

E. Tomas Barraza

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tomasbar.com
Durham, NC

EDUCATION

Duke University

2016 – 2021

Doctor of Philosophy, Electrical Engineering

Thesis Advisor: Dr. Adrienne D. Stiff-Roberts

GPA: 3.75 overall

Certificate in College Teaching

2018 - 2021

North Carolina State University

2012 - 2016

Bachelor of Science, Electrical Engineering, cum laude

Nano Systems Specialization

GPA: 3.61 major, 3.46 overall

RESEARCH EXPERIENCE

Doctoral Research

Stiff-Roberts Lab

Duke University, Durham, NC

Electrical & Computer Engineering Dept.

- Developing applications for Resonant-Infrared Matrix-Assisted Pulsed Laser Evaporation (RIR-MAPLE)
- Pioneering usage of RIR-MAPLE to deposit metal-halide perovskites for optoelectronic devices
- Researching new guidelines for amphiphilic polymer depositions by RIR-MAPLE

Research Assistant

Nanofabrication of PDMS Membranes

NC State University, Raleigh, NC

NSF REU Engineering the Grid

- Created materials apt for soft lithography processing
- Worked towards creation of microfluidics biomedical device

Research Assistant

Real-Time Engine Part Coating Monitoring

NC State University, Raleigh, NC

Air Force Research Laboratory STTR

- Assessed porosity ceramic coatings using Mueller Matrix Polarimetry
- Utilized MATLAB software to perform extensive data and statistical analysis

Student Employee

Awear Headband

Raleigh, NC

- In charge of realizing prototype circuitry while working with an interdisciplinary group of students

ACADEMIC PUBLICATIONS

1. W.A. Dunlap-Shohl*, **E.T. Barraza***, Andrew Barrette, Kenan Gundogdu, A.D. Stiff-Roberts, D.B. Mitzi. "MAPbI₃ Solar Cells with Absorber Deposited by Resonant Infrared Matrix-Assisted Pulsed Laser Evaporation." *ACS Energy Letters*. December 2017.
2. D.A. Luo, **E.T. Barraza**, M.W. Kudenov. "Mueller Matrix Polarimetry on Plasma Sprayed Thermal Barrier Coatings for Porosity Measurement." *Applied Optics*. December 2017.
3. **E.T. Barraza***, W.A. Dunlap-Shohl*, D.B. Mitzi, A.D. Stiff-Roberts. "Deposition of Methylammonium Lead Triiodide by Resonant Infrared Matrix-Assisted Pulsed Laser Evaporation." *Journal of Electronic Materials*. February 2018.

PROFESSIONAL PRESENTATIONS

1. **E.T. Barraza**, W.A. Dunlap-Shohl, D.B. Mitzi, A.D. Stiff-Roberts. "Deposition of Metal-Halide Perovskites by RIR-MAPLE: Materials & Processing Advances." *Duke ECE Department Graduate Workshop*, Durham, NC. September 2017.
2. **E.T. Barraza**, W.A. Dunlap-Shohl, Y. Liu, D.B. Mitzi, A.D. Stiff-Roberts. "Deposition of Crystalline Organic-Inorganic Hybrid Materials by RIR-MAPLE." *Electronic Materials Conference*, South Bend, IN. June 2017.
3. **E.T. Barraza**, M.C. Folgueras, A.D. Stiff-Roberts. "Exploration of Solvent Effects on Morphology of Polyaniline & Other Polymer Films Deposited Through RIR-MAPLE." *APS March Meeting*, New Orleans, LA. March 2017.
4. **E.T. Barraza**, A.D. Stiff-Roberts. "Resonant-Infrared Matrix-Assisted Pulsed Laser Evaporation: Enabling Room-Temperature Mid-Infrared Detection Through Intraband Transitions". *Duke ECE Department Graduate Workshop*, Durham, NC. September 2016.

HONORS & AWARDS

GEM Consortium Associate Fellowship (2016 - 2021)

John T. Chambers Scholars Fellowship (Honorable Mention) (2017)

Research Triangle MRSEC Graduate Fellowship (2016 -)

NCSU Dean's List Member (2013, 2014)

NCSU Wolfpack Recognition Scholarship (2012)

UNIVERSITY SERVICE

Duke University

Undergraduate Student Mentorship (2016 -)

- Responsible for developing comprehensive research plans for undergraduate students
- Oversees training of undergraduate students on lab safety and scientific equipment usage matters

University Libraries Graduate & Professional Students Advisory Board Member (2016 - 2017)

- Participated in interdepartmental roundtable discussions on needs of students
- Discussed allocation of discretionary spending, representing ECE & engineering students

ECE Advocacy and Student Engagement (EASE) Volunteer (2016 -)

- Hosted prospective students, participating in panels, guiding tours
- Related experience of underrepresented minority in graduate environment to those with similar backgrounds

North Carolina State University

ECE Department Ambassador (2015 - 2016)

- Led events to encourage first year engineering students to join ECE & ease their transition
- Volunteered time towards promoting ECE department at university-wide prospective student events

IEEE Chapter Vice-Chair (2015 - 2016)

- Took administrative role in organizing local events and competitions
- Worked to have local chapter perform at national events

SKILLS & INTERESTS

Fluent in Spanish | MATLAB | Science Communication | Regional Chinese Cuisine