver and Neural Interface System-on-Chip" *IEEE Transactions on Biomedical Circuits and Systems*, vol. 13, no. 6, pp. 1736-1746, Dec. 2019.
- [62] J. Warchall, P. Theilmann, Y. Ouyang, H. Garudadri, P. Mercier, "Robust Biopotential Acquisition via a Distributed Multi-Channel FM-ADC," *IEEE Transactions on Biomedical Circuits and Systems*, vol. 13, no. 6, pp. 1229-1242, Dec. 2019. **(ISSCC Special Issue)**
- [63] J. Park, P.P. Mercier, "A sub-10pJ/bit 5Mbps Magnetic Human Body Communication Transceiver," *IEEE Journal of Solid-State Circuits*, vol. 54, no. 11, pp. 3031-3042, Nov. 2019. **(ISSCC Special Issue)**

- [64] A. Abdulslam, P.P. Mercier, "A Passive-Stacked Third-Order Buck Converter with Inherent Input Filtering Achieving 0.7 W/mm^2 Power Density and 94% Peak Efficiency," *IEEE Solid-State Circuits Letters*, 2019. **(ISSCC Special Issue)**
- [65] L. Pisha, J. Warchall, T. Zubatiy, S. Hamilton, C.-H. Lee, G. Chockalingam, P.P. Mercier, R. Gupta, B.D. Rao, H. Garudadri, "A Wearable, Extensible, Open-Source Platform for Hearing Healthcare Research," *IEEE Access*, vol. 7, pp. 162083-162101, Nov. 2019.
- [66] H. Wang, P.P. Mercier, "A 763 pW $230 \text{ pJ/conversion}$ Fully-Integrated CMOS Temperature-to-Digital Converter with $+0.81/-0.75^\circ\text{C}$ Inaccuracy," *IEEE Journal of Solid-State Circuits*, vol. 54, no. 8, pp. 2281-2290, Aug. 2019.
- [67] C.S. Levy, T.W. Kornack, P.P. Mercier, "Bell-Bloom Magnetometer Linearization by Intensity Modulation Cancellation," *IEEE Transactions on Instrumentation and Measurements*, vol. 69, no. 3, pp. 883-892, Mar. 2019.
- [68] S.S. Amin, P.P. Mercier, "A Fully-Integrated Li-ion-Compatible Hybrid 4-Level DC-DC Converter in 28nm FDSOI," *IEEE Journal of Solid-State Circuits*, vol. 54, no. 3, pp. 720-732, Mar. 2019. **(CICC Special Issue)**
- [69] S. Ha, C. Kim, J. Park, G. Cauwenberghs, P. Mercier, "A Fully Integrated RF-powered Energy-Replenishing Current-Controlled Stimulator," *IEEE Transactions on Biomedical Circuits and Systems*, vol. 13, no. 1, pp. 191-202, Feb. 2019.
- [70] S.S. Amin, P.P. Mercier, "MISIMO: A Multi-Input Single-Inductor Multi-Output Energy Harvesting Platform in 28nm FDSOI for Powering Net-Zero-Energy Systems," *IEEE Journal of Solid-State Circuits*, vol. 53, no. 12, pp. 3407-3419, Dec. 2018. **(ISSCC Special Issue)**
- [71] A. Fazli Yeknami, X. Wang, I. Jeerapan, S. Imani, A. Nikoofard, J. Wang, P.P. Mercier, "A 0.3V Biofuel-Cell-Powered Glucose/Lactate Biosensing System," *IEEE Journal of Solid-State Circuits*, vol. 53, no. 11, pp. 3126-3139, Nov. 2018. **(ISSCC Special Issue)**
- [72] T. Kan, F. Lu, T.-D. Nguyen, P.P. Mercier, C. Mi, "Integrated Coil Design for EV Wireless Charging Systems Using LCC Compensation Topology," *IEEE Transactions on Power Electronics*, vol. 33, no. 11, pp. 9231-9241, Nov. 2018.
- [73] J. Warchall, S. Kaleru, N. Jayapalan, B. Nayak, H. Garudadri, P.P. Mercier, "A $678\mu\text{W}$ Frequency-Modulation Based ADC with 104dB Dynamic Range in 44kHz Bandwidth," *IEEE Transactions on Circuits and Systems II*, vol. 65, no. 10, pp. 1370-1374, Oct. 2018.
- [74] H. Jiang, P.-H. Wang, P.P. Mercier, D.A. Hall, " 0.4 V 0.93 nW/kHz Relaxation Oscillator Exploiting Comparator Temperature-Dependent Delay to Achieve $94 \text{ ppm}/^\circ\text{C}$ Stability," *IEEE Journal of Solid-State Circuits*, vol. 53, no. 10, pp. 3004-3011, Oct. 2018.
- [75] J. Kim, J.R. Sempionatto, S. Imani, M.C. Hartel, A. Barfidokht, G. Tang, A.S. Campbell, P.P. Mercier, J. Wang, "Simultaneous Monitoring of Interstitial Fluid and Sweat using a Single Flexible Wearable Iontophoretic-Biosensor Platform," *Advanced Science*, 5, 1800880, Aug. 2018.
- [76] T. Kan, Y. Zhang, Z. Yan, P.P. Mercier, C.C. Mi, "A Rotation-Resilient Wireless Charging System for Lightweight Autonomous Underwater Vehicles," *IEEE Transactions on Vehicular Technology*, vol. 67, no. 8, pp. 6935-6942, Aug. 2018.
- [77] T. Kan, R. Mai, P.P. Mercier, C. Mi, "Design and Analysis of a Three-Phase Wireless Charging System for Lightweight Autonomous Underwater Vehicles," *IEEE Transactions on Power Electronics*, vol. 33, no. 8, pp. 6622-6632, Aug. 2018.
- [78] A. Abdulslam, B. Mohammad, M. Ismail, P.P. Mercier, Y. Ismail, "A 93% Peak Efficiency Fully-Integrated Multilevel Multistate Hybrid DC-DC Converter", *IEEE Transactions on Circuits and Systems I*, vol. 65, no. 8, pp. 2617-2630, Aug. 2018.

- [79] J. Huang, F. Laiwalla, J. Lee, L. Cui, V. Leung, A. Nurmikko, P.P. Mercier, “A 0.01mm² Mostly Digital Capacitor-Less AFE for Distributed Autonomous Neural Sensor Nodes,” *IEEE Solid-State Circuits Letters*, vol. 1, no. 7, pp. 162-165, Jul 2018.
- [80] H. Wang, X. Wang, J. Park, A. Barfidokht, J. Wang, P.P. Mercier, “A Battery-Powered Wireless Ion Sensing System Consuming 5.5 nW of Average Power,” *IEEE Journal of Solid-State Circuits*, vol. 53, no. 7, pp. 2043-2053, Jul. 2018. (**ESSCIRC Special Issue**)
- [81] P.-H. Wang, H. Jiang, L. Gao, P. Sen, Y.-H. Kim, G.M. Rebeiz, P.P. Mercier, D.A. Hall, “A Near-Zero-Power Wake-up Receiver Achieving -69 dBm Sensitivity,” *IEEE Journal of Solid-State Circuits*, vol. 53, no. 6, pp. 1640-1652, Jun. 2018.
- [82] H. Wang, P.P. Mercier, “A Current-Mode Capacitively-Coupled Chopper Instrumentation Amplifier for Biopotential Recording With Resistive or Capacitive Electrodes,” *IEEE Transactions on Circuits and Systems II*, vol. 65, no. 6, pp. 699-703, Jun. 2018.
- [83] J. Ramírez, D. Rodriguez, F. Qiao, J. Warchall, J. Rye, E. Aklile, A.S.-C. Chiang, B.C. Marin, P.P. Mercier, C.K. Cheng, K.A. Hutcheson, E.H. Shinn, D.J. Lipomi, “Metallic Nanoislands on Graphene for Monitoring Swallowing Activity in Head and Neck Cancer Patients,” *ACS Nano*, vol. 12, no. 6, pp. 5913-5922, Jun. 2018.
- [84] H. Wang, P.P. Mercier, “A 3.4 pW 0.4 V 469.3 ppm/°C Five-Transistor Current Reference Generator,” in *IEEE Solid-State Circuits Letters*, vol. 1, no. 5, pp. 122-125, May 2018.
- [85] P.-H. Wang, H. Jiang, L. Gao, P. Sen, Y.-H. Kim, G.M. Rebeiz, P.P. Mercier, D.A. Hall, “A 6.1 nW Wake-Up Receiver Achieving -80.5 dBm Sensitivity via a Passive Pseudo-Balun Envelope Detector,” in *IEEE Solid-State Circuits Letters*, vol. 1, no. 5, pp. 134-137, May 2018.
- [86] A.J. Bandodkar, S. Imani, R. Nunez-Flores, R. Kumar, C. Wang, A.M.V. Mohan, J. Wang, P.P. Mercier, “Re-usable electrochemical glucose sensors integrated into a smartphone platform,” *Biosensors and Bioelectronics*, vol. 101, pp. 181-187, Mar. 2018.
- [87] L.G. Salem, J. Warchall, P.P. Mercier, “A Successive-Approximation Recursive Digital Low-Dropout Voltage Regulator with PD Compensation and Sub-LSB Duty Control,” *IEEE Journal of Solid-State Circuits*, vol. 53, no. 1, pp. 35-49, Jan. 2017. (**ISSCC Special Issue**)
- [88] C. Kim, S. Ha, J. Park, A. Akinin, P.P. Mercier, G. Cauwenberghs, “A 144 MHz Fully Integrated Resonant Regulating Rectifier with Hybrid Pulse Modulation for mm-sized Implants,” *IEEE Journal of Solid-State Circuits*, vol. 52, no. 11, pp. 3043-3055, Nov. 2017.
- [89] D.-G. Lee, P.P. Mercier, “Noise Analysis of Phase-Demodulating Receivers Employing Super-Regenerative Amplification,” *IEEE Transactions on Microwave Theory and Techniques*, vol. 65, no. 9, pp. 3299-3311, Sep. 2017.
- [90] X. Wang, P.-H. Wang, Y. Cao, P.P. Mercier, “A 0.6V 75nW All-CMOS Temperature Sensor with 1.67m°C/mV Supply Sensitivity,” *IEEE Transactions on Circuits and Systems I: Regular Papers*, vol. 64, no. 9, pp. 2274-2283, Sep. 2017.
- [91] L.G. Salem, J.F. Buckwalter, P.P. Mercier, “A Recursive Switched-Capacitor House-of-Cards Power Amplifier,” *IEEE Journal of Solid-State Circuits (JSSC)*, vol. 52, no. 7, pp. 1719-1738, Jul. 2017. (**ESSCIRC Special Issue**)
- [92] T.F. O’Connor, M.E. Fach, R. Miller, S.E. Root, P.P. Mercier, D.J Lipomi, “The Language of Glove: Wireless gesture decoder with low-power and stretchable hybrid electronics,” *PLoS ONE*, vol. 12, no. 7, e0179766, Jul. 2017.
- [93] H. Wang, P.P. Mercier, “Near-Zero-Power Temperature Sensing via Tunneling Currents Through Complementary Metal-Oxide-Semiconductor Transistors,” *Scientific Reports*, vol. 7, no. 4427, Jun. 2017. (*highlighted in many press articles such as **Yahoo News**, **The Engineer**, and others, putting it in the top 5% of all research outputs as scored by Altmetric*)

