Valerie E. Rennoll

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EDUCATION

Johns Hopkins University, Baltimore, MD (2016 – present) Ph.D. Electrical and Computer Engineering
Dr. Jim West's Research Group Cumulative GPA: 3.88

American University, Washington, DC (2012 – 2016) *Bachelors of Science* in Audio Technology and Physics
Honors Program Participant Cumulative GPA: 3.98

RESEARCH EXPERIENCE

Graduate Student, Johns Hopkins University, Baltimore, MD *(January 2017 – present)*
- Optimizing electret polymers for use in flexible, acoustic impedance-matched transducers

Audio Technology Capstone, American University, Washington, DC *(January 2016 – May 2016)*
- Researched how to use delay-sum beamforming with Playstation Kinect

Senior Physics Thesis, American University, Washington, DC *(August 2015 – May 2016)*
- Constructed demonstrations to explain acoustics concepts, such as interference between and diffraction of waves

Research Intern, NOAA Office of Coast Survey, Silver Spring, MD *(May 2016 – August 2015)*
- Analyzed approximately 2 terabytes of acoustical depth data for ocean floor mapping in the Arctic
- Created new workflow for the Office of Coast Survey to ingest bathymetric data from outside sources
- Utilized sonar for acoustic data collection onboard NOAA Ship *Fairweather*

Research Assistant, American University, Washington, DC *(February 2014 – May 2015)*
- Measured thermal noise in optical coatings for use in the Laser Interferometer Gravitational-Wave Observatory

Research Intern, Applied Research in Acoustics, Culpeper, VA *(June 2014 – August 2014)*
- Performed subject matter expert playtesting of WaveQuest, an educational underwater acoustics video game
- Developed parametric underwater noise models as part of real-time passive sonar simulation engine

TEACHING EXPERIENCE

Course Instructor, Johns Hopkins University, Baltimore, MD *(August 2020 – December 2020)*
- Developed and led an introductory course on electret materials for freshmen undergraduates

Teaching Academy Participant, Johns Hopkins University, Baltimore, MD *(August 2019 – December 2020)*
- Completed certificate program that provided formal instruction on pedagogy and evidence-based teaching practices

Guest Lecturer, Johns Hopkins University, Baltimore, MD *(Spring 2020)*
- Developed and provided guest lectures on the electronic properties of materials for a graduate level course

Physics Teaching Assistant, American University, Washington, DC *(January 2013 – May 2016)*
- Held regular office hours to support students in understanding class content
- Assessed weekly homework assignments of approximately fifty students

WORK EXPERIENCE

Lab Technician, Dipole Materials, Baltimore, Maryland *(April 2020 – May 2020)*
- Produced electrospun nanofiber mats for use as face mask filters

Acoustic Consultant Intern, Shen Milsom & Wilke, Washington DC *(September 2015 – December 2015)*
- Composed reports for clients addressing potential acoustic issues and how to mitigate architectural impacts
- Conducted site visits for the collection of sound measurement data

Nonprofit Intern, Sound Foundation, Culpeper, VA *(June 2014 – August 2014)*
- Gathered research to form case of support for the nonprofit, which introduces disadvantaged high school students to STEM and business fields through real-world acoustics projects
- Designed program structure and lessons based on pedagogical research

Administrative Intern, Shrewsbury Township, Glen Rock, PA *(August 2011 – May 2014)*
- Constructed and maintained database to organize approximately 600 sewer maps
- Executed administrative duties such as filing, updating website, and creating newsletter

Camp Counselor, Camp Superkids with Johns Hopkins Bayview Medical Center, New Freedom, PA *(July 2013)*
- Organized and led a weeklong music workshop for children to write and record their own song

PUBLICATIONS

Rennoll, V., Lee, S., Erturun, U., Fried, S., West, J. "DNA increases the β–phase content of PVDF films." CEIDP, 2020.

Rennoll, V., McLane, I., Emmanouilidou, D., West, J., Elhilali, M. "Electronic stethoscope filtering mimics the perceived sound characteristics of acoustic stethoscope." JBHI, 2020.

Fischl, K.D., Tognetti, G., Mendat, D., Orchard, G., Rattray, J., Sapsanis, C., Campbell, L., Elphage, L., Niebur, T., Pasciaroni, A., **Rennoll, V.**, Romney, H., Walker, S., Pouliquen, P., Andreou, A. **"**Neuromorphic self-driving robot with retinomorphic vision and spike-based processing/closed-loop control." CISS, 2017.

