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McAllisterSci
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Andrew McAllister

PhD in Applied Physics, science communicator

Summary

Goal — A career that helps bridge the communication gap between scientists and non-scientists through writing, audio, video, and in-person engagement efforts.

Science Communication — Throughout my PhD I have sought out training and experiences presenting to, writing for, and working with diverse audiences. I relentlessly pursue context in making science understandable, interesting, and relevant for audiences.

Self-Starter — Started the Students of Applied Physics project to get more experience shaping stories written about science for a general audience.

Education

Expected: 2018 **PhD in Applied Physics**, *University of Michigan*, Ann Arbor, MI.

2012 **B.S. in Physics**, *Rensselaer Polytechnic Institute*, Troy, NY.
Magna cum laude, dual major in mathematics

Work Experience

June-August 2013 **Computational Chemistry and Materials Science Fellow**, *Lawrence Livermore National Laboratory*, Livermore, CA.

Awards

2014 National Science Foundation Graduate Research Fellowship Program

2012 Nadia Trinkala Service Award [Link for Verification], Rensselaer Physics Department

2010 Founder's Award of Excellence [Link for Verification], Rensselaer Physics Department

2008 Boy Scouts of America, Eagle Scout

Writing and Editing for a General Audience

1. **Using LEDs to Tell Plants What We Want From Them [Link]**, *Science in the News Blog, 2018.*
   Worked with the "Friends of Joe's Big Idea" program by National Public Radio.
2. **Senior Editor**, *Students of Applied Physics, Applied Physics Student Council.*
   I work with PhD students to develop understandable and engaging articles about research in the applied physics department. Example article [Link]
3. **Atomistic Calculations Predict That Boron Incorporation Increases The Efficiency Of LEDs [Link]**, *University of Michigan Materials Science & Engineering News, 2017.*
   Press release for research group. Picked up by the Department of Energy, National Energy Research Scientific Computer Center, and Semiconductor Today.

4. **How Gecko Feet Will Make Your Next Move Easier [Link]**, *Michigan Science Writers, 2017.*
   I also work as a content editor for Michigan Science Writers, where I provide feedback and help develop a rought draft developing of a piece by another graduate student.

Communication Training

August 2017 **ComSciCon Chicago [Link for more information]**, *Chicago, IL*.
Attended a conference based on science communication.

2016 **Researchers Expanding Lay-Audience Teaching and Engagement (RELATE) Workshops**.

- Over 3 months, worked on crafting messages and narratives, considering different audiences and making visual aids.
- Developed and produced a YouTube video [Link] highlighting my research.

Public Engagement

2018 **Engaging Scientists in Policy and Advocacy**.
Voluteer for "Ask a Scientist at Art Fair", where I spoke to adults interested in science at a large local event in an informal setting.

2018 **Skype a Scientist [Link]**.
Volunteered for the Skype a Scientist program, where I skyped into multiple high school classrooms to talk about science, becoming a scientist, and other topics. More information on my blog, here. [Link]

2017 **Nerd Nite [Link] Ann Arbor Talk**.
Gave a 20 minute talk about my research at a local bar to an audience of mostly non-scientists. A recording is available at: LED Light Bulbs: Why Do They Cost an Arm and a Leg? [Link]

2013-2016 **American Society for Engineering Education**.
Organized and ran a table at K-Grams Kid's Fair – an elementary school visit to University of Michigan. At the table, I helped demonstrate some concepts of signal analysis by using a laser to transmit music through open air.

2008-2012 **Society of Physics Students**.
Organized and ran multiple outreach events at local schools and on campus. A large project that I was involved with was organizing a full-day program on light and solar cells for the Harlem Academy's visit to Rensselaer with my advisor, Peter Persans.

Leadership

2018-Present **Organizer**, *ComSciCon Michigan*, Ann Arbor, MI.
Work with other graduate students to organize, publicize and run a conference devoted to science communication in Ann Arbor Michigan.

2017-Present **Senior Editor**, *Students of Applied Physics Project, Applied Physics Student Council*, Ann Arbor, MI.
I work with PhD students to develop understandable and engaging articles about research in the applied physics department. Example article [Link]

2014-2015 **President**, *Local Chapter of American Society for Engineering Education*, Ann Arbor, MI.
Organize and run meetings, ensure that skill workshops have teachers, plan future workshops based on the needs of University of Michigan students.

2009-2011 **President**, *Local Chapter of Society of Physics Students*, Troy, NY.
Organize meetings and social events, foster a community of physics students, act as intermediary between faculty and students, help organize and run engagement events in local area.