- [94] A.J. Bandodkar, J.-M. You, N.-H. Kim, Y. Gu, R. Kumar, A. M.V. Mohan, J. Kurniawan, S. Imani, T. Nakagawa, B. Parish, M. Parthasarathy, P.P. Mercier, S. Xu, J. Wang, “Soft, stretchable, high power density electronic skin-based biofuel cells for scavenging energy from human sweat,” *Energy and Environmental Science*, vol. 10, pp. 1581-1589, Jun. 2017. (highlighted in many press articles such as **Yahoo News, New Scientist, and others**)
- [95] J. Sempionatto, T.T. Nakagawa, A. Pavinatto, S.T. Menash, S. Imani, P. Mercier, J. Wang, “Eyeglasses-based Wireless Electrolyte and Metabolite Sensing Platform,” *Lab on a Chip*, vol. 17, pp. 1834-1842, Apr. 2017.
- [96] J. Park, H. Garudadri, P.P. Mercier, “Channel Modeling of Miniaturized Battery-Powered Capacitive Human Body Communication Systems,” *IEEE Transactions on Biomedical Engineering*, vol. 64, no. 2, pp. 452-462, Feb. 2017.
- [97] S. Ha, A. Akinin, J. Park, C. Kim, H. Wang, C. Maier, P.P. Mercier, G.C. Cauwenberghs, “Silicon Integrated High-Density Electrocortical Interfaces,” *Proceedings of the IEEE*, vol. 105, no. 1, pp. 11-33, Jan. 2017.
- [98] L.G. Salem, J.G. Louie, P.P. Mercier, “Flying-Domain DC-DC Conversion,” *IEEE Journal of Solid-State Circuits (JSSC)*, vol. 51, no. 12, pp. 2830-2842, Dec. 2016. (**ISSCC Special Issue**)
- [99] J. Kim, I. Jeerapan, S. Imani, T.N. Cho, A. Bandodkar, S. Cinti, P.P. Mercier, J. Wang, “Non-Invasive Alcohol Monitoring using a Wearable Tattoo-based Iontophoretic Biosensing System,” *ACS Sensors*, vol. 1, no. 8, pp. 1011-1019, Aug. 2016. (highlighted in many press articles, live radio, and live TV ranging from the **BBC, IEEE Spectrum, PC Magazine, Yahoo News, CTV Canada, etc.**)
- [100] D. Ahn and P.P. Mercier, “Wireless Power Transfer with Concurrent 200 kHz and 6.78 MHz Operation in a Single Transmitter Device,” *IEEE Transactions on Power Electronics*, vol. 31, no. 7, pp 5018-5029, Jul. 2016. (highlighted in many press articles from **EE Times, phys.org, Science Daily, RF Globalnet, etc.**)
- [101] H. Wang, P.P. Mercier, “A Reference-Free Capacitive-Discharging Oscillator Architecture Consuming 44.4pW/75.6nW at 2.8Hz/6.4kHz,” *IEEE Journal of Solid-State Circuits (JSSC)*, vol. 51, no. 6, pp 1423-1435, Jun. 2016.
- [102] S. Imani, A.J. Bandodkar, A.M.V. Mohan, R. Kumar, S. Yu, J. Wang, P.P. Mercier, “A Wearable Chemical-Electrophysiological Hybrid Biosensing System for Real-Time Health and Fitness Monitoring,” *Nature Communications*, vol. 7, May 2016. (highlighted in over 1000 press articles from **Popular Science, NBC News, Gizmodo, CNET, etc.**, putting it in the top 5% of all research outputs scored by **Altmetric**)
- [103] R. Cánovas, M. Parrilla, P. Mercier, F.J. Andrade, J. Wang, “Balloon-Embedded Sensors Withstanding Extreme Multiaxial Stretching and Global Bending Mechanical Stress: Towards Environmental and Security Monitoring,” *Advanced Materials Technology*, May, 2016.
- [104] J. Kim, S. Imani, W. R. de Araujo, J. Warchall, G. Valdés-Ramírez, T. R.L.C. Paixão, P. P. Mercier, J. Wang, “Wearable salivary Uric acid Mouthguard biosensor with integrated Wireless Electronics,” *Biosensors & Bioelectronics*, vol. 74, pp 1061-1068, Dec. 2015. (highlighted in many press articles from the **MIT Technology Review, EE Times, KPBS, Science World Report, Inside Science TV, etc.**)
- [105] D. Lee, L.G. Salem, and P.P. Mercier, “Narrowband Transmitters: Ultralow-Power Design,” *IEEE Microwave Magazine*, vol. 16, no. 3, pp 130-142, Apr. 2015.
- [106] L.G. Salem and P.P. Mercier, “A Recursive Switched-Capacitor DC-DC Converter Achieving 2^N-1 Ratios with High Efficiency over a Wide Output Voltage Range,” *IEEE Journal of Solid-State Circuits (JSSC)*, vol. 49, no. 12, pp 2773-2787, Dec. 2014. (**ISSCC Special Issue**)

- [107] S. Bandyopadhyay, P.P. Mercier, A.C Lysaght, K.M. Stankovic, and A.P. Chandrakasan, "A 1.1nW Energy Harvesting System with 544pW Quiescent Power for Next Generation Implants," *IEEE Journal of Solid-State Circuits (JSSC)*, vol. 49, no. 12, pp 2812-2824, Dec. 2014. (***ISSCC Special Issue***)
- [108] W. Jia, X. Wang, S. Imani, A.J. Bandodkar, J. Ramirez, P.P. Mercier, J. Wang, "Wearable textiles biofuel cells for powering electronics," *Journal of Materials Chemistry A*, doi: 10.1039/C4TA04796F, 2014.
- [109] P.P. Mercier, S. Bandyopadhyay, A.C Lysaght, K.M. Stankovic, and A.P. Chandrakasan, "A sub-nW 2.4 GHz Transmitter for Low Data-Rate Sensing Applications," *IEEE Journal of Solid-State Circuits (JSSC)*, vol. 49, no. 7, pp 1463-1474, Jul. 2014.
- [110] J. Kim, G. Valdés-Ramírez, A.J. Bandodkar, W. Jia, A.G. Martinez, J. Ramírez, P. Mercier, J. Wang, "Non-invasive mouthguard biosensor for continuous salivary monitoring of metabolites," *Analyst*, vol. 139, pp 1632-1636, 2014.
- [111] P.P. Mercier and A.P. Chandrakasan, "Rapid Wireless Capacitor Charging using a Multi-Tapped Inductively-Coupled Secondary Coil," *IEEE Trans. Circuits and Systems I (TCAS-I)*, vol. 60, no. 9, pp 2263-2272, Sep. 2013.
- [112] A. Paidimarri, P.M. Nadeau, P.P. Mercier, and A.P. Chandrakasan, "A 2.4GHz Multi-Channel FBAR-based Transmitter With an Integrated Pulse-Shaping Power Amplifier," *IEEE Journal of Solid-State Circuits (JSSC)*, vol. 48, no. 4, pp 1042-1054, Apr. 2013.
- [113] P.P. Mercier, A.C Lysaght, S. Bandyopadhyay, A.P. Chandrakasan, and K.M. Stankovic, "Energy extraction from the biologic battery in the inner ear," *Nature Biotechnology (Cover Article)*, vol. 30, no. 12, pp 1240—1243, Dec. 2012.
See also "Bioelectronics: Power from the ear," *Nature*, vol. 491, Nov. 8, 2012.
- [114] P.P. Mercier and A.P. Chandrakasan, "A Supply-Rail-Coupled eTextiles Transceiver for Body-Area Networks," *IEEE Journal of Solid-State Circuits (JSSC)*, vol. 46, no. 6, pp 1284-1295, Jun. 2011.
- [115] P.P. Mercier, M. Bhardwaj, Denis C. Daly and A.P. Chandrakasan, "A Low-Voltage Energy-Sampling IR-UWB Digital Baseband Employing Quadratic Correlation," *IEEE Journal of Solid-State Circuits*, vol. 45, no. 6, pp 1209-1219, Jun. 2010.
- [116] D.C. Daly, P.P. Mercier, M. Bhardwaj, A.L. Stone, Z.N. Aldworth, T.L. Daniel, J. Voldman, J.G. Hildebrand, A.P. Chandrakasan, "A Pulsed UWB Receiver SoC for Insect Motion Control," *IEEE Journal of Solid-State Circuits*, vol. 45, no. 1, pp 153-166, Jan. 2010. (***ISSCC Special Issue***)
- [117] P.P. Mercier, D.C. Daly, and A.P. Chandrakasan, "An Energy-Efficient All-Digital UWB Transmitter Employing Dual Capacitively-Coupled Pulse-Shaping Drivers," *IEEE Journal of Solid-State Circuits*, vol. 44, no. 6, pp. 1679 - 1688, Jun. 2009.
- [118] A.P. Chandrakasan, F.S. Lee, D.D. Wentzloff, V. Sze, B.P. Ginsburg, P.P. Mercier, D.C. Daly, and R. Blazquez, "Low-Power Impulse UWB Architectures and Circuits," *Proceedings of the IEEE*, vol. 97, pp. 332-352, Feb. 2009.
- [119] P.P. Mercier, S. M. Kilambi, and B. Nowrouzian, "Optimization of FRM FIR digital filters over CSD and CDBNS multiplier coefficient spaces employing a novel genetic algorithm," *Journal of Computers*, vol. 2, pp. 20–31, Sep. 2007.

PEER-REVIEWED CONFERENCE PAPERS

- [1] X. Cai, T. Zhang, W. Jie, Y. Zheng, D. Li, Y. Zhang, Y. Zhao, Y. Li, H. Jiang, P. Mercier, H. Wang, “BASS-PLL: A Bandwidth Augmented Sub-Sampling PLL Achieving a Wide Bandwidth above 30% of the Reference Frequency and a Worst Case FoM_{REF} of -247.9dB at 3GHz with a Ring Oscillator,” in Proc. *IEEE Custom Integrated Circuits Conference (CICC)*, Apr. 2025.
- [2] W.-C.B. Liu, G. Pillonnet, P.P. Mercier, “Closed-loop Control of a Dual-Side Series/Parallel Piezoelectric-based DC-DC Converter,” in Proc. *IEEE Applied Power Electronics Conference (APEC)*, Mar. 2025.
- [3] M.H.K. Hmada, W.-C.B. Liu, G. Pillonnet, P.P. Mercier, “Merging Hybrid and Multi-Phase Topologies: a 6-Phase Triple-Step-Down DC-DC Converter Achieving up to a 60:1 Voltage Conversion Ratio and 868A/cm³ Current Density,” in Proc. *IEEE International Solid-State Circuits Conference (ISSCC)*, Feb. 2025.
- [4] Z. Lin, J. Wouda, S. Oukassi, G. Pillonnet, P.P. Mercier, “An Autonomous and Lightweight Microactuator Driving System Using Flying Solid-State Batteries,” in Proc. *IEEE International Solid-State Circuits Conference (ISSCC)*, Feb. 2025.
- [5] A.G. Gadelkarim, P.P. Mercier, “A 3.5mW mm-Wave Low-Noise Active Bandpass Filter Employing an All-Passive Interferer-Cancellation Feedforward Path,” in Proc. *IEEE International Solid-State Circuits Conference (ISSCC)*, Feb. 2025.
- [6] R. Huo, T. Zhang, W. Jie, Y. Zheng, D. Li, L. Gao, Y. Zhao, H. Jiang, Y. Li, P. Mercier, H. Wang, “A 1.8-to-3.0GHz Fully Integrated All-in-One CMOS Frequency Management Module Achieving -47/+42ppm Inaccuracy from -40 to 95°C and -150/+70ppm After Accelerated Aging,” in Proc. *IEEE International Solid-State Circuits Conference (ISSCC)*, Feb. 2025.
- [7] T. Zhang, R. Huo, P.P. Mercier, H. Wang, “A 1.2 GHz 5-bit RC-Based Phase Interpolator with High Linearity Achieved by Self-Centering Interpolation and Buffer Delay Matching,” in Proc. *IEEE Biomedical Circuits and Systems Conference (BioCAS)*, Oct. 2024.
- [8] S. Agarwal, G. Pillonett, H. Lu, N.S.K. Fathy, P.P. Mercier, “A Current-Source-Free Constant-Current Wireless Adiabatic Neural Stimulator Achieving a 5.5-27.7x Improved RF-to-Electrode Stimulation Efficiency Factor,” in Proc. *IEEE VLSI Symposium*, Jun. 2024.
- [9] T. Zhang, D. Zhang, P.P. Mercier, H. Wang, “Design and Analysis of a Family of pW-Level Sub-1V CMOS VRGs by Stacking a Current-Source Transistor and a Resistive-Load Transistor,” in Proc. *IEEE International Symposium on Circuits and Systems (ISCAS)*, May. 2024.
- [10] R. Burns, A. Wiechmann, P. Sadeghi, N. Lobandi, N. Fathy, R. Huang, N. Sun, P.P. Mercier, “A 24.4μW Room Temperature Gas Sensor based on Molecularly Imprinted Polymers Demonstrating SARS-Cov-2 and D-Glucose Aerosol Sensing,” in Proc. *IEEE Custom Integrated Circuits Conference (CICC)*, Apr. 2024.
- [11] A. Gadelkarim, P.P. Mercier, “A 18.2mW Subsampling mm-Wave Receiver Employing a Subtractive Anti-Aliasing Active Bandstop Filter at 23GHz,” in Proc. *IEEE Custom Integrated Circuits Conference (CICC)*, Apr. 2024.
- [12] W.-C.B. Liu, P.P. Mercier, “A Merged Backside Series/Parallel Hybrid Piezoelectric-Resonator-Based DC-DC Converter,” in Proc. *IEEE Applied Power Electronics Conference and Exposition (APEC)*, Feb. 2024.

