

JUSTIN M. STINE

MEMS Sensors and Actuators Laboratory (MSAL)

2201 JM Patterson Building, University of Maryland, College Park, MD, USA 20742

(301) 405-1897 | jmstine@terpmail.umd.edu | justinstine.org

EDUCATION

University of Maryland College Park, College Park, MD

March 2019

M.S. in Electrical Engineering

Thesis: “bPOD: A Wireless Integrated System for Dissolved Oxygen Sensing for Bioprocess Monitoring”

Advisor: Dr. Reza Ghodssi

St. Mary’s College of Maryland (SMCM), St. Mary’s City, MD

May 2014

B.A. in Physics and Mathematics (double major), magna cum laude

Minor in Musical Performance (trumpet)

Thesis: “The Effect of Local Vertical Dissipation Profiles on Absorption Features in Accretion Flows”

Advisor: Dr. Ted Denzen

TEACHING EXPERIENCE

University of Maryland College Park

Graduate Teaching Mentor – Department of Electrical and Computer Engineering

Fall 2017

- ENES489P – Special Topics in Engineering; Hands-on Systems Engineering Projects
 - Supported three undergraduate students as subject matter expert to assist with systems engineering formulation of an ingestible capsule device to treat pancreatic cancer.

Professor: Dr. John MacCarthy (Fall `17)

Graduate Teaching Assistant – Department of Electrical and Computer Engineering

2015-2017

- ENEE307 – Electronic Circuits Design Laboratory (Four semesters - Head TA Fall 2016)
 - Taught two 3 hour weekly lab sessions, assisting students with completion of lab experiments, covering topics of BJT’s, MOSFETS, and audio amplifiers.
 - Responsible for grading pre-lab assignments, lab reports, as well as proctoring and grading exams.

Professors: Dr. Romero (Fall `15), Dr. Newcomb (Spring `16, `17), and Dr. Goldsman (Fall `16)

St. Mary’s College of Maryland

Undergraduate Teaching Assistant – Department of Physics

2013-2014

- Fundamentals of Physics III
- Electricity & Magnetism
 - Led class discussions, graded homework assignments, and held weekly review sessions.

Professor: Dr. Erin DePree

RESEARCH EXPERIENCE

University of Maryland College Park

Graduate Research Assistant – Department of Electrical and Computer Engineering

2017 - present

MEMS Sensors and Actuators Laboratory (MSAL)

PI: Dr. Reza Ghodssi, Director of ISR, Herbert Rabin Distinguished Professor

- Designing an in situ sensing solution for bioprocess monitoring in industrial bioreactors.
 - Focuses primarily on device integration of fabricated sensor and microcontroller unit to create a wireless sensor network for dissolved oxygen sensing.

St. Mary’s College of Maryland

Undergraduate Research Assistant – Department of Physics

2013-2014

Advisor: Dr. Tao, Assistant Professor

- Conducted senior thesis investigating effect of altering power law dependencies of vertical dissipation profiles of stellar mass black holes.
 - The accretion disk structure equations were solved at select annuli, and compiled into a full disk spectra for each dissipation profile.
 - Determined how the discrepancies in energy, resulting from absorption features at specific frequencies of observational data, can be accounted for in theoretical models.

PUBLICATIONS

1. **J. M. Stine**, L. A. Beardslee, W. E. Bentley, and R. Ghodssi, “*Electrochemical Dissolved Oxygen Sensor-Integrated Capsule for Wireless In Situ Bioprocess Monitoring*,” *Biosensors and Bioelectronics*, in preparation (February 2019).
2. G. E. Banis, L. A. Beardslee, **J. M. Stine**, R. M. Sathyam, and R. Ghodssi, “*Gastrointestinal Targeted Sampling of Sensing via Integrated Capsule System*,” *Journal of Microelectromechanical Systems*, Accepted (February 2019).

CONFERENCE PROCEEDINGS & PRESENTATIONS

1. **J. M. Stine**, L. A. Beardslee, R. M. Sathyam, W. E. Bentley, and R. Ghodssi, “Exploring bioreactor heterogeneities with wireless in situ ‘smart marble’ platform,” *Spring 2019 ACS National Meeting*, Orlando, Florida, March 31 - April 4, 2019. (Accepted)
2. G. E. Banis, L. A. Beardslee, **J. M. Stine**, and R. Ghodssi, “Enteric & 3D-Printed Hybrid Package for Sampling in Digestive Regions,” *Hilton Head Workshop 2018: A Solid-State Sensors, Actuators and Microsystems Workshop*, Hilton Head, SC, June 3-7, 2018.
3. R. C. Huiszoon, **J. M. Stine**, L. A. Beardslee, P. Ramiah Rajasekaran, W. E. Bentley, and R. Ghodssi, “Flexible Impedance Sensor for Wireless Monitoring of Catheter Biofilms,” *Hilton Head Workshop 2018: A Solid-State Sensors, Actuators and Microsystems Workshop*, Hilton Head, SC, June 3-7, 2018.
4. G. E. Banis, L. A. Beardslee, **J. M. Stine**, and R. Ghodssi, "pH Targeting via Packaging for a Wireless Ingestible Capsule," *The 9th International Conference on Microtechnologies in Medicine and Biology (MMB2018)*, Monterey, CA, March 26-28, 2018.
5. **J. Stine**. The Effect of Local Vertical Dissipation Profiles on Absorption Features in Accretion Flows. Poster presentation. *St. Mary's Project Day*, St. Mary's College of Maryland, St. Mary's City, MD, May 2014.
6. **J. Stine**, D. Rice, and C. Winterer. Modeling Traffic Flow with Overtaking. Oral presentation. *Mathematical Association of America Sectional Meeting*, James Madison University, Harrisonburg, VA, April 2014.
7. **J. Stine**. Chaotic Motion of the Double Spring Pendulum. Poster Presentation. *Natural Science and Mathematics Student Symposium*, St. Mary's College of Maryland, St. Mary's College of Maryland, St. Mary's City, MD, April 2013.

AWARDS

3 rd Place Poster Presentation June 2018 AMBIC Meeting	June 2018
ECE Distinguished Teaching Assistant	2016-2017
ECE TA Training and Development Fellow	2016-2017
2 nd Place Paper Presentation MAA Sectional Meeting	Spring 2014
Omicron Delta Kappa, Leadership and Service Honors Society	Fall 2013 - present
SMCM Physics Peer Mentor (awarded to one PHYS student)	Fall 2012
Sigma Pi Sigma, Physics Honors Society	Fall 2011 - present
SMCM Dean's List	2010 - 2014
SMCM Academic Achievement Scholarship Award Recipient	2010 - 2014

MEMBERSHIPS

American Chemical Society	2019 - present
Institute of Electrical and Electronics Engineers (IEEE) – Student Member	2015 - present
American Physical Society	2013 - present