Amanda Darling, MPH, Ph.D.

(331) 452-6612 • amandadarling@hsph.harvard.edu • Boston, MA

EDUCATION

Doctor of Philosophy, Civil Engineering **January 2021- September 2024**
Virginia Polytechnic Institute and State University GPA: 3.93/4.0

Master of Public Health **January 2021-May 2023**
Virginia Polytechnic Institute and State University GPA: 3.94/4.0

Master of Science, Environmental Engineering **August 2019-December 2021**
Virginia Polytechnic Institute and State University GPA: 3.90/4.0

University of Illinois at Urbana-Champaign **August 2015-August 2019**
Bachelor of Science in Civil Engineering GPA: 3.67/4.0

FELLOWSHIPS

Global Change Center Fellowship **August 2023-May 2024**
Global Change Center; Virginia Polytechnic Institute & State University

- Awarded to PhD students enrolled in the Global Change Center interdisciplinary graduate education program (IGEP) who exemplify and demonstrate academic rigor and commitment to the goals of the program (i.e., interdisciplinary training, community engagement)

NSF Research Traineeship (NRT) Combating Antimicrobial Resistance Fellowship **August 2022-May 2023**
National Science Foundation

- Awarded to PhD students engaged in transdisciplinary team-based research to advance wastewater-based surveillance techniques to understand dissemination and proliferation of antimicrobial resistance in the environment

Rural Environmental Health Fellowship
Global Change Center; Virginia Polytechnic Institute & State University **August 2021-May 2022**

- Awarded to PhD students pursuing research focused on rural environmental health.
- Used to support interdisciplinary activities that advance research at the nexus of environmental health sciences in rural settings.

Via Fellowship **August 2019- December 2023**
Department of Civil & Environmental Engineering; Virginia Polytechnic Institute & State University

- Awarded to prospective graduate students nominated by faculty in civil & environmental engineering.
- Based on academic merit and Ph.D. potential.

AAUW Selected Professions Fellowship **August 2019-August 2020**
American Association of University Women

- Awarded to women who intend to pursue a full-time course of study in one of the designated degree programs where women's participation traditionally has been low.
- Based on academic excellence, potential as a practicing professional, and promise as a role model in new and nontraditional fields of study, research or practice.

SUMMARY

I am a multidisciplinary biologist in the disciplines of biological sciences and data analytics with a strong foundation in environmental surveillance. Specifically, I specialize in surveillance and detection of pathogens and antimicrobial resistance in environmental systems (e.g., wastewater, drinking water, surface water) to inform public health using molecular biology and multi-omics techniques.

For my doctoral research at Virginia Tech, I formulated experimental designs and hypotheses for environmental surveillance of pathogens (SARS-CoV-2, Norovirus GII, rotaviruses), antibiotic-resistant bacteria, and antimicrobial resistance indicators in wastewater and drinking water. I utilized programming tools and scripting languages (R, Linux) to perform statistical data analysis (e.g., generalized linear models (GLMs)) in addition to evaluating and visualizing

relationships between physicochemical, droplet digital PCR (ddPCR), qPCR, next-generation sequencing, and health outcome data.

I have expertise in processing environmental metagenomic data using bioinformatic workflows and dimensionality reduction techniques (e.g., NMDS, PCA). Additionally, I have trained and supervised small and large teams of undergraduate and early-career graduate students on laboratory, field-based, and analytical techniques. In addition to technical reports, I have prepared five publication ready manuscripts for submission to scientific journals. I have also communicated key findings from my research to the broader research community at scientific conferences and workshops.

With a strong background in public health, environmental microbiology, and statistical data analysis, I am motivated and committed to advancing applied research initiatives addressing national security threats in biological systems.