- [13] W.-C.B. Liu, G. Pillonnet, P.P. Mercier, “An Integrated Dual-Side Series/Parallel Piezoelectric Resonator-based 20-to-2.2V DC-DC Converter Achieving a 310% Loss Reduction,” in Proc. *IEEE International Solid-State Circuits Conference (ISSCC)*, Feb. 2024.
- [14] H.R. Kooshkaki, P.P. Mercier, “A 0.75mW Receiver Front-end for NB-IoT,” in Proc. *IEEE Radio Frequency Integrated Circuits Symposium (RFIC)*, Jun. 2023.
- [15] G. Pillonnet, M. Kamel, P.P. Mercier, “Normalized Benchmarking of Hybrid Switched-Capacitor DC-DC Converters,” in Proc. *IEEE Workshop on Control and Modeling for Power Electronics (COMPEL)*, Jun. 2023.
- [16] J. Wu, A. Akinin, M. Lee, A. Paul, H. Lu, Y. Park, P. Fowler, S.-J. Kim, P.P. Mercier, G.C. Cauwenberghs, “A Low-Noise 0.001Hz-1kHz Sample-Level Duty-Cycling Neural Recording System-on-Chip,” in Proc. *IEEE International Circuits and Systems Conference (ISCAS)*, May. 2023. **(Best Runner Up Paper Award; Women in Circuits and Systems Runner Up Award)**
- [17] W.-C.B. Liu, P.P. Mercier, “A Series/Parallel Magnetic-Less Step-Down Converter based on Piezoelectric Resonators,” in Proc. *IEEE Applied Power Electronics Conference (APEC)*, Mar. 2023.
- [18] S.-H. Kuo, M. Dunna, H. Lu, A. Agarwal, D. Bharadia, P.P. Mercier, “An LTE-harvesting BLE-to-WiFi Backscattering Chip for Single-Device RFID-like Interrogation,” in Proc. *IEEE International Solid-State Circuits Conference (ISSCC)*, Feb. 2023.
- [19] C. Hardy, H. Pham, M.M. Jatlaoui, F. Voiron, T. Xie, P.-H. Chen, S. Jha, P.P. Mercier, H.-P. Le, “A Scalable Heterogeneous Integrated Two-Stage Vertical Power Delivery Architecture for High Performance Computing,” in Proc. *IEEE International Solid-State Circuits Conference (ISSCC)*, Feb. 2023.
- [20] C.B. Gungor, P.P. Mercier, H. Toreyin, “A Stochastic Resonance P and T-Wave Detection Algorithm,” in Proc. *IEEE Engineering in Medicine and Biology Society Conference (EMBC)*, Jul. 2022.
- [21] S.-K. Kuo, M. Dunna, D. Bharadia, P.P. Mercier, “A WiFi and Bluetooth Backscattering Combo Chip Featuring Beam Steering via a Fully-Reflective Phased-Controlled Multi-Antenna Termination Technique Enabling Operation Over 56 Meters,” in Proc. *IEEE International Solid-State Circuits Conference (ISSCC)*, Feb. 2022.
- [22] C.B. Gungor, P. Mercier, H. Toreyin, “A 3.75 nW Analog Electrocardiogram Processor Facilitating Stochastic Resonance for Real-Time R-Wave Detection,” in Proc. *IEEE Biomedical Circuits and Systems Conference (BioCAS)*, Jun. 2021.
- [23] A. Akinin, J.M. Ford, J. Wu, J. Park, H.D. Thacker, G. Cauwenberghs, P.P. Mercier, “Maximizing Wireless Power Transfer to Intraocular Implants under Unconstrained Eye Movements,” in Proc. *IEEE EMBS Conference on Neural Engineering*, May 2021.
- [24] M. Dunna, M. Meng, P.-H. Wang, C. Zhang, P. Mercier, D. Bharadia, “SyncScatter: Enabling WiFi like synchronization and range for WiFi backscatter Communication,” *Symposium on Networked Systems Design and Implementation (NSDI)*, pp. 923-937, Apr. 2021. [journal equivalent conference]
- [25] A. Abdulsalm, P.P. Mercier, “A 98.2%-Efficiency Reciprocal Direct Charge Recycling Inductor-First DC-DC Converter,” in Proc. *IEEE International Solid-State Circuits Conference (ISSCC)*, Feb. 2021.
- [26] J. Huang, P.P. Mercier, “A Distortion-Free VCO-based Sensor-to-Digital Front-end Achieving 178.9-dB FoM and 128-dB SFDR with a Calibration-Free Differential Pulse Code Modulation Technique,” in Proc. *IEEE International Solid-State Circuits Conference (ISSCC)*, Feb. 2021.

- [27] M. Meng, M. Dunna, H. Yu, S. Kuo, D. Bharadia, P.P. Mercier, “Improving the Range of Wi-Fi Backscatter via a Passive Retro-Reflective Single-Side-Band-Modulating MIMO Array and Non-Absorbing Termination,” in Proc. *IEEE International Solid-State Circuits Conference (ISSCC)*, Feb. 2021.
- [28] C. Pochet, J. Huang, P.P. Mercier, D.A. Hall, “A 400mV_{pp}, 92.3 dB-SNDR, 1kHz-BW, 2nd-order VCO-based ExG-to-Digital Front-End Using a Multiphase Gated-Inverted Ring-Oscillator Quantizer,” in Proc. *IEEE International Solid-State Circuits Conference (ISSCC)*, Feb. 2021.
- [29] A. Akinin, J. Ford, J. Wu, C. Kim, H. Thacker, P.P. Mercier, G.C. Cauwenberghs, “An Optically-Addressed Nanowire-Based Retinal Prosthesis with 73% RF-to-Stimulation Power Efficiency and 20nC-3 μ C Wireless Charge Telemetry,” in Proc. *IEEE International Solid-State Circuits Conference (ISSCC)*, Feb. 2021. **(IEEE Brain Technical Community and IEEE Solid-State Circuits Society 2021 Brain-Related Best Paper Award – Honorable Mention)**
- [30] J. Lee, A.-H. Lee, V. Leung, J. Huang, P. Asbeck, P.P. Mercier, S. Shellhammer, L. Larson, F. Laiwalla, A. Nurmikko, “A Wireless Network of Microimplants for Neural Recording and Microstimulation,” in Proc. *IEEE Brain Workshop on Advanced Neural Technologies*, Oct. 2020.
- [31] J. Huang, P.P. Mercier, “A -105dB THD 87dB-SNDR VCO-based Sensor Front-end Enabled by Background-Calibrated Differential Pulse Code Modulation,” in Proc. *IEEE Symposium on VLSI Circuits*, Jun. 2020. **(Best student paper award nominee)**
- [32] P.-H. Wang, P.P. Mercier, “A 4.4 μ W -92/-90.3dBm Sensitivity Dual-mode BLE/Wi-Fi Wake-up Receiver,” in Proc. *IEEE Symposium on VLSI Circuits*, Jun. 2020. **(Best student paper award nominee)**
- [33] A. Nikoofard, H. Abbasi Zadeh, P.P. Mercier, “A 920MHz 16-FSK Receiver Achieving a Sensitivity of -103dBm at 0.6mW via an Integrated N-Path Filter Bank,” in Proc. *IEEE Symposium on VLSI Circuits*, Jun. 2020.
- [34] H.R. Kooshkaki, P.P. Mercier, “A 0.55mW Fractional-N PLL with a DC-DC Powered Class-D VCO Achieving Better than -66dBc Fractional and Reference Spurs for NB-IoT,” in Proc. *IEEE Custom Integrated Circuits Conference (CICC)*, Mar. 2020.
- [35] S.S. Amin, P.P. Mercier, “H-SIMO: A Hybrid Single-Inductor Multi-Output 5-Level Thin-Oxide Power Management Unit Achieving 91.4% Efficiency from Li-ion Battery Voltages in 28nm FD-SOI,” in Proc. *IEEE Custom Integrated Circuits Conference (CICC)*, Mar. 2020.
- [36] X. Wang, P.P. Mercier, “A 11.1nJ-Start-up 16/20MHz Crystal Oscillator with Multi-Path Feedforward Negative Resistance Boosting and Optional Dynamic Pulse Width Injection,” in Proc. *IEEE Custom Integrated Circuits Conference (CICC)*, Mar. 2020.
- [37] P.-H. Wang, C. Zhang, H. Yang, D. Bharadia, P.P. Mercier, “A 28 μ W IoT Tag That Can Communicate with Commodity WiFi Transceivers via a Single-Side-Band QPSK Backscatter Communication Technique,” in Proc. *IEEE International Solid-State Circuits Conference (ISSCC)*, Feb. 2020.
- [38] G. Carfano, H. Murguia, P. Gudem, P.P. Mercier, “Impact of FR1 5G NR Jammers on UWB Indoor Position Location Systems,” in Proc. *International Conference on Indoor Positioning and Indoor Navigation (IPIN)*, Oct. 2019.
- [39] X. Wang, P.P. Mercier, “A Charge-Pump-based Digital LDO Employing an AC-Coupled High-Z Feedback Loop Towards a sub-4fs FoM and a 105,000x Stable Dynamic Current Range,” *IEEE Custom Integrated Circuits Conference (CICC)*, Apr. 2019. **(Outstanding student paper award nominee)**

- [40] A. Abdulslam, B.H. Lam, P.P. Mercier, "A Battery-Connected Symmetric Modified Multilevel Ladder Converter Achieving $0.45\text{W}/\text{mm}^2$ Power Density and 90% Peak Efficiency," *IEEE Custom Integrated Circuits Conference (CICC)*, Apr. 2019.
- [41] V.W. Leung, L. Cui, S. Alluri, J. Lee, J. Huang, E. Mok, S. Shellhammer, R. Rao, P. Asbeck, P.P. Mercier, L. Larson, A. Nurmikko, F. Laiwalla, "Distributed Microscale Brain Implants with Wireless Power Transfer and Mbps Bi-directional Networked Communications," *IEEE Custom Integrated Circuits Conference (CICC)*, Apr. 2019.
- [42] J. Lee, E. Mok, J. Huang, L. Cui, A.-H. Lee, V. Leung, P.P. Mercier, S. Shellhammer, L. Larson, R.R. Rao, Y.-K. Song, A. Nurmikko, F. Laiwalla, "An Implantable Wireless Network of Distributed Microscale Sensors for Neural Applications," *IEEE EMBS Conference on Neural Engineering (NER)*, Mar. 2019.
- [43] P.-H. Wang, P.P. Mercier, "A $220\mu\text{W}$ -85dBm Sensitivity BLE-compliant Wake-up Receiver Achieving -60dB SIR via Single-Die Multi-Channel FBAR-based Filtering and a 4-Dimensional Wake-Up Signature," in Proc. *IEEE International Solid-State Circuits Conference (ISSCC)*, Feb. 2019.
- [44] J. Warchall, P. Thielmann, Y. Ouyang, H. Garudadi, P.P. Mercier, "A Rugged Wearable Modular ExG Platform Employing a Distributed Scalable Multi-Channel FM-ADC Achieving 101dB Input Dynamic Range and Motion-Artifact Resilience," in Proc. *IEEE International Solid-State Circuits Conference (ISSCC)*, Feb. 2019.
- [45] J. Park, P. P. Mercier, "A sub- $40\mu\text{W}$ 5Mb/s Magnetic Human Body Communication Transceiver Demonstrating Trans-Body Delivery of High-Fidelity Audio to a Wearable In-Ear Headphone," in Proc. *IEEE International Solid-State Circuits Conference (ISSCC)*, Feb. 2019.
- [46] A. Abdulslam, P.P. Mercier, "A Continuous-Input-Current Passive-Stacked Third-Order Buck Converter Achieving $0.7\text{W}/\text{mm}^2$ Power Density and 94% Peak Efficiency," in Proc. *IEEE International Solid-State Circuits Conference (ISSCC)*, Feb. 2019.
- [47] F. Laiwalla, J. Lee, J. Huang, V. Leung, L. Larson, P. Mercier, S. Shellhammer, R. Rao, P. Asbeck, A. Nurmikko, "A Wireless Microscale Sensor Network for Chronic Implantable Neural Interfaces," *IEEE Brain Initiative Workshop on Advanced NeuroTechnologies*, Nov. 2018.
- [48] J. Warchall, S. Kaleru, N. Jayapalan, B. Nayak, H. Garudadri, P.P. Mercier, "A $678\mu\text{W}$ Frequency-Modulation Based ADC with 104dB Dynamic Range in 44kHz Bandwidth," in Proc. *IEEE International Symposium on Integrated Circuits and Systems (ISICAS)*, Sep. 2018.
- [49] D.-G. Lee, P.P. Mercier, "AMASS PLL: An Active-Mixer-Adopted Sub-Sampling PLL Achieving an FOM of -255.5dB and a Reference Spur of -66.5dBc," in Proc. *IEEE VLSI Symposium*, Jun. 2018.
- [50] S.S. Amin, P.P. Mercier, "A 78%-Efficiency Li-ion-Compatible Fully-Integrated Modified 4-Level Converter with 0.01-40mW DCM-Operation in 28nm FDSOI," in Proc. *IEEE Custom Integrated Circuits Conference (CICC)*, Apr. 2018. (**Outstanding student paper award nominee**)
- [51] S.S. Amin, P.P. Mercier, "MISIMO: A Multi-Input Single-Inductor Multi-Output Energy Harvester Employing Event-Driven MPPT Control to Achieve 89% Peak Efficiency and a 60,000x Dynamic Range in 28nm FDSOI," in Proc. *IEEE International Solid-State Circuits Conference (ISSCC)*, Feb. 2018.
- [52] A. Fazli Yeknami, X. Wang, S. Imani, A. Nikoofard, I. Jeerapan, J. Wang, P.P. Mercier, "A 0.3V Biofuel-Cell-Powered Glucose/Lactate Biosensing System Employing a 180nW 64dB SNR Passive $\Delta\Sigma$ ADC and a 920MHz Wireless Transmitter," in Proc. *IEEE International Solid-State Circuits Conference (ISSCC)*, Feb. 2018.

