# Jackson Anderson

*Curriculum Vitae, April 2025*

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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] 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`.

[2] 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.

[3] **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`.

[4] 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`.

[5] 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`.

[6] **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

| | |
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| Pending | **NSF**, *PI*, Equipment: MRI Track 1: Acquisition of a Two-Photon Printer for Engineered Materials Research, $876,840 |
| 2024-Present | **NSF**, *PI*, ERI: Leveraging 2D Ferroelectric Semiconductors Towards Acoustoelectric Circulators, $199,980 |
| 2024-Present | **NSF**, *Sr. Personnel*, Bridging Microelectronics Education Gap in Rural State through Partnerships with K-12 School Science Teachers, 2024 Supplement to RII Track-2 FEC: Advancing Research Towards Industries of the Future to Ensure Economic Growth for EPSCoR Jurisdictions - Advanced Wireless - Integration with Infrastructure System, $294,949 |

## Awards and Honors

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

2016 **RIT Turkman Scholar**

2015 **Tau Beta Pi Stabile Scholar**

## Invited Talks

2024 **Beilstein Symposium on Sensing with Mechanical Systems**, Ferroelectric Materials for Reprogrammable and CMOS-Integrated Transducers

## Teaching Experience

### University of Vermont

Instructor IC Fabrication (Fall '24)

Instructor Semiconductor Materials and Devices (Spring '24, '25)

Co-Instructor IC Fabrication [Lab] (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)

## Research Experience

### University of Vermont

2024-Present Acoustoelectric Interactions in In2Se3 towards RF Circulators

2024-Present Commercially Integrable Gallium Nitride Resonators

2023-Present Multidisciplinary Semiconductor Curriculum Development

### 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

2025 **Review Panelist**, National Science Foundation

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

## College & Departmental Service

2025 **Admitted Student Visit Days**, Organize lab visit for ASV events to highlight semiconductor learning opportunities at UVM to prospective engineering and science students

2024-Present **Certificate Research Advisor**, Serve as technical advisor in the area of semiconductor materials and devices for eight undergraduate student research projects/project proposals.

2024-Present **Project Advisor**, Work with two part-time EE graduate students to define and execute master's projects specialized to their interests

2024-Present **Committee Member**, Serve as part of ten PhD and MS students' exams (defense, comprehensive, and/or qualifying) in Electrical Engineering and Material Science programs.

## 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] 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]`.

[3] 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`.

[4] J. C. Damle, **J. Anderson**, M. Storey, and D. Weinstein, "Automated measurement of acoustoelectric RF MEMS for wireless communication applications," *Purdue SURF Symposium*, p. 9, 2021.

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

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

## Professional Skills

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| 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

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| 2025 | **Developing materials for summer workshop training K-12 teachers in microelectronics concepts.** |
| 2019 | **Imagination Station**<br>Demonstrate cardiac anatomy of cow hearts to K-12 students at Halloween science event. |
| 2015-2017 | **Imagine RIT**<br>Explain microelectronics processing and MEMS technologies at STEM festival attended by thousands. |

## Languages

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

## Professional Memberships

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