GRANTS RECEIVED

Virginia Water Resources Research Center Grant **August 2022- July 2023**

Virginia Water Resources Research Center

Project Title: "Wastewater characterization and enteropathogen quantification in a rural Virginia sewershed and associated implications for local water resources"

RESEARCH EXPERIENCE

Postdoctoral Research Fellow **Boston, MA**

Harvard T.H. Chan School of Public Health, Harvard University June 2025-present

- Designed and applied bioinformatics workflows to process multiomic data using tools including MetaPhlAn, StrainPhlAn, Sylph, Centrifuger, Kraken2, Bracken, and custom scripts (R, Linux) to investigate biofilm contributions to wastewater pathogen and antimicrobial resistance signals in hospital settings.
- Led time-series based analysis of hospital-scale wastewater multiomics data to investigate applicability of wastewater for source tracking hospital acquired infection outbreaks.
- Drafted and finalized two first-authored manuscripts for publication.
- Trained and mentored >5 undergraduate, masters, and PhD-level students on laboratory and data-analysis workflows (ddPCR, DNA/RNA extraction, bioinformatics).
- Processed and analyzed hybridization-based probe capture enrichment sequencing data, optimizing alignment and coverage estimation workflows to improve sensitivity for low-abundance targets.
- Designed laboratory experiments to optimize methods for recovering oncoviruses from wastewater.

ORISE Postdoctoral Fellow **Washington, DC**

U.S. Environmental Protection Agency, Office of Water, Water Reuse Program September 2024-May 2025

- Developed issue papers targeted for non-scientific audiences on public health topics related to water reuse including antimicrobial resistance, opportunistic pathogens in premise plumbing, quantitative microbial risk assessment, and relevant policy issues, demonstrating flexible non-technical and technical writing ability.
- Coordinated updates to the Water Reuse National Action Plan (WRAP) with internal and external stakeholders across multiple disciplines (government, industry, academia) to influence environmental policy implementation.
- Gathered, synthesized, and visualized data from water reuse projects, providing data-driven insights for the Water Reuse National Action Plan.
- Designed web updates for the water reuse online platform by refining infographics and scientific write ups that explain how water reuse can build water security, sustainability, and resilience in communities.

Graduate Research Assistant **Blacksburg, VA**

Department of Environmental Engineering, Virginia Tech Spring 2020-August 2024

- **Biosurveillance Expertise.** Developed and executed environmental biosurveillance protocols using field and laboratory equipment to collect > 110 wastewater samples, assess community pathogen shedding dynamics, and analyze molecular biomarkers (e.g., viruses, antibiotic resistance genes, antimicrobial-resistant organisms) relevant to infectious disease surveillance.
- **Multi-omics Based Analysis.** Designed and optimized bioinformatics workflows to process metagenomic sequencing data using tools such as Kraken2, Bracken, and custom scripts (R, Linux), integrating data across laboratory workflows to identify spatial-temporal patterns of antimicrobial resistance (AMR) in wastewater and inform biosurveillance strategies.

- **Biosurveillance Protocol Development**. Evaluated and tested advanced technologies and platforms (e.g., ddPCR, next-generation sequencing) for inclusion in biosurveillance protocols and provided technical oversight, improving operational efficiencies and aligning our research agenda with cutting-edge methodologies.
- **Data Analytics**. Analyzed microbiological data using statistical models and dimensionality reduction techniques including non-metric multidimensional scaling (NMDS), principal component analysis (PCA), and generalized linear models (GLMs), to evaluate relationships between >10 location-specific, date-specific, and sample-specific covariates from biosurveillance data using various programs in R.
- **Applied Microbiology and Chemistry.** Coordinated design of innovative experiments in an environmental microbiology lab and performed DNA and RNA extraction, microbial culture of ESBL *E. coli*, water sample concentration, and high-throughput data collection techniques (ddPCR, qPCR) for molecular detection and quantification of pathogens and health biomarkers in > 150 environmental samples.
- **Public Health Research.** Assisted with human subjects research for two large-scale survey-based studies on microbial drinking water quality in rural Appalachia, integrating environmental exposure and health outcome data to inform mitigation strategies for waterborne infectious diseases.
- **Cross-Disciplinary Leadership.** Supervised an interdisciplinary team of two undergraduate, two master's, and three doctoral students, delegating tasks for fieldwork, laboratory procedures, and statistical analysis.
- **Qualitative Analysis Techniques.** Leveraged organizational and qualitative data analysis skills to conduct a systematic literature review and meta-analyses of 85 identified peer-reviewed publications on water quality and public health in rural Appalachian U.S. to inform rural environmental health data disparities.
- **Task Management.** Constructed data management plans and implemented quality assurance and quality control measures for multi-omics data and other quantitative molecular data, ensuring reproducibility, accountability, and compliance with established standards.
- **Writing Skills.** Prepared four scientific peer-reviewed publications, three technical reports summarizing research progress for our partner organization, and two research proposals for environmental microbiology surveillance and infectious disease projects, communicating scientific findings internally to key partners and team members and externally to the broader research community.
- **Public Speaking.** Communicated key findings and technical concepts from rural wastewater surveillance projects to the broader STEM scientific community at research conferences and workshops.
- **Strategic Communications.** Created data visualizations using R to devise creative ways to communicate technical concepts and research findings to diverse and interdisciplinary audiences.