- [53] L.G. Salem, P.P. Mercier, "A sub-1.55mV Accuracy 36.9ps FOM Digital Low-Dropout Regulator Employing Switched-Capacitor Resistance," in Proc. *IEEE International Solid-State Circuits Conference (ISSCC)*, Feb. 2018.
- [54] H. Wang, P.P. Mercier, "A 113 pW Fully Integrated CMOS Temperature Sensor Operating at 0.5 V," in Proc. *IEEE Sensors Conference*, Nov. 2017.
- [55] J. Park, C. Kim, A. Akinin, G.C. Cauwenberghs, P.P. Mercier, "Wireless Powering of mm-Scale Fully-on-Chip Neural Interfaces," in Proc. *IEEE Biomedical Circuits and Systems Conference (BioCAS)*, Oct. 2017.
- [56] H. Wang, X. Wang, J. Park, A. Barfidokht, J. Wang, P.P. Mercier, "A 5.5nW Battery-Powered Wireless Ion Sensing System," in Proc. *IEEE European Solid-State Circuits Conference (ESSCIRC)*, Sep. 2017.
- [57] H. Wang, P.P. Mercier, "A 420fW Self-Regulated 3T Voltage Reference Generator Achieving 0.47%/V Line Regulation from 0.4-to-1.2V," in Proc. *IEEE European Solid-State Circuits Conference (ESSCIRC)*, Sep. 2017.
- [58] H. Wang, P.P. Mercier, "A 1.6%/V 124.2pW 9.3Hz Relaxation Oscillator Featuring a 49.7pW Voltage and Current Reference Generator," in Proc. *IEEE European Solid-State Circuits Conference (ESSCIRC)*, Sep. 2017.
- [59] P.-H. Wang, H. Jiang, L. Gao, P. Sen, Y.-H. Kim, G. Rebeiz, P.P. Mercier, D.A. Hall, "A 400 MHz 4.5 nW -63.8 dBm Sensitivity Wake-up Receiver Employing an Active Pseudo-Balun Envelope Detector," in Proc. *IEEE European Solid-State Circuits Conference (ESSCIRC)*, Sep. 2017.
- [60] T. Ajayi, K. Al-Hawaj, A. Amarnath, S. Dai, S. Davidson, P. Gao, G. Liu, A. Lotfi, J. Puscar, A. Rao, A. Rovinski, L. Salem, N. Sun, C. Torng, L. Vega, B. Veluri, X. Wang, S. Xie, C. Zhao, R. Zhao, C. Batten, R.G. Dreslinski, I. Galton, R.K. Gupta, P.P. Mercier, M. Srivastava, M.B. Taylor, Z. Zhang, "Celerity: An Open Source RISC-V Tiered Accelerator Fabric," *IEEE Hot Chips*, Aug. 2017.
- [61] C. Kim, S. Ha, A. Akinin, J. Park, R. Kudendran, H. Wang, P.P. Mercier, G.C. Cauwenberghs, "Design of Miniaturized Wireless Power Receivers for mm-sized Implants," in Proc. *IEEE Custom Integrated Circuits Conference (CICC)*, May 2017. DOI: 10.1109/CICC.2017.7993703 **(Invited)**
- [62] T. Kan, P.P. Mercier, C. Mi, "A Three-Phase Wireless Charging System for Lightweight Autonomous Underwater Vehicles," in Proc. *IEEE Applied Power Electronics Conference & Exposition (APEC)*, pp. 1407-1411, Mar. 2017. DOI: 10.1109/APEC.2017.7930881
- [63] H. Jiang, P.-H. Wang, L. Gao, P. Sen, Y.-H. Kim, G. Rebeiz, D. Hall, P.P. Mercier, "A 4.5nW Wake-Up Radio with -69dBm Sensitivity," in Proc. *IEEE International Solid-State Circuits Conference (ISSCC)*, vol. 60, pp. 416-417, Feb. 2017. DOI: 10.1109/ISSCC.2017.7870438
- [64] L.G. Salem, P.P. Mercier, "A 0.4-1V 1MHz-to-2GHz Switched-Capacitor Adiabatic Clock Driver Achieving 55.6% Clock Power Reduction," in Proc. *IEEE International Solid-State Circuits Conference (ISSCC)*, vol. 60, pp. 442-443, Feb. 2017. DOI: 10.1109/ISSCC.2017.7870451
- [65] L.G. Salem, J. Warchall, P.P. Mercier, "A 100nA-2mA Successive-Approximation Digital LDO with PD Compensation and sub-LSB Duty Control Achieving a 15.1ns Response-Time at 0.5V," in Proc. *IEEE International Solid-State Circuits Conference (ISSCC)*, vol. 60, pp. 340-341, Feb. 2017. DOI: 10.1109/ISSCC.2017.7870400
- [66] L.G. Salem, J.F. Buckwalter, P.P. Mercier, "A Recursive House-of-Cards Digital Power Amplifier Employing a $\lambda/4$ -less Doherty Power Combiner in 65nm CMOS," in Proc. *IEEE*

- European Solid-State Circuits Conference (ESSCIRC)*, vol. 42, pp. 189-192, Sep. 2016. DOI: 10.1109/ESSCIRC.2016.7598274
- [67] C. Kim, J. Park, A. Akinin, S. Ha, R. Kubendran, H. Wang, P.P. Mercier, G.C. Cauwenberghs, “A Fully Integrated 144 MHz Wireless-Power-Receiver-on-Chip with an Adaptive Buck-Boost Regulating Rectifier and Low-Loss Fractal Signal Distribution,” in Proc. *IEEE VLSI Symposium*, June 2016. DOI: 10.1109/VLSIC.2016.7573492
- [68] H. Wang and P.P. Mercier, “A 14.5 pW, 31 ppm/°C Resistor-Less 5 pA Current Reference Employing A Self-Regulated Push-Pull Voltage Reference Generator,” in Proc. *IEEE International Symposium on Circuits and Systems (ISCAS)*, pp. 1290-1293, May 2016. DOI: 10.1109/ISCAS.2016.7527442
- [69] S. Imani, A.J. Bandonkar, J. Kim, J. Wang, P.P. Mercier, “Wearable Chemical Sensors: Opportunities and Challenges,” in Proc. *IEEE International Symposium on Circuits and Systems (ISCAS)*, pp. 1122-1125, May 2016. DOI: 10.1109/ISCAS.2016.7527442
- [70] J. Warchall, A. Balakrishnan, O. Balkan, W.D. Hairston, P. Theilmann, P.P. Mercier, H. Garudadri, “A Multi-Channel EEG System Featuring Single-Wire Data Aggregation via FM-FDM Techniques,” in Proc. *IEEE International Symposium on Circuits and Systems (ISCAS)*, pp. 526-529, May 2016. DOI: 10.1109/ISCAS.2016.7527293
- [71] L.G. Salem, J. G. Louie, and P.P. Mercier, “A Flying-Domain DC-DC Converter Powering a Cortex M0 Processor with 90.8% Efficiency,” in Proc. *IEEE International Solid-State Circuits Conference (ISSCC)*, vol. 59, pp. 234-236, Feb. 2016. DOI: 10.1109/ISSCC.2016.7417993
- [72] D.-G. Lee and P.P. Mercier, “A 1.65 mW PLL-free PSK Receiver Employing Super-regenerative Phase Sampling,” in Proc. *IEEE Biomedical Circuits and Systems Conference*, Oct. 2015. DOI: 10.1109/BioCAS.2015.7348307
- [73] J.-H. Lin, H. Liu, C.-H. Liu, P. Lam, G.-Y. Pan, H. Zhaung, I. Kang, P.P. Mercier, C.-K. Cheng, “An Interdigitated Non-Contact ECG Electrode for Impedance Compensation and Signal Restoration,” in Proc. *IEEE Biomedical Circuits and Systems Conference*, Oct. 2015. DOI: 10.1109/BioCAS.2015.7348421
- [74] L.G. Salem and P.P. Mercier, “A Single-Inductor 7+7 Ratio Reconfigurable Resonant Switched-Capacitor DC-DC Converter with 0.1-to-1.5V Output Voltage Range,” in Proc. *IEEE Custom Integrated Circuits Conference (CICC)*, Sep. 2015.
- [75] H. Wang and P.P. Mercier, “A 51 pW Reference-Free Capacitive-Discharging Oscillator Architecture Operating at 2.8 Hz,” in Proc. *IEEE Custom Integrated Circuits Conference (CICC)*, Sep. 2015. **[Best student paper nomination]**
- [76] J. Park and P.P. Mercier, “Magnetic Human Body Communication,” in Proc. *IEEE Engineering in Medicine and Biology Society Conference (EMBC)*, Aug. 2015. (highlighted in many press articles from the *MIT Technology Review*, *Fortune*, *IEEE Spectrum*, *Engadget*, etc.)
- [77] A. Yeung, H. Garudadri, C. Van Toen, P.P. Mercier, O. Balkan, S. Makeig, and N. Virji-Babul, “Comparison of Foam-Based and Spring-Loaded Dry EEG Electrodes with Wet Electrodes in Resting and Moving Conditions,” in Proc. *IEEE Engineering in Medicine and Biology Society Conference (EMBC)*, Aug. 2015.
- [78] L.G. Salem and P.P. Mercier, “A Battery-Connected 24-Ratio Switched Capacitor PMIC Achieving 95.5%-Efficiency,” in Proc. *IEEE Symposium on VLSI Circuits*, Jun. 2015.
- [79] S. Ha, A. Akinin, J. Park, C. Kim, H. Wang, C. Maier, G. Cauwenberghs, P.P. Mercier, “A 16-Channel Wireless Neural Interfacing SoC With RF-powered Energy-Replenishing Adiabatic Stimulation,” in Proc. *IEEE Symposium on VLSI Circuits*, Jun. 2015. **[Highlighted paper]**

- [80] C. Kim, S. Ha, J. Park, A. Akinin, P.P. Mercier, G. Cauwenberghs, "A 144MHz Integrated Resonant Regulating Rectifier with Hybrid Pulse Modulation," in Proc. *IEEE Symposium on VLSI Circuits*, Jun. 2015.
- [81] L.G. Salem and P.P. Mercier, "A Footprint-Constrained Efficiency Roadmap for on-Chip Switched-Capacitor DC-DC Converters," in Proc. *IEEE International Symposium on Circuits and Systems (ISCAS)*, May 2015.
- [82] T.-C. Chou, R. Subramanian, J. Park, P.P. Mercier, "A Miniaturized Ultrasonic Power Delivery System," in Proc. *IEEE Biomedical Circuits and Systems Conference (BioCAS)*, Oct. 2014.
- [83] L. Salem and P.P. Mercier, "A 45-Ratio Recursively Sliced Series-Parallel Switched-Capacitor DC-DC Converter Achieving 86% Efficiency," in Proc. *IEEE Custom Integrated Circuits Conference (CICC)*, Sep. 2014.
- [84] L. Salem and P.P. Mercier, "An 85%-Efficiency Fully-Integrated 15-Ratio Recursive Switched-Capacitor DC-DC Converter With 0.1-2.2V Output Voltage Range," in Proc. *IEEE International Solid-State Circuits Conference (ISSCC)*, pp. 88-89, Feb. 2014.
- [85] S. Bandyopadhyay, P.P. Mercier, A.C Lysaght, K.M. Stankovic, and A.P. Chandrakasan, "A 1.1nW Energy Harvesting System with 544pW Quiescent Power for Next Generation Implants," in Proc. *IEEE International Solid-State Circuits Conference (ISSCC)*, pp.396-397, Feb. 2014.
- [86] H. Su, H. Liu, S-H.Weng, H. Wang, A. Presswala, H. Zhuang, J-H. Lin, P. Mercier, and C-K. Cheng, "A Non-contact Biopotential Sensing System With Motion Artifact Suppression," in Proc. *IEEE International Conference on Communications, Circuits, and Systems*, Nov. 2013.
- [87] P.P. Mercier, S. Bandyopadhyay, A.P. Chandrakasan, "Enabling sub-nW RF Circuits through Subthreshold Leakage Management," in Proc. *IEEE SOI-3D-Subthreshold Microelectronics Technology Unified Conference*, pp. 26-27, Oct. 2013.
- [88] P.P. Mercier, S. Bandyopadhyay, A.C Lysaght, K.M. Stankovic, and A.P. Chandrakasan, "A 78 pW 1 b/s 2.4 GHz Radio Transmitter for Near-Zero-Power Sensing Applications," in Proc. *IEEE European Solid-State Circuits Conf. (ESSCIRC)*, pp. 133-136, Sep. 2013.
- [89] A. Paidimarri, P.M. Nadeau, P.P. Mercier, and A.P. Chandrakasan, "A 440pJ/bit 1Mb/s 2.4GHz Multi-Channel FBAR-based TX and an Integrated Pulse-shaping PA," in Proc. *IEEE Symposium on VLSI Circuits*, pp.34-35, Jun. 2012.
- [90] P.M. Nadeau, A. Paidimarri, P.P. Mercier, and A.P. Chandrakasan, "Multi-channel 180pJ/b 2.4GHz FBAR-based Receiver," in Proc. *IEEE Radio Freq. IC Symp. (RFIC)*, Jun. 2012.
- [91] P.P. Mercier, A.P. Chandrakasan, "A 110 μ W 10Mb/s eTextiles Transceiver for Body Area Networks with Remote Batter Power," in Proc. *IEEE International Solid-State Circuits Conference (ISSCC) Dig. Tech. Papers*, pp. 496-497, Feb. 2010.
- [92] P.P. Mercier, M. Bhardwaj, D.C. Daly, and A.P. Chandrakasan, "A 0.55V 16Mb/s 1.6mW Non-Coherent IR-UWB Digital Baseband with \pm 1ns Synchronization Accuracy," in Proc. *IEEE International Solid-State Circuits Conference (ISSCC) Dig. Tech. Papers*, pp. 252-253, Feb. 2009.
- [93] D.C. Daly, P.P. Mercier, M. Bhardwaj, A. L. Stone, J. Voldman, R. B. Levine, J. G. Hildebrand, A. P. Chandrakasan, "A Pulsed UWB Receiver SoC for Insect Motion Control," in Proc. *IEEE International Solid-State Circuits Conference (ISSCC) Dig. Tech. Papers*, pp. 200-201, Feb. 2009.
- [94] P.P. Mercier, D.C. Daly, and A.P. Chandrakasan, "A 19pJ/pulse UWB Transmitter with Dual Capacitively-Coupled Digital Power Amplifiers," in Proc. *IEEE Radio Freq. IC Symp. (RFIC)*, Jun. 2008.

