Anupama Shree Dhamala

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SUMMARY OF QUALIFICATIONS:

- Hands-on experience with building an experimental plasma jet printer and its operation
- Experienced in using MATLAB and Python to process and analyze data
- Trained in operation of Scanning Electron Microscope (SEM), profilometer, four-point probe, inkjet, and aerosol jet printers
- Knowledge of semiconductor processing including dry etch process, semiconductor physics, plasma physics, applications of plasma processing, design and analysis of analog and digital circuits
- Innovative professional with creative problem-solving skills, ability to thrive in a team or individual setting

EDUCATION:

Doctor of Philosophy, Electrical and Computer Engineering, Boise State University, Boise, Idaho
Expected Graduation: **December 2024**

- GPA: 3.70/4.00
- Extensive Coursework in Plasma Engineering, Additive Technology and Flexible Hybrid Electronics, Advanced Device Design and Simulation, Integrated Circuit Processing, Digital Circuit Design, Linear Systems, Laser and Optical Systems
- Courses covering semiconductor processing including dry etch process, solid-state device physics, plasma physics, applications of plasma processing
- Research Topics: Modeling and simulation of a plasma jet printer, Determination of electron temperature and electron density of a plasma jet printer using Optical Emission Spectroscopy, study of effect of plasma treatment on gold ink deposition

Master of Science, Measurement and Control Engineering, Idaho State University, Pocatello, Idaho
Graduation: May 2019

- GPA: 3.89/4.00
- Courses covering Embedded Systems, VLSI Design, Advanced Electronics, Mixed Signal Design, and System Identification and Simulation
- Research Topic: Detection of curbs and edges using Convolutional Neural Networks

WORK EXPERIENCE:

Graduate Researcher
Electrical and Computer Engineering, Boise State University — August 2019 – present

- Developed an experimental plasma jet printer using specifications provided by Space Foundry, designed and performed experiments to characterize its operation
- Performed data analysis using MATLAB to calculate the electron temperature using optical emission spectroscopy of plasma
- Captured and analyzed the spectral data of the plasma jet printer using ThorLabs Compact CCD Spectrometer CCS200
- Collaborated with team members to design and run tests for plasma jet printer and to investigate the effect of plasma sources on nanoparticle ink
- Researched, designed and performed experiments to study nanoparticle ink sintering using plasma
- Performed electrical and physical characterization of aerosol jet printed and plasma treated samples using Scanning Electron Microscope (SEM), profilometer and four-point probe

Graduate Teaching Assistant
Electrical and Computer Engineering, Boise State University — August 2022 – August 2023

- Teach students to solve analog circuit problems involving diodes, op-amps and RLC elements in Microelectronics circuits

ADDITIONAL PROJECTS:

- Printing and electrical characterization resistive strain gauge using Fujifilm Dimatix Inkjet Printer
- Modeling and Simulation of Plasma Jet Printer in CFD-ACE+
- Design and characterization of digital circuits such as inverter, adder, and oscillator in Cadence Virtuoso
- Detection of curbs and edges from Microsoft Kinect using Convolutional Neural Networks
- Design and simulation of PDP-8 microprocessor in Verilog

TECHNICAL SKILLS AND TOOLS:

- Electrical and physical characterization: SEM, Profilometer, Four-point probe
- Circuit Design and Simulation: LTSpice, Tanner Tools, Cadence Virtuoso, Electric
- Programming Languages and Data Analysis Tools: MATLAB, Python, MS Excel, C/C++
- Optical Emission Spectroscopy: optical spectrometer
- Flexible Hybrid Printing: Space Foundry Plasma Jet Printer, Optomec Aerosol Jet Printer, Fujifilm Dimatix Inkjet Printer, NScrypt Microdispense System
- Plasma Modeling and Simulation: CFD-ACE+, COMSOL
- Laboratory Skills: Breadboarding, Oscilloscope, Function Generator, Spectrum Analyzer, Vector Network Analyzer, Power Sensor

PUBLICATIONS AND PRESENTATIONS:

- J. Manzi, T. Varghese, **A. S. Dhamala**, L. Prakasan, J. Eixenberger, N. Kandadai, D. Estrada, and H. Subbaraman, "Plasma Jet Deposition and Self-Sintering of Gold Nanoparticle Ink for Flexible Electronics," in 2023 IEEE International Flexible Electronics Technology Conference (IFETC), Aug. 2023, pp. 1–3. doi: 10.1109/IFETC57334.2023.10254892.
- **A. S. Dhamala** and N. Kandadai, "Simulation of 2D Model of a Novel Microplasma Used for Printed Flexible Hybrid Electronics," in 2022 IEEE International Conference on Plasma Science (ICOPS), May 2022, pp. 1–1. doi: 10.1109/ICOPS45751.2022.9813260.
- **A. S. Dhamala**, J. Manzi, H. Subbaraman and N. Kandadai, "Simulation of 2D Model of Dielectric Barrier Discharge for Flexible Hybrid Electronics," 2021 IEEE International Conference on Plasma Science (ICOPS), 2021, pp. 1-1, doi: 10.1109/ICOPS36761.2021.9588583.
- S. Tandukar, **A. S. Dhamala**, W. Lin, and S. C. Chiu, "Embedded Plant/Process Simulator: Design and System Integration for Scalable FFT/IFFT Computations," in 2018 IEEE International Conference on Electro/Information Technology (EIT), May 2018, pp. 0677–0680. doi: 10.1109/EIT.2018.8500173.

AWARDS:

- "**Graduate Teaching Assistantship**", Boise State University, August 2022 - present
- "**GEM scholarship**", Boise State University, August 2022 – May 2023
- "**Paul Phelps Continuing Education Grant**", ICOPS 2021 and 2022
- "**Graduate Research Assistantship**", Boise State University, August 2019 – July 2022
- "**Graduate Teaching Assistantship**", Idaho State University, August 2017 – May 2019

EXTRACURRICULAR ACTIVITIES:

- **"Volunteer",** 2024 Engineering and Science festival at Boise State, February 3, 2024
- **"Volunteer",** *TechGirlz* – a one-day career in STEM discovery day for middle school girls in the Treasure Valley, organized by Women Innovators (W.IN), October 2023
- **"Graduate Representative",** Institute of Electrical and Electronic Engineers (IEEE), Boise State University, 2019 - 2022
- "**Project Supervisor**" *Aayo Kitab*, *Ka Baata*, 2016
  Developed strategies for the implementation of a mobile book library in public transportation in Nepal.
- **"Project Manager**", *Yantra 3.0*, an art/science/tech festival in Kathmandu, 2014