Undergraduate Research Assistant **Champaign, IL**
Department of Environmental Engineering, University of Illinois at Urbana-Champaign January 2019 – May 2019
Advisor: Dr. Megan Konar

- Developed literature review and technical writing report analyzing the impact of social networks on household food sharing and natural resource management in regions of Zambia affected by prolonged droughts.

Water Treatment Research Assistant **Champaign, IL**
Construction Engineering Research Laboratory, USACE January 2019- August 2019

- Researched application of water reuse systems to address water scarcity in Army installations.
- Designed shower head and water storage tank for mobile hygiene systems reusing grey water.
- Analyzed and interpreted lab results from water sample field data taken from mobile hygiene system.

Undergraduate Research Assistant **London, U.K.**
University College London; Advisor: Dr. Luiza Campos October 2018 – December 2018

- Researched mobile phone applications and databases to support decentralized closed-loop water systems.
- Identified parameters for modeling and mapping data on water-waste-energy-food nexus in rural areas.

PUBLICATIONS

UNDER REVIEW

[1] **Amanda Darling**, Benjamin Davis, Thomas Byrne, Madeline Deck, Gabriel Maldonado Rivera, Sarah Price, Amber Amaral-Torres, Clayton Markham, Raul Gonzalez, Rekha Singh, Erin Wettstone, Suporn Pholwat, Mami Taniuchi, Peter Vikesland, Leigh-Anne Krometis, Amy Pruden, Alasdair Cohen (In

preparation). Wastewater Based Epidemiology for SARS-CoV-2, Rotavirus, and Norovirus in Small Rural Systems.

PUBLISHED

[1] Sarah Price Loc Nguyen, Vineeth Manthapuri, Kyra Sigler, Petra Choi, Clayton Markham, **Amanda Darling**, Ivan Odur, Amy Pruden, Leigh-Anne Krometis (2026). Representation of Urban and Rural Contexts in the Application of Wastewater Surveillance for Antimicrobial Resistance: A Systematic Review. *Water Research*, 294, 125450, https://doi.org/10.1016/j.watres.2026.125450.

[2] Sarah Price, Leigh-Anne Krometis, Jessica Magee, **Amanda Darling**, Amy Pruden (2025). Extending Wastewater-Based Surveillance to Serve Rural Communities: Comparison of Antimicrobial Resistance Indicator Genes in Septage and Wastewater Influent. *Science of the Total Environment*, 1000, 180456, https://doi.org/10.1016/j.scitotenv.2025.180456.

[3] **Amanda Darling**, Benjamin Davis, Thomas Byrne, Madeline Deck, Gabriel Maldonado Rivera, Sarah Price, Amber Amaral-Torres, Clayton Markham, Raul Gonzalez, Peter Vikesland, Leigh-Anne Krometis, Amy Pruden, Alasdair Cohen (2025). Comparative Assessment of Wastewater-Based Surveillance Normalization Methods to Improve Pathogen Monitoring in Rural Sewersheds. *Environmental Science & Technology*, 59(22), 11095–11107. https://doi.org/10.1021/acs.est.4c14485

[4] **Amanda Darling**, Benjamin Davis, Thomas Byrne, Madeline Deck, Gabriel Maldonado Rivera, Sarah Price, Amber Amaral-Torres, Clayton Markham, Raul Gonzalez, Peter Vikesland, Leigh-Anne Krometis, Amy Pruden, Alasdair Cohen (2025). Subsewershed Analyses of the Impacts of Inflow and Infiltration on Viral Pathogens and Antibiotic Resistance Markers Across a Rural Sewer System. *Water Research. https://doi.org/10.1016/j.watres.2025.123230*