- [95] P.P. Mercier, D. C. Daly, M. Bhardwaj, D. D. Wentzloff, F. S. Lee, and A. P. Chandrakasan, "Ultra-low-power UWB for sensor network applications," in *Proc. IEEE International Conference on Circuits and Systems (ISCAS)*, May 2008.
- [96] D.C. Daly, M. Bhardwaj, F. S. Lee, P.P. Mercier, D. D. Wentzloff, J. Voldman, A. P. Chandrakasan, "Energy Efficient Pulsed-UWB Transceiver for Insect Flight Control," in *Government Microcircuit Applications & Critical Technology Conference (GOMACTech)*, pp. 401-404, Mar. 2008.
- [97] D. D. Wentzloff, F. S. Lee, D. C. Daly, M. Bhardwaj, P.P. Mercier, and A. P. Chandrakasan, "Energy efficient pulsed-UWB CMOS circuits and systems," in *Proc. IEEE Int. Conf. Ultra-wideband (ICUWB)*, Sep. 2007.
- [98] K. Boyle, P.P. Mercier, N. Sadeghi, V. Gaudet, C. Schlegel, C. Winstead, M. Kashyap, "Design and Implementation of an All-Analog Fast-Fourier Transform Processor," in *Proc. IEEE Midwest Symp. on Circuits and Systems (MWCAS)*, Aug. 2007, pp. 1532 – 1535.
- [99] P.P. Mercier, S. Singh, K. Iniewski, B. Moore, and P. O'Shea, "Yield and cost modeling for 3D chip stack technologies," in *Proc. IEEE Custom Integr. Circuits Conf. (CICC)*, Sep. 2006, pp. 357–360.
- [100] P.P. Mercier and B. Nowrouzian, "Design of FRM digital filters over the CSD multiplier coefficient space employing genetic algorithms," in *Proc. IEEE Int. Conf. on Acoust., Speech and Signal Process. (ICASSP)*, May 2006.
- [101] P.P. Mercier and B. Nowrouzian, "A genetic algorithm for the design and optimization of FRM digital filters over a canonical double-base multiplier coefficient space," in *Proc. IEEE International Conference on Circuits and Systems (ISCAS)*, May 2006.
- [102] K. Iniewski, C. Siu, S. Kilambi, S. Khan, B. Crowley, P.P. Mercier, and C. Schlegel, "Ultra-low power circuit and system design trade-offs for smart sensor network applications," in *Proc. IEEE Int. Conf. on Inf. and Comm. Tech.*, p. 309–321, Dec. 2005.

TUTORIALS

- [1] P.P. Mercier, "Enabling Standards-Compliant Wireless Communications at >100x Lower Power," *Tutorial Presented at the International Microwave Symposium (IMS)*, Atlanta, GA (virtual due to COVID-19), Jun. 2021.
- [2] P.P. Mercier, "Interface Circuits for Wearable and Implantable Sensing Systems," *Tutorial presented at the IEEE International Solid-State Circuits Conference (ISSCC)*, San Francisco, CA, Feb. 2020.
- [3] P. P. Mercier, "Physiochemical Interface Circuits for Wearable and Implantable Sensing Systems," *IEEE Solid-State Circuits Society ISSCCedu online mini-course*, San Francisco, CA, Feb. 2020.
- [4] P.P. Mercier, "Building Li-ion-compatible DC-DC Converters in Scaled CMOS," *IEEE Solid-State Circuits Society CICCedu online mini-course*, Austin, TX, Apr. 2019.
- [5] P.P. Mercier, "Power Management for the Internet-of-Things," *Tutorial presented at the IEEE Custom Integrated Circuits Conference (CICC)*, Austin, TX, Apr. 2019.
- [6] P.P. Mercier, "Nanowatt wake-up radios: exploring power and sensitivity trade-offs," *Tutorial presented at the IEEE International Microwave Symposium (IMS)*, Philadelphia, PA, June 2018.
- [7] P.P. Mercier, "Design of Low-Power Wake-up Radios for IoT Applications," *Tutorial presented at the IEEE Custom Integrated Circuits Conference (CICC)*, San Diego, CA, April 2018.

- [8] P.P. Mercier, “Unawearables: new wearable sensors and circuits for unobtrusive health and fitness monitoring,” *Tutorial presented at the IEEE European Solid-State Circuits Conference (ESSCIRC)*, Leuven, Belgium, Sep. 2017.
- [9] P.P. Mercier, “Improving Battery-Life of Deeply Duty-Cycled IoT Nodes via Ultra-Low-Power Wake-up Receivers,” *Tutorial presented at the IEEE International Microwave Symposium (IMS)*, Honolulu, HI, Jun. 2017.
- [10] P.P. Mercier, “Ultra-Low-Power RC Oscillators,” *Tutorial presented at the IEEE International Microwave Symposium (IMS)*, Honolulu, HI, Jun. 2017.

INVITED ABSTRACTS, PRESENTATIONS, AND POSTERS

- [1] P.P. Mercier, “Wearable, Ingestible, and Implantable Wireless Sensing Systems for Healthcare Applications,” *Presented at the Department of Neurosciences-Digital Tools and Wearable Devices Seminar*, La Jolla, CA, May. 2025.
- [2] P.P. Mercier, “Wearable, Ingestible, and Implantable Wireless Sensing Systems for Healthcare Applications,” *Presented at the LINKJ Special Symposium*, Tokyo, Japan, Apr. 2025.
- [3] P.P. Mercier, “Ambient IoT: Power and Connecting the Next Information Frontier,” *Presented at the University of California, Berkeley*, Berkeley, CA, Feb. 2025.
- [4] P.P. Mercier, “Directions in Wearable Sensing,” *Presented at the EverythingALS and ALSOne Neurotech Day*, Nov. 2024.
- [5] P.P. Mercier, “Unawearables: Enabling Unobtrusive Wearable Devices via Smart Sensors and Low-Power Wireless Circuits,” *Presented at the UC Davis ECE Department Distinguished Seminar Series*, Nov. 2024.
- [6] P.P. Mercier, “Low-Power Wearable and Ingestible Physiochemical Monitoring Devices,” *Presented at the Medical Wearables Conference*, Oct. 2024.
- [7] P.P. Mercier, “Low-Power Standards-Compatible Wireless Communication Circuits for Next-Generation IoT and Wearable Applications,” *Presented at the Tokyo Institute of Technology*, Tokyo, Japan, Jul. 2024.
- [8] P.P. Mercier, “Low-Power Sensing and Wireless Communication Circuits,” *Presented at the IEEE Internet of Things Vertical and Topical Summit*, Jan. 2024.
- [9] P.P. Mercier, “Low-Power and Energy-Efficient Integrated Circuit Design for a Sustainable Future,” *Presented at the IEEE Solid-State Circuits Society and Power Electronics Society: ICs Addressing Societal Grand Challenges: Sustainability and Climate Change Seminar*, Sep. 2023.
- [10] P.P. Mercier, “Enabling Low-Power yet Standards Compatible Wireless Communication via Wake-Up Receivers and Backscatter Circuits,” *Presented at the IEEE International Microwaves Symposium*, San Diego, CA, Jun. 2023.
- [11] P.P. Mercier, “Next-Generation Wearable Hybrid Physiochemical Sensing Systems,” *Presented at the Cali-Baja Symposium*, La Jolla, CA, Apr. 2023.
- [12] P.P. Mercier, “Unawareables: Building Invisible yet Useful Wearable Devices,” *Chancellor’s Associates Colloquium*, La Jolla, CA, Mar. 2023.
- [13] P.P. Mercier, “Next-Generation Wearable Sensor Technologies,” *Presented at the National Academy of Engineering Southern California Regional Symposium*, San Diego, CA, Mar. 2023.
- [14] P.P. Mercier, “Wearable Sensors and Low-Power WiFi-Compatible Communication Circuits for Emerging IoT Applications,” *Presented at the Medical Wearables Conference*, Dec. 2022.
- [15] P.P. Mercier, “Ultra-low-power Integrated Circuits and Physiochemical Sensors for Next-Generation Unawareables,” *Presented at the BioXTech virtual group*, Dec. 2022.

- [16] P.P. Mercier, “Energy Harvesting and Self-Powered Sensing for Miniaturized IoT and Unawareable Devices,” *Presented at the ACM International Workshop on Energy Harvesting & Energy-Neutral Sensing*, Boston, CA, Nov. 2022.
- [17] P.P. Mercier, “Unaware-ables: Low-Power, Robust, and Useful Wearable Devices”, *Presented at the IEEE International Microwave Symposium*, Denver, CO, Jun. 2022.
- [18] P.P. Mercier, “Energy-Efficient Power Management Circuits for IoT and Wearable Devices,” *Keynote presentation at the IEEE Sensors Interface Meeting*, Veldhoven, The Netherlands, May 2022.
- [19] P.P. Mercier, “Energy Harvesting and Self-Powered Sensing for Miniaturized IoT and “Unawareable” Devices,” *Presented at the PSMA International Energy Harvesting Workshop (EnerHarv)*, Raleigh, NC, Apr. 2022.
- [20] P.P. Mercier, “Enabling Low-Power yet Standards Compatible Wireless Communication via Wake-up Receivers and Backscatter Circuits for the IoT,” *Presented as an IEEE SSCS Society-wide Webinar*, Jan. 2022.
- [21] P.P. Mercier, “Energy Harvesting and Self-Powered Sensing for Next-Generation “Unawareables” and IoT,” *Presented at the Sensors Converge Conference*, (virtual due to COVID-19), Sep. 2021.
- [22] P.P. Mercier, “Ultra-low-power integrated circuits and physiochemical sensors for next-generation unawearables,” *IEEE Solid-State Circuits Society Distinguished Lecture at Oregon IEEE Solid-State Circuits Society local chapter*, Hillsboro, OR (virtual due to COVID-19), Jun 2021.
- [23] P.P. Mercier, “Ultra-Low-Power Integrated Circuits and Physiochemical Sensors for Next-Generation Unawearables”, *Presented at the International Symposium on Advanced Sensor Technology*, Seoul, Korea (virtual due to COVID-19), Mar. 2021.
- [24] P.P. Mercier, “Energy-Efficient Communication Technologies for Emerging Internet-of-Things Applications,” *IEEE Solid-State Circuits Society Distinguished Lecture at the SSCS Northern Virginia Section*, (virtual due to COVID-19), Oct. 2020.
- [25] P.P. Mercier, “Hybrid Converters for Mobile and IoT Applications,” *Presented at the Integrated Power Conversion and Power Management Conference (PwrSoC)* (virtual due to COVID-19), Nov. 2020.
- [26] P.P. Mercier, “Low-Power Communication Circuits and Technologies for Emerging Internet-of-Things Applications,” *IEEE Solid-State Circuits Society Distinguished Lecture at the SSCS Princeton Central Jersey Section*, (virtual due to COVID-19), Nov. 2020.
- [27] P.P. Mercier, “Energy-Efficient Communication Technologies for Emerging Internet-of-Things Applications,” *Presented at the 2020 RFID Conference*, (virtual due to COVID-19), Oct. 2020.
- [28] P.P. Mercier, “Energy-Efficient Communication Technologies for Emerging Internet-of-Things Applications,” *IEEE Solid-State Circuits Society Distinguished Lecture at the SSCS Utah Section*, (virtual due to COVID-19), Oct. 2020.
- [29] P.P. Mercier, “Energy-Efficient Communication Technologies for Emerging Internet-of-Things Applications,” *IEEE Solid-State Circuits Society Distinguished Lecture at the Advanced Circuits Research Center in Israel*, (virtual due to COVID-19), July 2020.
- [30] P.P. Mercier, “Ultra-low-power integrated circuits and physiochemical sensors for next-generation unawearables,” *IEEE Solid-State Circuits Society Distinguished Lecture at the Beijing IEEE Solid-State Circuits Society local chapter*, (virtual due to COVID-19), May 2020.
- [31] P.P. Mercier, “Low-Power Wireless Systems: Opportunities and Challenges,” *Presented at the DARPA MTO Offsite Planning Meeting on the U.S.S. Midway*, San Diego, CA, Dec. 2019.

