

Andrew McAllister

PhD in Applied Physics, science communicator

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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:** **PhD in Applied Physics**, *University of Michigan*, Ann Arbor, MI.
January 2019 Relevant Coursework: Engineering 580 – Teaching Engineering
Public Policy 650 – Introduction to Science and Technology Policy Analysis
- 2012** **B.S. in Physics**, *Rensselaer Polytechnic Institute*, Troy, NY.
Magna cum laude, dual major in mathematics

Awards

- 2014** National Science Foundation Graduate Research Fellowship Program
- 2013** Computational Chemistry and Materials Science Fellow, Lawrence Livermore National Laboratory
- 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

- How to Talk to Your Plants: Using LEDs to grow better crops [Link]**, *Science in the News Blog*, 2018.
Worked with the "Friends of Joe's Big Idea" program by National Public Radio.
- 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](#). [\[Link\]](#) [More information](#). [\[Link\]](#)
- 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.
- 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 rough draft developing of a piece by another graduate student.

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

Communication Training



- August 2017 **ComSciCon Chicago** [[Link for more information](#)], Chicago, IL.
- 2016 **Researchers Expanding Lay-Audience Teaching and Engagement (RELATE) Workshops.**
 - o Over 3 months, worked on crafting messages and narratives, considering different audiences and making visual aids.
 - o Developed and produced a [YouTube video](#) [[Link](#)] highlighting my research.

Public Engagement

- 2018 **Engaging Scientists in Policy and Advocacy.**
Volunteer 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 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 **Organizer** [[Link](#)], ComSciCon Michigan, Ann Arbor, MI.
- 2017-2018 **Senior Editor**, *Students of Applied Physics Project*, Ann Arbor, MI.
- 2014-2015 **President**, *Local Chapter of American Society for Engineering Education*, Ann Arbor, MI.
- 2009-2011 **President**, *Local Chapter of Society of Physics Students*, Troy, NY.

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December 10, 2018

Dear Dr. Rita Blaik,

Science and technology are increasingly a part of everyone's day-to-day life. From the GMO food that we eat to the computers we keep in our pocket, discussions about what technology should or shouldn't do and what scientists should or shouldn't prioritize are common. Experts provide valuable input for these discussions, but non-experts can (and should) have a seat at the table. The key for helping this happen is effective and engaging science communication. Science communication does many vital things: it inspires new generations of scientists, it makes sure science is funded, and it is entertaining (for some, at least). But underlying these goals is its ability to democratize science. By allowing between decision makers, scientists *and* non-scientists, more viewpoints are considered and ultimately better resolutions to conflict can be found. I plan to make this the focus of my science communication career and am excited to apply to the postdoctoral scholar position at the California NanoSystems Institute.

Throughout my technical training, I have sought out experiences to develop and practice my communication skills in various mediums to diverse audiences. One experience in particular stands out. The Researchers Expanding Lay-Audience Teaching and Engagement (RELATE) program was my first formal training in communicating to a broader audience. I was excited to participate and learn the methods other scientists used to communicate their work. RELATE lasted three months, and during this time I wrote and produced a YouTube video about my research and gave a twenty minute talk to over 100 people at a local bar. The enthusiasm for my talk was encouraging, and I spent the rest of my night answering questions about light bulbs! Given just a little background, many people without formal education in my field were able to ask insightful questions about my research and were enthusiastic to do so.

During my undergraduate degree, I worked in various teaching assistant positions helping in both a laboratory setting and doing weekly recitation-like office hours. But in graduate school, I did not have many teaching opportunities because of my program and requirements on my funding. Nevertheless, rather than not teach at all, I found non-traditional ways of teaching. The American Society for Engineering Education provided the chance to teach smaller scale workshops on technical programs like Mathematica. We also developed small scale curricula, so that the weekly workshops would cover necessary skills through different instructors over multiple semesters. It was here I was exposed to discussions on newer education pedagogy. Eventually this led to taking the Teaching Engineering course, where many of those discussions continued and I learned about different learning styles, methods of teaching aside from lecture, and outcome measures. Finally, I was lucky that my advisor frequently let me teach topics at weekly group meetings and encouraged me to try different methods like active learning with my lab mates.

Like other STEM PhDs, doing research has also given me many technical skills; two of which are relevant to the position at CNSI. First, as a computational researcher, I am used to collaborating with other scientists outside my field. Working at CNSI, I will work with a wide array of scientists including biologists, doctors and various branches of engineering not in my specialty. This previous experience during my PhD will be invaluable as I talk to these experts and work on understanding their research and how to translate it to others. Second, a part of my PhD studies has been on nanotechnology. This will also be helpful in understanding the fundamental concepts of the research

done at CNSI and translating them to different audiences.

While I have found the research done during my PhD exciting and interesting, the best parts have been when I am trying to work out the best way of explaining something to someone else. Right now, this is (with some exceptions) what I have to do *in addition* to my normal scientific research. But this opportunity at CNSI would allow me to take my favorite part of graduate school and make it my full-time job. I would have more opportunities to learn about pedagogy during classes and more chances to put what I've learned into practice while working with the existing CNSI programming. I would also have the opportunity to learn and work with many experienced communicators already working at CNSI. I would be excited to work on developing new projects there, and would love to expand and think about how CNSI can serve to connect scientists, policy makers and the public.

My PhD has lead me to see democratizing science as something my unique skills and interests can work towards. Through effective science communication and engagement, everyone can learn about the exciting world of technology and have a say in how it develops. I am very much looking forward to discussing my skills and experiences with you, and can be reached at mcala@umich.edu or at 732-275-5051.

Sincerely,

Andrew McAllister