

Andrew McAllister

Curriculum Vitae

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Interests

I develop and apply first principles methods to study structural, electronic, optical, and recombination processes in materials and nanostructures. Using high performance computing with these methods allows investigation into properties that are difficult to measure experimentally. With this additional insight, I can aid in the design of better materials and devices.

I am also passionate about communicating science to both technical and layperson audiences. I have been involved with community engagement for K-12 and adult groups. I have also taught technical writing to graduate students with the American Society for Engineering Education. In addition, I have sought out training to improve my communication skills like the [RELATE](#) workshop series and a teaching engineering class (ENGR 580). Communicating science is just as important as doing good science; without this skill you cannot get the support you need to do research.

Education

2012–Present **PhD in Applied Physics**, *University of Michigan*, Ann Arbor, MI.

2008–2012 **B.S. in Physics**, *Rensselaer Polytechnic Institute*, Troy, NY.
Dual major in mathematics

Work Experience

2012–Present **Graduate Student Researcher**, *University of Michigan*, Ann Arbor, MI.

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

2011–2012 **Undergraduate Research Assistant**, *Rensselaer Polytechnic Institute*,
Troy, NY.

Awards

2014 National Science Foundation Graduate Research Fellowship Program

2012 Nadia Trinkala Service Award, RPI Physics Department

2011 Pi Mu Epsilon, Mathematics Honor Society

2010 Rensselaer Polytechnic Institute Founder's Award of Excellence

2008 Boy Scouts of America, Eagle Scout

Public Engagement

- 2017 Nerd Nite Ann Arbor Talk
 - [LED Light Bulbs: Why Do They Cost and Arm and a Leg?](#)
- 2016 Researchers Expanding Lay-Audience Teaching and Engagement Workshops
 - Communication Fundamentals, resulted in producing a YouTube [video](#)
 - Advanced Oral Communication
- 2013-Present American Society for Engineering Education
 - President: 2014-2015
- 2008-2012 Society of Physics Students
 - President: 2009-2011

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

Publications

1. 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](#)
2. **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](#)
3. 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, Emmanouil Kioupakis, Radiative and Auger Recombination in InN, International Conference on Nitride Semiconductors, 2017, Strasbourg, France
1. **Andrew McAllister**, Dylan Bayerl, Emmanouil Kioupakis, Radiative and Auger Recombination of Degenerate Carriers in InN American Physical Society March Meeting, 2017, New Orleans, LA
1. **Andrew McAllister**, Emmanouil Kioupakis, Auger recombination in InN from first principles, American Physical Society March Meeting, 2016, Baltimore, MD
1. **Andrew McAllister**, Emmanouil Kioupakis, Daniel Åberg, André Schleife, Auger recombination in scintillator materials from first principles, American Physical Society March Meeting, 2015, San Antonio, TX
2. **Andrew McAllister**, Predictive modelling of quantum processes for optoelectronic devices, Physics Graduate Student Symposium, 2014, Ann Arbor, MI
3. **Andrew McAllister**, Emmanouil Kioupakis, Daniel Åberg, André Schleife, Auger recombination in sodium iodide, American Physical Society March Meeting, 2014, Denver, CO
4. **Andrew McAllister**, Computational Modeling of Auger Recombination, Computational Chemistry and Materials Science Summer Institute, Livermore, CA, Lawrence Livermore National Laboratory

Poster

1. **Andrew McAllister**, Daniel Åberg, Emmanouil Kioupakis, André Schleife, Babak Sadigh, Computational modelling of Auger recombination in scintillators, 2013 Computational Chemistry and Materials Science Summer Institute, 2013, Livermore, CA

High-performance Computing Awards

- 2017 Electronic and optical properties of novel photovoltaic and thermoelectric materials from first-principles, National Energy Research Scientific Computing Center (1,800,000 hours). PI: Emmanouil Kioupakis *Note: Award and project was same as 2016, not a copy and paste error.*
- 2016 Electronic and optical properties of novel photovoltaic and thermoelectric materials from first-principles, National Energy Research Scientific Computing Center (1,800,000 hours). PI: Emmanouil Kioupakis
- 2015 Electronic and optical properties of novel photovoltaic and thermoelectric materials from first-principles, National Energy Research Scientific Computing Center (4,000,000 hours). PI: Emmanouil Kioupakis

Mentoring

2014 Lunch and Lab with a Grad Mentoring Program

Professional Memberships

American Physical Society

Materials Research Society

American Society for Engineering Education

American Association for the Advancement of Science

Computer skills

Fortran, Python, C++, Matlab, Mathematica, Shell and \LaTeX . Further details and proficiencies available on request.