- [32] P.P. Mercier, "Ultra-low-power integrated circuits and physiochemical sensors for next-generation unawearables," *IEEE Solid-State Circuits Society Distinguished Lecture at the Scotland and UK IEEE Solid-State Circuits Society local chapter*, Edinburgh, UK, Sep. 2019.
- [33] P.P. Mercier, "Ultra-low-power integrated circuits and physiochemical sensors for next-generation unawearables," *IEEE Solid-State Circuits Society Distinguished Lecture at the Maryland/Virginia/DC IEEE Solid-State Circuits Society and Circuits and Systems local chapter*, College Park, MD, Sep. 2019.
- [34] P.P. Mercier, "Ultra-low-power integrated circuits enabling next-generation IoT applications," *Presented at the National Academy of Engineering Frontiers of Engineering event*, San Diego, CA, Jun. 2019.
- [35] P.P. Mercier, "Ultra-low-power integrated circuits and physiochemical sensors for next-generation unawearables," *IEEE Solid-State Circuits Society Distinguished Lecture at the San Diego IEEE Solid-State Circuits Society local chapter*, San Diego, CA, May. 2019.
- [36] P.P. Mercier, "Unwearables: Addressing Sensor, Circuit, and Energy Harvesting Challenges in Next-Generation Wearable Devices," *Presented at the IEEE Custom Integrated Circuits Conference (CICC)*, Austin, TX, Apr. 2019.
- [37] P.P. Mercier, "Ultra-Low-Power Integrated Circuits and Physiochemical Sensors for Next-Generation Unawearables," *Presented at the DARPA Actuation, Sensing, and Control for Rapid Injury Response Workshop*, Arlington, VA, Apr. 2019.
- [38] P.P. Mercier, "Ultra-Low-Power Integrated Circuits and Physiochemical Sensors for Next-Generation Unawearables," *Presented at the University of Southern California*, Los Angeles, CA, Nov. 2018.
- [39] P.P. Mercier, "Unwearables: new wearable sensors, circuits, and analytics for unobtrusive monitoring," *Presented at the SEMI MEMS & Sensors Executive Congress*, Napa, CA, Nov. 2018.
- [40] P.P. Mercier, "Ultra-small near-zero-power radios, implants, and sensing systems," *Presented at the DARPA Microsystems Exploratory Council Millimeter-Scale Wirelessly Powered Sensors Workshop*, Los Angeles, CA, Jul. 2018.
- [41] P. P. Mercier, "Wearable Sensors", *Presented at the US Marine Corps Innovation Event*, La Jolla, CA, Feb. 2018.
- [42] P.P. Mercier, "The Next Industrial Revolution: IoT, Wearables, and AI," *Presented at the Next Business Forum*, Seoul, South Korea, Nov. 2017.
- [43] P.P. Mercier, "Global Hubs for Innovative Ecosystems in Biotechnology," *Presented at the Stevanato Innovation Day*, San Diego, CA, Jun. 2017.
- [44] P.P. Mercier, "Non-Invasive Blood Alcohol Monitoring," *Presented at the Biomedical Technology Exhibition, sponsored by the American Institute for Medical and Biological Engineering (AIMBE) in partnership with the Congressional Research and Development Caucus and the Congressional Robotics Caucus*, Capitol Hill, Washington, DC, May 2017.
- [45] P.T. Theilman, J. Warchall, P. Mercier, H. Garudari, "Work Towards a Fieldable Multi-Channel EEG System for Continuous Monitoring," in *Proc. IEEE International Symposium on Circuits and Systems (ISCAS)*, Baltimore, MD, May 2017.
- [46] P.P. Mercier, "Beyond Activity Tracking: next-generation wearable and implantable sensor technologies" *Presented at the SPIE Defense and Commercial Sensing Conference*, Anaheim, CA, Apr. 2017.
- [47] D.A. Hall, H. Jiang, P.-H. Wang, L. Gao, P. Sen, Y.-H. Kim, G. Rebeiz, P.P. Mercier, "A 10nW Wake-up Radio with -60dBm Sensitivity," in *Government Microcircuit Applications & Critical Technology Conference (GOMACTech)*, Reno, NV, Mar. 2017.

- [48] P.P. Mercier, "Physiochemical Sensor Technologies and Ultra-Low-Power Integrated Circuits for Next-Generation "Unawearables" Systems," *Invited Seminar at the Microsystems Technology Lab at MIT*, Cambridge, MA, Dec. 2016.
- [49] P.P. Mercier, "Transcutaneous Power of Single-Chip Implants," *Presented at the Sensors Global Summit*, La Jolla, CA, Dec. 2016.
- [50] D. Ahn, P.P. Mercier, "A 200-kHz/6.78-MHz Wireless Power Transmitter Featuring Concurrent Dual-Band Operation," in Proc. *IEEE International SoC Design Conference (ISOCC)*, Jeju, South Korea, Oct. 2016. DOI: 10.1109/ISOCC.2016.7799763
- [51] P.P. Mercier, J. Rogers, A. Arias, N. Verma, J. Rabaey, "Drawing the line(s): processing sensor information in the right place(s) in energy-constrained systems," *Panel organization and presentation at the SRC SONIC Center Annual Review*, Champaign, IL, Oct. 2016.
- [52] P.P. Mercier, "Wearables: an opportunity for healthcare?," *Presented at the 5G Connected Healthcare Workshop*, La Jolla, CA, May 2016.
- [53] P.P. Mercier, "New Circuit Topologies & Techniques for High-Efficiency Power Conversion in Compact Form Factors," *Invited seminar presented at UCLA and Intel Corporation*, Apr. 2016.
- [54] P.P. Mercier, "Energy-Efficient Wearable Sensors," *Presented at the UCSD Orthopaedic Surgery Research Conference*, April 2016.
- [55] P.P. Mercier and L.G. Salem, "Multi-Ratio Switched-Capacitor DC-DC Converters for Power Management Applications," *Presented at the International Symposium on Quality Electronic Design*, Santa Clara, CA, Mar. 2016.
- [56] P.P. Mercier, "Energy-Harvesting for Autonomous Operation of Low-Power Wireless Sensors," *Presented at the Sensors Global Summit*, La Jolla, CA, Nov. 2015.
- [57] P.P. Mercier, "Enabling energy-autonomous wearable and implantable sensors through energy harvesting and near-zero-power electronics," *Presented at the KAIST-UCSD Joint Symposium on Wearable Devices*, Daejeon, Korea, Oct. 2015.
- [58] P.P. Mercier, "Enabling wide output voltage range switched-capacitor DC-DC converters," *Presented at a SRC/SONIC eWorkshop*, Jun. 2015.
- [59] P.P. Mercier, "Next generation switched-capacitor DC-DC converter topologies," *Presented at the CMOS Emerging Technologies Research Symposium*, Vancouver, BC, May 2015.
- [60] P.P. Mercier, "Harvesting small amounts of power to enable miniaturized sensors," *Presented at the Trillion Sensors Summit*, La Jolla, CA, Nov. 2014
- [61] P.P. Mercier, "Efficient on-chip power conversion for energy harvesting and low-power mobile applications," *Presented at the International Power Supply On Chip Workshop*, Boston, MA, Oct. 2014.
- [62] P.P. Mercier, "A Tutorial on Wireless Power Transfer and Miniaturized DC/DC Power Converters," *Presented at SPAWAR Systems Center Pacific*, San Diego, CA, June 2014.
- [63] P.P. Mercier, "New Advances in Wearable Devices, Biosensors, and Analytics", Panelist at the *Digital Health Forum of San Diego: The Future of Wearable Technologies in Healthcare*, La Jolla, CA, June 2014.
- [64] P.P. Mercier, "Breaking down power barriers: efficient and miniaturized energy management and energy harvesting," *Presented at the Huawei Power Summit*, San Diego, CA, May 2014.
- [65] P.P. Mercier S. Bandyopadhyay, A.C. Lysaght, K.M. Stankovic, A.P. Chandrakasan, "Powering Wireless Devices from the Biologic Battery in the Inner-Ear," *IEEE International SoC Conference*, Irvine, CA, Oct. 2013.
- [66] P.P. Mercier and V. Sridharan, "Low-Power Transmitters for Body-Area Networks," *IEEE Symposium on Power Amplifiers for Wireless Communication*, La Jolla, CA, Sep. 2013.

- [67] P.P. Mercier, "Powering a 2.4 GHz Radio from the Biologic Battery in the Inner-Ear," *Presented at the CMOS Emerging Technologies Symposium*, Whistler, BC, Canada, Jul. 2013.
- [68] P.P. Mercier, "Electrochemical energy harvesting from the inner-ear," *Presented at the INC-IEM Neuroengineering Seminar Series*, La Jolla, CA, Mar. 2013.
- [69] A.C. Lysaght, P.P. Mercier, S. Bandyopadhyay, A.P. Chandrakasan, and K.M. Stankovic, "Endocochlear Potential Powered Electronics" *Associated for Research in Otolaryngology Annual MidWinter Meeting*, vol. 36, Baltimore, MD, Feb., 2013.
- [70] P.P. Mercier, "Enabling study and control of insects through extreme miniaturization of wireless electronics," *Presented at Burapha Univeristy*, Chonburi Province, Thailand, Dec., 2012.
- [71] P.P. Mercier, "nW Energy Harvesting: What can it do for you?," *Presented at the Office of Naval Research Power and Energy Systems 6.1 Program Review*, San Diego, CA, Nov. 2012.
- [72] P.P. Mercier, "Ultra-Low-Power Radios for Miniaturized Sensing Systems," *Presented at the Center for Wireless Communications Semiannual Research Review*, La Jolla, CA, Nov. 2012.
- [73] P.P. Mercier, "Zero-Leakage Electronics and Opportunities in Miniaturized Wireless Systems," *Presented at the Center for Magnetic Recording Research Review*, La Jolla, CA, Oct. 2012.
- [74] P.P. Mercier, "Cyborg Insects and Autonomous Sensors: How Efficient Radios can Enable the Next Generation of Connectivity," *Presented at the Qualcomm Research Center*, San Diego, CA, Oct. 2012.
- [75] A. Paidimarri, P. Nadeau, P.P. Mercier, and A. Chandrakasan, "Ultra-low Power FBAR-based Multi-Channel Transceivers," *Presented at the ISSCC Student Research Preview*, San Francisco, CA, Feb. 2012.
- [76] P.P. Mercier, "Self-Powered Personal Microsystems for Medical Monitoring Applications," *Presented at TechConnect World*, Boston, MA, Jun. 2011.
- [77] P.P. Mercier, "Attaining Extreme Energy Efficiency in Body-Area Networks Using Electronic Textiles," *Presented at the MEDRC Next Generation Medical Electronic Systems Workshop*, Cambridge, MA, May, 2011.
- [78] P.P. Mercier, "Connected Health for Remote Patient Monitoring," *Presented at the MTL Annual Research Conference (MARC)*, Cambridge, MA, Jan. 2010.
- [79] P.P. Mercier, "Personal Medical Connectivity: Research Overview," *Presented at the Intel Digital Health Group*, Hillsboro, OR, Oct. 2009.
- [80] P.P. Mercier, "Energy Efficient Pulsed-UWB for Miniaturized Flying Vehicles," *Presented at the CMOS Emerging Technologies Workshop*, Banff, AB, Canada, Feb. 2009.
- [81] P.P. Mercier, "An Energy-Efficient UWB Transmitter with Dual Capacitively-Coupled Digital Power Amplifiers," *Presented at the Center for Integrated Circuits and Systems*, Cambridge, MA, Apr. 2008.
- [82] P.P. Mercier, "A 22pJ/pulse All-Digital UWB Transmitter in 90nm CMOS," *Presented at the International Solid-State Circuits Conference (ISSCC) Student Forum*, San Francisco, CA, Feb. 2008.
- [83] P.P. Mercier, "Fully Integrated Pulsed-UWB Transceivers for Small Lightweight Flying Vehicles," *Presented at the MTL Annual Research Conference (MARC)*, Waterville Valley, MA, Jan. 2008.
- [84] P.P. Mercier, "Cost Modeling for Vertically Integrated Chip Sets," *Presented at the CMOS Emerging Technologies Workshop*, Banff, AB, Canada, Jul. 2006.