[5] Sarah E Philo, Kara B De León, Rachel T Noble, Nicolette A Zhou, Rashed Alghafri, Itay Bar-Or, **Amanda Darling**, Nishita D'Souza, Oumaima Hachimi, Devrim Kaya, Sooyeol Kim, Katrin Gaardbo Kuhn, Blythe A Layton, Cresten Mansfeldt, Bethany Oceguera, Tyler S Radniecki, Jeffrey L Ram, Lauren P Saunders, Abhilasha Shrestha, Lauren B Stadler, Joshua A Steele, Bradley S Stevenson, Kyle Bibby, Alexandria B Boehm, Rolf U Halden, Jeseth Delgado Vela (2023). Wastewater surveillance for bacterial targets: current challenges and future goals. *Applied and Environmental Microbiology.* https://doi.org/10.1128/aem.01428-23

[6] Alasdair Cohen, Peter Vikesland, Amy Pruden, Leigh-Anne Krometis, Lisa M Lee, **Amanda Darling**, Michelle Yancey, Meagan Helmick, Rekha Singh, Raul Gonzalez, Michael Meit, Marcia Degen, Mami Taniuchi (2023). Making Waves: The Benefits, and Challenges, of Responsibly Implementing Wastewater-based Surveillance for Rural Communities. *Water Research.* https://doi.org/10.1016/j.watres.2023.121095

[7] Devin A Bowes, **Amanda Darling**, Erin M Driver, Devrim Kaya, Rasha Maal-Bared, Lisa M Lee, Kenneth Goodman, Sangeet Adhikari, Srijan Aggarwal, Aaron Bivins, Zuzana Bohrerova, Alasdair Cohen, Claire Duvallet, Rasha A Elnimeiry, Justin M Hutchison, Vikram Kapoor, Ishi Keenum, Fangqiong Ling, Deborah Sills, Ananda Tiwari, Peter Vikesland, Ryan Ziels, Cresten Mansfeldt (2023). Structured Ethical Review for Wastewater-Based Testing in Support of Public Health. *Environmental Science & Technology.* https://doi.org/10.1021/acs.est.3c04529

[8] **Amanda Darling**, Hannah Patton, Md Rasheduzzaman, Rachel Guevara, Joshua McCray, Leigh-Anne Krometis, Alasdair Cohen (2023). Microbiological and chemical drinking water contaminants and associated health outcomes in rural Appalachia: A systematic review and meta-analysis. *Science of the Total Environment.*

[9] Alasdair Cohen, Ayella Maile-Moskowitz, Christopher Grubb, Raul Gonzalez, Alessandro Ceci, **Amanda Darling,** Laura Hungerford, Ronald Fricker, Carla V. Finkielstein, Amy Pruden, & Peter Vikesland (2022). Sub-Sewershed SARS-CoV-2 Wastewater Surveillance & COVID-19 Epidemiology Using Building-specific Occupancy & Case Data. *ACS ES&T Water.* https://doi.org/10.1021/acsestwater.2c00059

Alasdair Cohen, Md Rasheduzzaman, **Amanda Darling**, Leigh-Anne Krometis, Marc Edwards, Teresa Brown, Tahmina Ahmed, Erin Wettstone, Suporn Pholwat, Mami Taniuchi, Elizabeth T Rogawski-McQuade (2022). Bottled and Well Water Quality in a Small Central Appalachian Community: Household-Level Analysis of Enteric Pathogens, Inorganic Chemicals, and Health Outcomes in Rural Southwest Virginia. *Int. J. Environ. Res. Public Health*. https://doi.org/10.3390/ijerph19148610

PRESENTATIONS

PAST

Environmental Dimensions of Antimicrobial Resistance (EDAR) **May 2024**

Considerations for Wastewater Based Epidemiology (WBE) of Antimicrobial Resistance (AMR) in Compromised Sewer Collection Networks — Flash talk

UNC Water and Health Conference — **October 2023**
Potential Biases Introduced by Inflow and Infiltration on Quantification of Normalized and Unnormalized Clinically Relevant Pathogens in a Rural Sewershed — Oral Presentation

Center for Emerging, Zoonotic, and Arthropod-Borne Pathogens (CEZAP) Symposium — **October 2023**
Wastewater Based Surveillance Applications to Understand Infection Dynamics: Special Considerations and Benefits for Monitoring Rural Systems — Oral Presentation

International Society of Exposure Science (ISES) Annual Meeting — **August 2023**
Benefits and Considerations when Applying Wastewater Based Surveillance in Rural Sewersheds: Lessons Learned from Monthly Subsewershed Sampling — Oral Presentation