Publications

1. Jimmy-Xuan Shen, Daniel Steiauf, **Andrew McAllister**, Guangsha Shi, Emmanouil Kioupakis, Anderson Janotti, and Chris Van de Walle, Impact of phonons and spin-orbit coupling on Auger recombination in InAs, *submitted*
2. **Andrew McAllister**, Dylan Bayerl, Emmanouil Kioupakis, Auger and radiative recombination in indium nitride, *Applied Physics Letters*, **112**, 251108 (2018) doi:10.1063/1.5038106
3. Kyeongwoon Chung, **Andrew McAllister**, David Bilby, Bong-Gi Kim, Min Sang Kwon, Emmanouil Kioupakis, Jinsang Kim, Designing interchain and intrachain properties of conjugated polymers for latent optical information encoding, *Chemical Science* **6**, 6980-6985 (2015) doi:10.1039/c5sc02403j
4. **Andrew McAllister**, Daniel Åberg, André Schleife, and Emmanouil Kioupakis, Auger recombination in sodium-iodide scintillators from first principles, *Applied Physics Letters* **106**, 141901 (2015) doi:10.1063/1.4914500
5. Daniel Recht, David Hutchinson, Thomas Cruson, Anthony DiFranzo, **Andrew McAllister**, Aurore J. Said, Jeffrey M. Warrender, Peter D. Persans, and Michael J. Aziz, Contactless Microwave Measurements of Photoconductivity in Silicon Hyperdoped with Chalcogens, *Applied Physics Express* **5**, 041301 (2012) doi:10.1143/apex.5041301

Presentations

Contributed

1. **Andrew McAllister**, Dylan Bayerl, Christina Jones, Emmanouil Kioupakis, Auger Recombination From First-principles in Group-III Nitride Alloys, American Physical Society March Meeting 2018, Los Angeles, CA
2. **Andrew McAllister**, Dylan Bayerl, Emmanouil Kioupakis, Auger Recombination in Group-III Nitrides from First Principles, Materials Research Society Fall Meeting, 2017, Boston, MA
3. **Andrew McAllister**, Dylan Bayerl, Emmanouil Kioupakis, Radiative and Auger Recombination in InN, International Conference on Nitride Semiconductors, 2017, Strasbourg, France
4. **Andrew McAllister**, Dylan Bayerl, Emmanouil Kioupakis, Radiative and Auger Recombination of Degenerate Carriers in InN American Physical Society March Meeting, 2017, New Orleans, LA
5. **Andrew McAllister**, Emmanouil Kioupakis, Auger recombination in InN from first principles, American Physical Society March Meeting, 2016, Baltimore, MD
6. **Andrew McAllister**, Emmanouil Kioupakis, Daniel Åberg, Andreé Schleife, Auger recombination in scintillator materials from first principles, American Physical Society March Meeting, 2015, San Antonio, TX
7. **Andrew McAllister**, Predictive modeling of quantum processes for optoelectronic devices, Physics Graduate Student Symposium, 2014, Ann Arbor, MI
8. **Andrew McAllister**, Emmanouil Kioupakis, Daniel Åberg, Andreé Schleife, Auger recombination in sodium iodide, American Physical Society March Meeting, 2014, Denver, CO
9. **Andrew McAllister**, Computational Modeling of Auger Recombination, Computational Chemistry and Materials Science Summer Institute, Livermore, CA, Lawrence Livermore National Laboratory

Poster

1. **Andrew McAllister**, Dylan Bayerl, Emmanouil Kioupakis Auger Recombination in Indium Nitride from First-Principles, Electronic Materials Conference, 2017, South Bend, IN
2. **Andrew McAllister**, Daniel Åberg, Emmanouil Kioupakis, André Schleife, Babak Sadigh, Computational modeling of Auger recombination in scintillators, Computational Chemistry and Materials Science Summer Institute, 2013, Livermore, CA

Teaching Experience

At the University of Michigan:

April 2015 Flow in Technical Writing Workshop

October 2014 Introduction to Mathematica Workshop

April 2014 Introduction to LaTeX Workshop

At Rensselaer Polytechnic Institute:

Spring 2012 Teaching Assistant, Physics 4100 - Introductory Quantum Mechanics

Fall 2011 Teaching Assistant, Physics 2961 - Modern Physics

Fall 2011 Grader, Math 4400 - Ordinary Differential Equations

Spring 2011 Teaching Assistant, Physics 1200 - Introductory Electromagnetism

Fall 2010 Teaching Assistant, Physics 1200 - Introductory Electromagnetism

High-Performance Computing Awards

2015-2018 Electronic and optical properties of novel photovoltaic and thermoelectric materials from first-principles, National Energy Research Scientific Computing Center
PI: Emmanouil Kioupakis

- **2018:** 5,000,000 CPU Hours
- **2017:** 7,300,000 CPU Hours
- **2016:** 2,301,200 CPU Hours
- **2015:** 8,000,000 CPU Hours

Professional Memberships

American Association for the Advancement of Science

American Physical Society

American Society for Engineering Education

Materials Research Society

Society for Social Studies of Science

Computer Skills

Software: Microsoft Office, LaTeX, Basic Knowledge of Adobe Illustrator and Adobe InDesign

Programming: Python, Fortran, C++, Matlab, Shell, Git

High Performance Computing Codes: VASP, QuantumEspresso, Wannier90, BerkeleyGW

Further details and proficiencies available on request.