ISSUED PATENTS

- [1] P.-H. Wang, P. Mercier, D. Bharadia, “Low Power Wi-Fi backscatter communication,” U.S. Patent 12,349,069, Jul. 1, 2025.
- [2] M. Dunna, M. Meng, P.P. Mercier, D. Bharadia, “Termination circuit for low power backscatter communication,” U.S. Patent 12,267,127 B2, Apr. 1, 2025.
- [3] P. Mercier, J. Park, “Low Power Magnetic Field Body Area Network With Quenching and Quick Start,” U.S. Patent 12,121,318, Oct. 22, 2024.
- [4] J. Wang, A.J. Bandodkar, P.P. Mercier, “Non-invasive and wearable chemical sensors and biosensors,” U.S. Patent 12,023,154, Jul. 2, 2024.
- [5] J. Wang, P. Mercier, “Salivary Biosensors and Biofuel Cells,” U.S. Patent 11,980,462, May 14, 2024.
- [6] J. Wang, P. Mercier, A.F. Yeknami, S. Imani, “Self-Powered Biosensors,” U.S. Patent 11,633,134, Apr. 25, 2023.
- [7] P.-H. Wang, P. Mercier, “BLE and/or WiFi Compliant and Blocker-Resilient Wake-up Receiver and Method,” U.S. Patent 11,570,709, Jan 31, 2023.
- [8] H. Wang, P. Mercier, “Near Zero Power Fully Integrated Digital Conversion, Sensors, and Sensing Methods,” U.S. Patent 11,444,633, Sep. 13, 2022.
- [9] S. Amin, P. Mercier, “Li-ion-compatible fully-integrated hybrid converter,” U.S. Patent 11,356,017, Jun. 7, 2022.
- [10] P. Mercier, H. Wang, “Stabilized voltage and current reference generator and circuits,” U.S. Patent 11,334,105, May 17, 2022.
- [11] J. Wang, P. Mercier, “Flexible epidermal multimodal health monitor,” U.S. Patent 11,122,982, Sep. 21, 2021.
- [12] X. Wang, P. Mercier, “Low Power Transmitter Oscillator Circuits and Methods,” U.S. Patent 10,897,240, Jan. 19, 2021.
- [13] P. Mercier, H. Wang, “Near Zero Power Charging to Digital Converter, Sensors, and Sensing Methods,” U.S. Patent 10,877,439, Dec. 29, 2020.
- [14] C. Kim, G. Cauwenberghs, P.P. Mercier, S. Ha, J. Park, A. Akinin, “Resonant Regulating Rectifier with an Integrated Antenna,” U.S. Patent 10,873,215, Dec. 22, 2020.
- [15] P. Mercier, D. Ahn, “Wireless Power Transfer Device and Method with Dual-Frequency Operation,” U.S. Patent 10,855,115, Dec. 1, 2020.
- [16] P.-H. Wang, H. Jiang, D. Hall, P. Mercier, “Low Power Wake-up Receiver,” U.S. Patent 10,804,946, Oct. 13, 2020.
- [17] C.-K. Cheng, P. Mercier, S.-H. Weng, “Electrical Wearable Capacitive Biosensor and Noise Artifact Suppression Method,” U.S. Patent 10,729,379, Aug. 4, 2020.
- [18] J. Wang, A.J. Bandodkar, P. Mercier, “Non-invasive and Wearable Chemical Sensors and Biosensors,” U.S. Patent 10,722,160, Jul. 28, 2020.
- [19] S. Ha, G. Cauwenberghs, C. Kim, J. Park, P.P. Mercier, A. Akinin, H. Wang, C.H. Maier, “Radio Frequency Powered Adiabatic Stimulation with Energy Replenishment,” U.S. Patent 10,716,948, Jul 21, 2020.
- [20] T. Nguyen, H. Garudadri, P. Mercier, A. Boothroyd, C. Mackersie, “External Device Leveraged Hearing Assistance and Noise Suppression Device, Method and Systems,” U.S. Patent 10,701,495, Jun. 30, 2020.
- [21] J. Park, P. Mercier, “Low power magnetic field body area network,” U.S. Patent 10,623,112, Apr. 14, 2020.
- [22] J. Wang, P. Mercier, “Salivary biosensors and biofuel cells,” U.S. Patent 10,595,759, Mar. 24, 2020.

- [23] L.G. Salem, P.P. Mercier, “Switched capacitor DC-to-DC converter and power conversion control methods,” U.S. Patent 10,374,511, Aug. 6, 2019.
- [24] L.G. Salem, P.P. Mercier, “Multi-level adiabatic charging methods, devices and systems,” U.S. Patent 10,348,300, Jul. 9, 2019.
- [25] L.G. Salem, J.F. Buckwalter, P.P. Mercier, “Switched Capacitor House of Cards Power Amplifier,” U.S. Patent 10,333,477, Jun. 25, 2019.
- [26] L.G. Salem, P.P. Mercier, “Successive approximation digital voltage regulation methods, devices and systems,” U.S. Patent 10,224,944, Mar. 5, 2019.
- [27] K. Stankovich, A. Chandrakasan, P. Mercier, S. Bandyopadhyay, A. Lysaght, “Energy Extraction,” U.S. Patent 9,369,005, Jun. 14, 2016.
- [28] P.P. Mercier and A.P. Chandrakasan, “Multi-Taped Inductively-Coupled Charging System,” U.S. Patent 9,293,942, Mar. 22, 2016.

Teaching Experience

University of California, San Diego

La Jolla, CA

Instructor

Fall 2024: ECE 203 – Biomedical Integrated Circuits and Systems

Spring 2024: ECE 165 – Digital Integrated Circuits

Fall 2023: ECE 203 – Biomedical Integrated Circuits and Systems (87% instructor rating)

Spring 2023: ECE 165 – Digital Integrated Circuits (98% instructor rating)

Fall 2022: ECE 203 – Biomedical Integrated Circuits and Systems (92% instructor rating)

Spring 2022: ECE 165 – Digital Integrated Circuits (93% instructor rating)

Fall 2021: ECE 203 – Biomedical Integrated Circuits and Systems (83% instructor rating)

Spring 2021: ECE 165 – Digital Integrated Circuits (85% instructor rating)

Fall 2020: ECE 203 – Biomedical Integrated Circuits and Systems (94% instructor rating)

Spring 2020: ECE 165 – Digital Integrated Circuits (92% instructor rating – **even during fully virtual instruction due to COVID-19**)

Fall 2019: ECE 203 – Biomedical Integrated Circuits and Systems (94% instructor rating – **TA won the best ECE TA Award**)

Spring 2019: ECE 165 – Digital Integrated Circuits (96% course rating)

Fall 2018: ECE 203 – Biomedical Integrated Circuits and Systems (95% instructor rating)

Winter 2018: ECE 165 – Digital Integrated Circuits (100% instructor rating)

Winter 2018: ECE 203 – Biomedical Integrated Circuits and Systems (91% instructor rating)

Spring 2017: ECE 165 – Digital Integrated Circuits (100% instructor rating)

Spring 2017: ECE 203 – Biomedical Integrated Circuits and Systems (93% instructor rating)

Fall 2016: ECE260A - VLSI Digital System Algorithms and Architectures (93% instructor rating)

Spring 2015: ECE 165 – Digital Integrated Circuits (**100% instructor & course rating from an 82 student class – ECE dept. record**)

Winter 2015: ECE 203 – Biomedical Integrated Circuits and Systems (93% instructor rating)

Fall 2014: ECE260A - VLSI Digital System Algorithms and Architectures (87% instructor rating)

Spring 2014: ECE 165 – Digital Integrated Circuits (**100% instructor & course rating from a 77 student class – ECE dept. record**)

Winter 2014: ECE 203 – Biomedical Integrated Circuits and Systems (98% instructor rating)

Spring 2013: ECE 283 – Biomedical Integrated Circuits and Systems (99% instructor rating)

Winter 2013: ECE 165 – Digital Integrated Circuits (94% instructor rating)

Massachusetts Institute of Technology

Cambridge, MA

Teaching Assistant

Spring 2010: MIT EECS Course 6.776 – High Speed Communication Circuits.

Funding

Energy-Efficient Microsystems Lab

As PI of the Energy-Efficient Microsystems Lab, I have raised over \$40MM for research at UCSD from the following sources:

- DARPA
- NIH
- NSF
- The Arnold and Mabel Beckman Foundation
- Semiconductor Research Corporation
- ONR
- iARPA
- Army Research Lab
- KETI
- NextFlex
- The Fetzer Franklin Fund
- The Hellman Foundation
- Samsung
- Qualcomm
- Dockon Inc.
- Mouthsense Inc.
- Peregrine Semiconductor
- IMA Life North America
- Moore Foundation
- University of California Multi-Campus Research Programs and Initiatives
- California Energy Commission
- The UCSD Center for Brain Activity Mapping
- The UCSD Center for Wireless Communications (corporate sponsored)
- The UCSD Center for Wearable Sensors (corporate sponsored)
- The Power Management Integration Center (corporate sponsored)

UC San Diego Center for Wearable Sensors

As co-director of the Center for Wearable Sensors, I have been instrumental in fundraising over \$7MM from corporate partners, with the bulk of this funding used to support collaborative

efforts across six engineering departments, the School of Medicine, and the Department of Visual Arts.

Power Management Integration Center

As Site Director of the Power Management Integration Center, I have help recruit corporate members to support research at both UCSD and at Dartmouth College.

Service

Journal service

- Guest Editor – *IEEE Open Journal of the Solid-State Circuits Society (OJ-SSCS) Special Issue on Low-Power RF Circuits and Systems (2023)*
- Guest Editor – *IEEE Journal of Solid-State Circuits* Special Issue on the 2018 *International Solid-State Circuits Conference (ISSCC) (2018)*
- Associate Editor – *IEEE Solid-State Circuits Letters* (2017-2023)
- Associate Editor – *IEEE Transactions on Biomedical Circuits & Systems* (2013-2023)
- Associated Editor – *IEEE Transactions on VLSI* (2015-2017)
- Guest Editor – *IEEE TBioCAS Special Issue on the 2014 International Solid-State Circuits Conference (ISSCC) (December, 2014)*
- Guest Editor – *IEEE TBioCAS Special Issue on the 2013 International Solid-State Circuits Conference (ISSCC) (December, 2013)*

Conference service

- Executive Committee member – Demo Chair – *IEEE International Solid-State Circuits Conference (ISSCC) (2022-present)*
- Technical Program co-Chair – *IEEE Sensor Interfaces Meeting (2022-2024)*
- Subcommittee Chair – Power Management – *IEEE Custom Integrated Circuits Conference (CICC) (2021-2023)*
- Technical Program Committee member – *IEEE VLSI Circuits Symposium (2018-2022)*
- International Technical Program Committee member – *IEEE International Solid-State Circuits Conference (ISSCC) Technology Directions subcommittee (2017-2022)*
- Technical Program Committee member – *IEEE Custom Integrated Circuits Conference (CICC) (2017-2023)*
- Technical program committee – *IEEE Biomedical Circuits and Systems Conference (BioCAS) (2014-2015)*
- Session chair – *International Symposium on Low-Power Electronics and Design (ISLPED) (2014)*
- Technical program committee - *CMOS Emerging Technologies Research Symposium (2013-2016)*

Peer reviewer (2009-present)

- *IEEE Journal of Solid-State Circuits (JSSC)*
- *IEEE Transactions on Circuits and Systems I (T-CAS I)*
- *IEEE Transactions on Circuits and Systems II (T-CAS II)*
- *IEEE Transactions on Microwave Theory and Techniques (T-MTT)*
- *IEEE Sensors Journal*
- *IEEE Transaction on Power Electronics*

- *Journal of Low Power Electronics and Applications (JLPEA)*
- *IET Circuits, Devices & Systems*
- *IEEE International Conference on Ultra-Wideband (ICUWB)*
- *IEEE Transactions on Biomedical Circuits & Systems (TBioCAS)*
- *IEEE Transactions on Biomedical Engineering (TBME)*
- *IEEE International Conference on Circuits and Systems (ISCAS)*
- *IEEE Biomedical Circuits and Systems Conference (BioCAS)*
- *IEEE Journal of Emerging and Selected Topics in Power Electronics*
- *IEEE Transactions on Industrial Electronics*
- *Nature Nanotechnology*
- *Advanced Materials*
- *Nature Biomedical Engineering*
- *Science Advances*

