Jackson Anderson

Curriculum Vitae, July 2024

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Education

2023 **Ph.D, Electrical and Computer Engineering**, Purdue University, Lafayette, IN
Dissertation: "CMOS Integrated Resonators and Emerging Materials for MEMS Applications."

2017 **MS, Microelectronic Engineering**, Rochester Institute of Technology, Rochester, NY
Thesis: "Measurement of Ferroelectric Films in MFM and MFIS Structures."

2015 **BS, Microelectronic Engineering**, *Rochester Institute of Technology*, Rochester, NY

Professional Appointments

2023-Present **Research Assistant Professor, Electrical and Biomedical Engineering**, University of Vermont and State Agricultural College, Burlington, VT

Journal Publications

[1] U. Rawat, **J. Anderson**, and D. Weinstein, *Large-signal behavior of ferroelectric micro-electromechanical transducers*, Apr. 12, 2023. DOI: 10.48550/arXiv.2304.05975. arXiv: 2304.05975[physics].

[2] A. Charnas, **J. Anderson**, J. Zhang, D. Zheng, D. Weinstein, and P. D. Ye, "Ultrathin indium oxide thin-film transistors with gigahertz operation frequency," *IEEE Transactions on Electron Devices*, vol. 70, no. 2, pp. 532–536, Feb. 2023, ISSN: 1557-9646. DOI: 10.1109/TED.2022.3231226.

[3] U. Rawat, **J. D. Anderson**, and D. Weinstein, "Design and applications of integrated transducers in commercial CMOS technology," *Frontiers in Mechanical Engineering*, vol. 8, 2022, ISSN: 2297-3079.

[4] **J. Anderson**, Y. He, B. Bahr, and D. Weinstein, "Integrated acoustic resonators in commercial fin field-effect transistor technology," *Nature Electronics*, vol. 5, no. 9, pp. 611–619, Sep. 2022, ISSN: 2520-1131. DOI: 10.1038/s41928-022-00827-6.

[5] C. Huang, **J. Anderson**, S. Peana, X. Chen, S. Ramanathan, and D. Weinstein, "Perovskite nickelate actuators," *Journal of Microelectromechanical Systems*, pp. 1–6, 2021, ISSN: 1941-0158. DOI: 10.1109/JMEMS.2021.3067189.

[6] M. Restaino, N. Eckman, A. T. Alsharhan, *et al.*, "In situ direct laser writing of 3d graphene-laden microstructures," *Advanced Materials Technologies*, vol. 6, no. 8, p. 2 100 222, 2021, ISSN: 2365-709X. DOI: 10.1002/admt.202100222.

[7] **J. D. Anderson**, J. Merkel, D. MacMahon, and S. K. Kurinec, "Evaluation of si:HfO2 ferroelectric properties in MFM and MFIS structures," *IEEE Journal of the Electron Devices Society*, vol. 6, pp. 525–534, 2018. DOI: 10.1109/JEDS.2018.2826978.

Conference Proceedings

[1] U. Rawat, **J. Anderson**, and D. Weinstein, "Large-signal analysis and modeling of CMOS-MEMS ferroelectric resonators," presented at the Hilton Head Sensors and Actuator Workshop, 2022, p. 1.

[2] D. Zheng, A. Charnas, **J. Anderson**, *et al.*, "First demonstration of BEOL-compatible ultrathin atomic layer-deposited InZnO transistors with GHz operation and record high bias-stress stability," in *2022 International Electron Devices Meeting (IEDM)*, Dec. 2022, pp. 4.3.1–4.3.4. DOI: 10.1109/IEDM45625.2022.10019452.

[3] A. Charnas, **J. Anderson**, J. Zhang, D. Zheng, D. Weinstein, and P. D. Ye, "Record RF performance of ultra-thin indium oxide transistors with buried-gate structure," in *2022 Device Research Conference (DRC)*, Jun. 2022, pp. 1–2. DOI: 10.1109/DRC55272.2022.9855782.

[4] **J. Anderson** and D. Weinstein, "PyMeasRF: Automating RF device measurements using python," Jul. 23, 2019. DOI: 10.25080/Majora-7ddc1dd1-014.