PRESENTATIONS

Acoustics Virtually Everywhere, virtual (*December 7-11, 2020)*

- Characterizing the acoustic impedance and attenuation of biocompatible elastomers: an optimal design of experiments approach

CEIDP, virtual *(October 17-30, 2020)*

- DNA increases the β–phase content of PVDF films

MRS Fall Meeting, Boston, MA *(December 1-6, 2019)*

- Assessing the individual contributions of dipolar, trapped, and triboelectric charges to electrospun PVDF's electrical response

POSTERS

APS March Meeting, Baltimore, MD *(March 14-18, 2016)*

- Visualizing Sound: Demonstrations to Teach Acoustic Concepts

Ocean Sciences Meeting, New Orleans, LA *(February 21-26, 2016)*

- Data Mining to Chart the Arctic: Analysis of Approaches to Incorporate Outside Source Data into NOAA Office of Coast Survey Workflow

PATENTS

Rennoll, V., McLane, I., Eisape, A., Elhilali, M., West, J. Impedance-matched acoustic transducer, Filed *JHU Invention Disclosure*, **C16430**, Oct 9, 2020.

McLane, I., West, J., Emmanouilidou, D., Elhilali, M., **Rennoll, V.**, Erturun, U., Orrego, S., Kang, SH. Tunable thin-film acoustic sensor, manufacturing methods, and processing algorithms, Filed *JHU Invention Disclosure*, **D14834**, Jul 7, 2017.

LEADERSHIP

Stevenson University Expanding Your Horizons: STEM Discovery Day, Owings Mills, MD *(Sept. 2017, 2018, & 2019)*

- Designed and led workshops introducing participants to the science of sound and construction of a speaker

Southern Elementary School Science Friday, Glen Rock, PA *(April 2018)*

- Co-organized event and coordinated over twenty volunteers to introduce elementary students to STEM fields

Girl Scout GENIUS Day, New Freedom, PA *(April 2017)*

- Co-organized event to introduce 130 girls to variety of STEM fields through hands-on workshops

USA Science and Engineering Festival, Washington, DC *(April 2014, April 2016)*

- Interacted with the public to explain the science of sports and sound at American University's booth

National Maker Faire, Washington, DC *(June 2015)*

- Showed and explained audio spectrum analyzer project to the public at American University's booth

HONORS & AWARDS

Collegiate Inventors Competition Runner Up Award *(October 2020)*
Johns Hopkins Discovery Award *(Summer 2019)*
IEEE Dielectrics and Electrical Insulation Society Graduate Student Fellowship *(December 2019)*
Maryland State Three Minute Thesis Competition, Audience's Choice *(May 2019)*
Johns Hopkins University Three Minute Thesis Competition, 2nd Place *(April 2019)*
Phi Beta Kappa Member *(Spring 2016)*
Outstanding Academics in Audio Technology, American University *(Spring 2014, 2015, & 2016)*
Honors and Scholars Program Outstanding Senior, American University *(Spring 2016)*
Outstanding Physics Academics, American University *(Spring 2013, 2014, & 2016)*
Honors Capstone Research Grant, American University *(Fall 2015)*
Acoustical Society of America, DC Chapter, Oral Presentation Award *(May 2015)*
Barry Goldwater Scholarship Honorable Mention *(Spring 2015)*
Honors Scholars and Artists Award, American University *(Spring 2015)*
Physics Teaching Assistant Award, American University *(Spring 2015)*
NOAA Hollings Scholar *(2014 – 2016)*
Dean's List, American University *(Fall 2012 – Spring 2016)*
Dean's Scholarship, American University *(Fall 2012 – Spring 2016)*
Girl Scout Gold Award *(2012)*

ACTIVITIES

Womxn Mentoring Whiting mentor *(Spring 2021)*

- Paired with undergraduate engineering student to provide support with internship and graduate school applications

STEM Achievement in Baltimore Elementary Schools (SABES) program mentor *(Fall 2019)*

- Assist students in completing student-driven STEM projects during afterschool program

Southern York County School District STEAM Committee *(Fall 2017 – Spring 2018)*

- Implementing activities to increase scientific thinking throughout the school district

Audio Technology Professor Search Committee *(Fall 2015)*

- Interviewed potential candidates as student member of committee

Women in Science *(Fall 2012 – Spring 2016)*; President *(Fall 2014 – Spring 2016)*

- Coordinated and led multiple events including a Girl Scout outreach day, Professor Potluck, Fall Social, Alumni Panel, and luncheon with Associate Director for Science at the White House

Society of Physics Students *(Fall 2013 – Spring 2016)*

- Interact with other physics students to develop scientific communication

Live Sound Club *(Fall 2013 – Fall 2014)*

- Worked in conjunction with other members to set up equipment for variety of on-campus concerts

SKILLS

Mathematica
Matlab
Electrospinning
Arduino
Python
R
JMP

RELEVANT COURSES

Structure of Materials (Fall 2017)
Digital Signal Processing (Spring 2017)
Audio Signal Processing (Fall 2016)
Microsystem Fabrication (Fall 2016)
Acoustics (Spring 2014)