Grant review service

- NSF SenSE panel reviewer (July 2020)
- NSF ECCS panel reviewer (February 2019)
- NSF ECCS panel reviewer (January 2018)
- NSF ECCS panel reviewer (March 2015)
- ARL ARL Director's Research Initiative (DRI) reviewer (June 2015)

UCSD Campus-wide Service

- Chair, Academic Senate Faculty Affairs Committee (2024-present)
- Co-Director – *Center for Wearable Sensors* – including 23 faculty across four engineering departments, the School of Medicine, and Arts and Humanities (Department of Visual Arts). Funding comes from the membership of 6-10 corporate partners. (2014-present)
- Site Director – *Power Management Integration Center* – includes 5 faculty across multiple engineering departments. Funding comes from the membership of 8-12 corporate partners. (2021-present)
- Vice Chair Academic Senate Faculty Affairs Committee (2023-2024)
- Chair, UCSD Academic Senate Awards Committee (2020-2022)
- Member, UCSD Academic Senate Awards Committee (2018-2020)
- Member, Office of Research Affairs Center Launch Review Panel. (2017-2018)
- Member, UCSD School of Public Health Advisory Committee (2017-2019)
- UCSD representative on Capitol Hill – presented to congressional staffers via an event hosted by the American Institute for Medical and Biological Engineering, then met, alongside UCSD's Executive Director of Government Research Relations, with the offices of three San Diego Congressmen and one California Senator to discuss research at UCSD. (2017)
- Faculty representative, Campus-wide commencement ceremony (2017)
- Organizer & presenter, KAIST-UCSD Symposium on Micro/Nanotechnologies and Electronics for Next-Generation Mobile, Wearable, and IoT Systems, Deajeon, Korea (2015)
- Faculty representative, Welcome Week Convocation Ceremony (2013)

UCSD ECE Departmental Service

- Vice Chair, ECE Department (2024-present)
- Member, Faculty search committee, Systems Focus (2024)
- Adhoc committee member, faculty review files (2x in 2024)
- Chair, ECE Faculty Awards Committee (2023-present)

- Chair, ECE Admissions Steering Committee (2020-2022)
- Member, ECE Admissions Committee (2019-present)
- Medical Devices and Systems curriculum advisor (2018-2020)
- ECE 50th Anniversary planning committee (2015-2016)
- MS Exam committee (2014-present)
- Alumni Imitative (2014-2020)
- Undergraduate/Graduate Affairs and Student Award Nomination committee (2012-2014)
- Medical Devices and Systems curriculum director (2013-2014)
- Medical Devices and Systems Ad-hoc committee - responsible for creating a new program in this area (2012-2013)

Co-Chair, Microsystem Technology Lab Annual Research Conference (2011)

Annual research conference with over 200 academic and industrial attendees. Responsible for steering committee leadership and conference organization including: solicitation of papers, managing paper edits, keynote speaker invitation, opening and closing remarks, and general planning. Created interactive attendee activities to solicit social and technical engagement amongst industry members and students. Cited by a high-ranking industry member as “the best student run conference in the country”.

Broader Impacts & Outreach

- Presented a webinar at BioXTech, a country-wide club founded and run by high school women interested in the intersection of biology and technology, and answered questions about technology and gave career advice (2023)
- Featured in the publication entitled “Building Blocks for Better Science: Case Studies in Low-Cost and Open Tools for Science”, which describes my work in low-cost COVID-19 symptoms monitoring devices (2020)
- Guest instructor at Hands-on-Technology summer camp at Wangenheim Middle School focused on accelerating the understanding of computer science in elementary and school-aged children (2014-present)
- Directly mentored ten B.S., M.S., and Ph.D. students from historically underrepresented backgrounds, including two high school students (2012-present)
- Directly mentored two high school students from historically underrepresented backgrounds (2013, and 2016-2017)
- Keynote speaker at ENSPIRE: one of the largest outreach at UCSD, where over 300 middle-school children visit UCSD to learn about higher education and engineering (Feb. 2015)

Press Articles

Prof. Mercier’s work across several different projects and his expert opinion have been featured in hundreds of press articles and in other forms of media (e.g., TV and radio). A few select articles/videos are shown below.

- [1] Adee, S. “Cyborg moth gets a new radio,” *IEEE Spectrum*, Feb. 2009.
<http://spectrum.ieee.org/robotics/military-robots/cyborg-moth-gets-a-new-radio>
- [2] Dillow, C. “Researchers turn animals ears into bio-batteries,” *Popular Science*, Nov. 7, 2012.
<http://www.popsci.com/science/article/2012-11/building-batteries-mammalian-inner-ear>
- [3] Doyle, K. “A chip powered by the battery in your ear,” *Popular Mechanics*, Nov. 7, 2012.

- http://www.popularmechanics.com/how-to/blog/scientists-tap-into-the-battery-in-your-ear-14556133?click=pm_latest
- [4] Subbaraman, N. “Gadget power coming out of your ear,” *Technology Review*, Nov. 7, 2012. <http://www.technologyreview.com/view/507166/gadget-power-coming-out-of-your-ears/>
- [5] Waltz, E. “Using the inner ear’s biologic battery,” *IEEE Spectrum*, Nov. 8, 2012. <http://spectrum.ieee.org/tech-talk/biomedical/devices/using-the-inner-ears-biological-battery>
- [6] Brown, E. “Inner ear’s energy can work like a battery, scientists say,” *The Los Angeles Times*, Nov. 12, 2012. <http://www.latimes.com/news/science/sciencenow/la-sci-sn-hearing-aid-inner-ear-battery-20121112,0,7178713.story>
- [7] Wang, S.S., “Harnessing energy from the body to run devices,” *The Wall Street Journal*, Nov. 26, 2012. <http://online.wsj.com/article/SB10001424127887324851704578137402753846438.html>
- [8] Thomsen, A. “Analog Designers Continue to Amaze,” *New Electronics*, Apr. 22, 2014. <http://www.newelectronics.co.uk/image-store/articles/60967%5CP31-32.pdf>
- [9] Betten, B. “The State of Wearable Sensor Technology,” *Medical Device and Diagnostic Industry*, Jun. 8, 2015. <http://www.mddionline.com/blog/devicetalk/state-wearable-sensor-technology-06-08-15>
- [10] Nusca, A. “Coming soon: Wearable tech that uses your body to transmit the signal,” *Fortune*. Sep. 1, 2015. <http://fortune.com/2015/09/01/magnetic-field-human-body-communication/>
- [11] Griffin, C. “Human Magnetic Fields Could be Used to Send Signals for Wireless Communication,” *Science World Report*, Sep. 1, 2015. <http://www.scienceworldreport.com/articles/29536/20150901/human-magnetic-fields-used-send-signals-wireless-communication.htm>
- [12] Metz, R. “Bluetooth Alternative Communicates through Your Body,” *Technology Review*, Sep. 2, 2015. <http://www.technologyreview.com/news/541041/bluetooth-alternative-communicates-through-your-body/>
- [13] Savage, N. “Body talk with magnets,” *IEEE Spectrum*, Sept. 16, 2015. <http://spectrum.ieee.org/tech-talk/consumer-electronics/gadgets/body-talk-with-magnets>
- [14] “Mouth guard monitors health markers, transmits information wirelessly to smart phone,” *Phys.org*, Aug. 31, 2015. <http://phys.org/news/2015-08-mouth-health-markers-transmits-wirelessly.html>
- [15] Pell, R., “Smart Mouth Guard Monitors Health Markers in Real Time,” *EE Times*, Sep. 2, 2015. http://www.eetimes.com/document.asp?doc_id=1327580
- [16] Orcutt, M., “Smart Mouthguard Monitors Your Saliva, and Your Health,” *Technology Review*, Sep. 9, 2015. <http://www.technologyreview.com/news/541111/smart-mouthguard-monitors-your-saliva-and-your-health/>
- [17] Starr, M., “Flexible patch performs like a wearable tricorder,” *CNET*, May 23, 2016. <https://www.cnet.com/news/flexible-patch-performs-like-a-wearable-tricorder/>
- [18] Mandlebaum, R.F., “This small, flexible patch will monitor your sweat,” *Popular Science*, May 23, 2016. <http://www.popsoci.com/small-flexible-patch-stuck-to-your-chest-monitor-sweat-fitness?dom=rss-default&src=syn>
- [19] NBC12 staff, “Could Star Trek-like ‘tricorder’ for health be near?,” *NBC12*, May 23, 2016. <http://www.nbc12.com/story/32039999/could-star-trek-like-tricorder-for-health-be-near>
- [20] Revell, T., “Radio powered by your own sweat hints at future of wearables,” *New Scientist*, June 22, 2017. <https://www.newscientist.com/article/2138282-radio-powered-by-your-own-sweat-hints-at-future-of-wearables/>
- [21] Dormehl, L., “Crazy-efficiency temperature sensor uses less than 1-billionth of a watt,” *Yahoo News*, July 6, 2017. <https://ca.news.yahoo.com/crazy-efficient-temperature-sensor-uses-213404635.html>

- [22]Thompson, A., “This hacked together glove can translate sign language”, *Popular Mechanics*, July 13, 2017.
<http://www.popularmechanics.com/technology/gear/a27292/glove-translate-sign-language/>
- [23] “Smartphone case delivers blood glucose readings in one device,” *The Engineer*, Dec. 7, 2017.
<https://www.theengineer.co.uk/smartphone-glucose-diabetics/>
- [24]The Doctors TV Show on CBS, “Could a Temporary Tattoo Help Detect Your Alcohol Content Level?” *The Doctors*, Nov. 7, 2018.
<https://www.thedoctorstv.com/videos/could-temporary-tattoo-help-detect-your-alcohol-content-level>
- [25]Moore, S.K., “Wireless Network Brings Dust-Sized Brain Implants a Step Closer,” *IEEE Spectrum*, May 14, 2019.
<https://spectrum.ieee.org/the-human-os/biomedical/devices/wireless-network-brings-dustsized-brain-implants-a-step-closer>
- [26]“Cutting Edge Chip for waking up small wireless devices uses only 0.00000022 Watts”, *SciTechDaily*, Nov. 11, 2019.
<https://scitechdaily.com/cutting-edge-chip-for-waking-up-small-wireless-devices-only-uses-0-00000022-watts/>
- [27]Nield, D. “Low power, tiny chip could see connected smart devices go battery-free,” *New Atlas*, Feb. 19, 2020.
<https://newatlas.com/telecommunications/tiny-wi-fi-chip-smart-home-devices/>
- [28]Labios, L., “Wearables: Where are We?”, *Triton Magazine*, January 14, 2021.
<http://tritonmag.com/wearables-where-are-we/>
- [29]Szporer, R., “The Road to Energy Efficiency in Video Starts with Standards”, *6G World*, April
<https://www.6gworld.com/exclusives/the-road-to-energy-efficiency-in-video-starts-with-standards/>
- [30]O’Carroll, E., “Your workouts could charge your smartwatch”, *Experience Magazine*, May, 2021.
<https://expmag.com/2021/05/your-workouts-could-charge-your-smartwatch/>
- [31]Szporer, R., “Wearable Tech’s Marriage Between Fashion and Functionality has Expiry Date”, *6G World*, June 22, 2021.
<https://www.6gworld.com/exclusives/wearable-techs-marriage-between-fashion-and-functionality-has-expiry-date/>
- [32]Keen, C., “Multi-tasking microneedle sensor tracks glucose, alcohol and lactate levels in real time”, *Physics World*, June 13, 2022.
<https://physicsworld.com/a/multi-tasking-microneedle-sensor-tracks-glucose-alcohol-lactate-levels-in-real-time/>
- [33]Dameron, E., “A self-powered ingestible sensor opens new avenues for gut research”, *MedicalXpress*, December 1, 2022.
<https://medicalxpress.com/news/2022-12-self-powered-ingestible-sensor-avenues-gut.html>
- [34]Manners, D., “IC for piezoelectric resonator DC-DC conversion achieves 310% loss reduction”, *Electronics Weekly*, February 21, 2024.
<https://www.electronicsexpress.com/news/business/piezoelectric-based-dc-dc-converter-achieves-310-loss-reduction-2024-02/>
- [35]Buntz, B., “New microactuator system could shrink power supplies for drones, robotics and medical devices”, *R&D World*, February 24, 2025.
<https://www.rdworldonline.com/new-microactuator-system-could-shrink-power-supplies-for-drones-robotics-and-medical-devices/>
- [36]Moore, S.K., “Flying Batteries Could Help Microdrones Take Off”, *IEEE Spectrum*, March 6, 2025.
<https://spectrum.ieee.org/microbots>