AEESP Research and Education Conference — **June 2023**
Subsewershed Surveillance in Rural Central Appalachia Reveals Enteropathogen Signal is Influenced by Inflow and Infiltration — Oral Presentation

AEESP Research and Education Conference — **June 2023**
Evolving from "Best Practice" to "Best Partnerships": the Ethics of Wastewater-Based Surveillance — Workshop (co-lead)

UNC Water and Health Conference — **October 2022**
Drinking water contamination, exposure, and associated health outcomes in rural Appalachia: a systematic review and meta-analysis — Poster

Water Engineering and Development Centre (WEDC) International Conference — **September 2021**
Drinking water contamination, exposure, and associated health outcomes in rural Appalachia: a systematic review and meta-analysis — Virtual Espresso Talk

TEACHING & MENTORING EXPERIENCE

Graduate Research Mentor — **Summer 2020- September 2024**
Department of Civil Engineering, Virginia Tech

- Led weekly meetings with two early PhD students, two master's students, and two undergraduate students to optimize sample collection and processing as well as data analysis pipelines for monthly wastewater and surface water surveillance work
- Trained and advised graduate and undergraduate students on field and lab- based techniques for environmental surveillance (i.e., ISCO-composite sampler deployment, ddPCR, sample concentration, DNA/RNA extraction, nutrient analysis, qubit)
- Mentored and supervised two undergraduate students in data collection and analysis for a systematic literature review
- Guided undergraduate students in preparation and presentation of research findings

Public Health Practicum Supervisor — **August 2021 – December 2021**
Department of Population Science-Public Health, Virginia Tech

- Collaborated with students in development of learning objectives and provided opportunities for students to achieve desired outcomes.
- Established regular meetings to provide direction and feedback to students.

Teaching Assistant — **August 2019- May 2020**
Intro to Environmental Engineering & Environmental Engineering Principles
Department of Civil Engineering, Virginia Tech

- Held weekly office hours, assisted students with assignments, and graded papers and exams.
- Explained mass-balance based concepts using planned lessons and assignments for >50 undergraduate students each semester.

LABORATORY, FIELD, & DATA ANALYSIS EXPERIENCE

Field work (Wastewater and Surface Water)

- Designed and implemented environmental surveillance protocols for monthly wastewater and surface water sample collection from a town's sewage conveyance system, the WWTP influent and the WWTP effluent, and downstream surface water using both grab- and composite- based methods.
- Processed and interpreted experimental data using ddPCR and standardized wastewater testing procedures for total suspended solids and chemical oxygen demand
- Deployed and performed maintenance on Teledyne ISCO composite samplers.

Microbial Culture

- Measured fecal indicator bacteria in water and wastewater via the IDEXX Colilert Method.
- Cultured ESBL producing *E. coli* and Carbapenemase-producing Enterobacterales (CPE) on selective media.
- Obtained pure culture of ESBL producing *E. coli* and Carbapenemase-producing Enterobacterales (CPE) by re-streaking isolates on fresh agar plates in a Biosafety level 2 laboratory.

Molecular based methods

- Processed sample extracts with custom TaqMan Array Cards (TAC) (a high throughput qPCR technique)
- Performed quantitative PCR (qPCR) using the Applied Biosystems 7500 system.
- Used ddPCR for wastewater and surface water sample processing and optimized assay development for wastewater based surveillance targets.
- Quantified concentrations of DNA and RNA using Qubit Fluorometric Quantification.

Nucleic Acid Extraction

- Extracted nucleic acid from wastewater and drinking water for downstream molecular analysis using ZymoBIOMICS DNA/RNA Miniprep kit.

R

- Proficient packages: ggplot2, Plotly, Shiny, dplyr, tidyr, vegan, tidyverse, OTUtable, MASS,sandwich, broom, lmtest, glmulti
- Used **R packages glmulti and lmtest** to evaluate potential predictor variables for drinking water and wastewater contaminant levels using **generalized linear models (GLMs)**
- **Wrote and performed R scripts** for principal component analysis (PCA), non-metric multidimensional scaling (NMDS), generalized linear models (GLMs), and logistic regression
- Examined explanatory covariates for inclusion as either random or fixed effects in models
- Conducted model selection using **glmulti** for comprehensive comparison of different predictor combinations, optimizing model accuracy.