Grants and Fellowships

2024-Present **NSF**, ERI: Leveraging 2D Ferroelectric Semiconductors Towards Acoustoelectric Circulators, $199,980

Awards and Honors

2016 **NSF Graduate Research Fellowship**, *Honorable Mention*

2016 **RIT Turkman Scholar**

2015 **Tau Beta Pi Stabile Scholar**

Campus Talks and Presentations

2023 **Purdue Nanotechnology Seminar**, *Integrated Acoustic Resonators in Commercial finFET Technology*

2020 **Purdue ECE Open House**, *Nickelate-Based Phase Transition Actuators*

Teaching Experience

University of Vermont

Instructor Semiconductor Materials and Devices (Spring '24)

Co-Developer IC Fabrication (Fall '23)

Purdue University

TA Electromagnetics (Fall '21 [In-Person])

Rochester Institute of Technology

TA Microelectronic Engineering Senior Design (Fall '16/Spring '17)

TA CMOS Processing (Spring '15/Fall '16)

TA Introduction to Microelectronic Engineering (Fall '15)

Graduate Research Experience

Purdue University, HybridMEMS Lab

2022-2023 Van der Waals MEMS Resonators

2017-2022 Commercially-Integrated finFET Acoustic Resonators

2019-2020 Nickelate-Based MEMS Actuators

2018-2019 Measurement of Injection Locking in Colpitts Oscillators

Rochester Institute of Technology

2014-2017 Ferroelectric HfO2 Characterization

2016 Polysilicon Microbolometer Design and Fabrication

Professional Service

2019-2022 **Contributor**, scikit-rf

2021 **Manuscript Review**, IEEE Journal of the Electron Devices Society

2021 **Manuscript Review**, Frontiers in Materials

2016 **Conference Volunteer**, Emerging Technologies: Communications, Microsystems, Optoelectronics, Sensors

Other Publications

[1] **J. Anderson**. "Skrf network viewer," Plotly Dash Application Gallery. (), [Online]. Available: `https://dash.gallery/dash-skrf-viewer/` (visited on 04/16/2023).

[2] A. Arsenovic, J. Hillairet, **J. Anderson**, *et al.*, "Scikit-rf: An open source python package for microwave network creation, analysis, and calibration [speaker's corner]," *IEEE Microwave Magazine*, vol. 23, no. 1, pp. 98–105, Jan. 2022, ISSN: 1557-9581. DOI: 10.1109/MMM.2021.3117139.

[3] J. C. Damle, **J. Anderson**, M. Storey, and D. Weinstein, "Automated measure-

ment of acoustoelectric RF MEMS for wireless communication applications," *Purdue SURF Symposium*, p. 9, 2021.

[4] H.-M. Tran, **J. Anderson**, and D. Weinstein, "Modeling ferroelectric domain switching kinetics," *Purdue SURF Symposium*, p. 3, 2020.

[5] **J. Anderson**, "Ferroelectric hafnium dioxide thin films," *Annual Microelectronic Engineering Conference*, May 1, 2015.

Professional Skills

Programming	Python, MATLAB, Perl, C
Fabrication	CMOS Processing, Electron Beam Lithography, Design of Experiments, Soldering, Hardware Assembly
Metrology	On-wafer Electrical Probing [S-Parameter, IV, CV, PV], Circuit Test, AFM, Ellipsometry, Reflectometry, SEM, FIB, EDS
Simulation	COMSOL, Silvaco Atlas, Silvaco Athena, SLURM
EDA	Keysight ADS, Cadence Virtuoso, Spectre, KiCad, LTSpice
Design	Fusion360, Blender, Affinity Designer, GNU Image Manipulation Program

Community Outreach

2019 **Imagination Station**
Demonstrate cardiac anatomy of cow hearts to K-12 students at Halloween science event.

2015-2017 **Imagine RIT**
Explain microelectronics processing and MEMS technologies at STEM festival attended by thousands.

Additional Work History

2022 **College of Engineering Tutor**, Purdue University
1-on-1 tutoring of underrepresented student in graduate-level finite element analysis coursework.

2012-2015 **Microelectronic Engineering Tutor**, Rochester Institute of Technology
1-on-1 and group tutoring in Engineering Learning Center.

2015 **Co-Op Engineer, Manufacturing Technology**, GLOBALFOUNDRIES
Data Analysis Solutions for 14 nm yield engineering using Perl, Python, and Tibco Spotfire.

2014 **Co-Op Engineer, In-Line Test**, IBM Microelectronics
Speed debugging of test hardware via correlation of failing test paths.

2013 **Co-Op Engineer, Yield Enhancement**, GLOBALFOUNDRIES
Classify yield-loss signatures in 28 nm product using WET, inline, sort, CFM, and tool/chamber data.

Languages

English	Native - C2
ASL	Basic - A1
French	Basic - A1

Professional Memberships

2019-Present	IEEE Electron Devices Society	*Member*
2019-Present	IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society	*Member*
2014-Present	IEEE	*Member*