Assay Design

- **Optimized annealing temperatures** for ddPCR assays, utilizing thermal gradients to enhance assay performance.
- **Performed in silico primer and probe design** using Geneious Prime to improve assay specificity for detection of waterborne pathogens and antimicrobial resistance markers.
- Used Primer3Plus to generate candidate primer and probe sequences.

Bioinformatics

- Performed metagenomic taxonomic classification and abundance profiling using tools including MetaPhlAn, Kraken2, Sylph, and Centrifuger, and assembled metagenomic contigs using MetaSPAdes to reconstruct microbial genomes from environmental samples.
- Conducted sequence alignment and post-alignment processing using Bowtie2 and SAMtools, and performed homology-based searches using BLAST to characterize and validate metagenomic features.
- Designed bioinformatics workflows to evaluate metagenomic pathogen detection results, integrating genome coverage metrics and sequence-level evidence to distinguish true positive detections from false positives.
- Crafted custom Linux scripts to merge reads from sequencing lanes, conduct quality control, alignment, and obtain SNP-verified read counts of antibiotic resistance genes using bioinformatics tools such as AMRplusplus and fastp.
- Applied multivariate statistical methods in R including Bray-Curtis PERMANOVA, pairwise PERMANOVA, and PCoA to assess and compare microbial community structure across sample groups, using phyloseq for end-to-end workflow management.
- Conducted differential abundance analysis using MaAsLin3 to identify microbial taxa and functional features significantly associated with metadata variables across metagenomic datasets.

HONORS & AWARDS

VA AWWA Student Water Challenge First Place Team **September 2022**

WaterJAM 2022

Robert C. Hoehn Graduate Scholarship **August 2021- May 2022**
Virginia Section American Water Works Association

Sonny Roden Memorial Graduate Student Scholarship **August 2021- May 2022**
Virginia Water Environment Association

RELATED PROFESSIONAL EXPERIENCE

Engineering Enterprises Inc. **Sugar Grove, IL**
Civil Engineering Intern May 2018- August 2018

- Monitored construction site progress, aided with treatment design, and prepared documentation of progress for phosphorus removal upgrades at the Wastewater Treatment Plant in Huntley, IL.
- Aided with field work and report writing for 10+ municipality projects in Northern Illinois.

Freeport McMoran Inc. **Green Valley, AZ**
Project Engineering Intern May 2017- August 2017

- Identified air sparger size impact on mineral grade and recovery using applied statistics research and presented findings at annual intern conference.
- Prepared and handled 30+ mill samples in the laboratory to determine their mineral components.

LEADERSHIP & VOLUNTEERING

Professional Development Chair, Global Change Center: Graduate Student Organization **August 2023 – August 2024**

- Organized an alumni panel with previously enrolled Global Change Center fellows from roles in government, academia, and industry
- Coordinated bimonthly workshops for Global Change affiliated students on topics related to professional development and/or research skills (i.e., R, data visualization using Inkscape, Conference Presentations, Grant Writing)

Chapter President, Virginia Tech VWEA/ VA AWWA Chapter **January 2021-August 2023**

- Facilitated professional development and service events with the national and regional AWWA chapters
- Led outreach events for new graduate students and bi-monthly group meetings
- Organized and moderated opportunities for current students and alumni to present individual research

CERTIFICATION & SKILLS

Engineer in Training (EI/EIT) December 2019

- Passed the NCEES Fundamentals of Engineering test

Programming languages: R, MATLAB, LaTeX, Linux
Other Proficient Applications: Microsoft Office, Inkscape, Geneious prime, ArcGIS
Completed Coursework Subject Areas: Environmental Health, Statistics, Computer Science, Bioinformatics, Physical Sciences

REFERENCES

Dr. Alasdair Cohen, Assistant Professor
Department of Population Health Sciences
Virginia Polytechnic Institute & State University
(540) 231-2010**,** agcohen@vt.edu

Dr. Amy Pruden, University Distinguished Professor
Department of Civil & Environmental Engineering
Virginia Polytechnic Institute & State University
(540) 231-3980**,** apruden@vt.edu

Dr. Leigh-Anne Krometis, Assistant Professor
Department of Biological Systems Engineering
Virginia Polytechnic Institute & State University
(540) 231-4372, krometis@vt.edu