

Cora M. Went

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SUMMARY

Physics PhD student studying new materials for solar energy. Passionate about accelerating an equitable transition to renewable energy to avert the worst effects of climate change through a career at the intersection of science and policy. Skilled at leadership, research, communicating science to technical and nontechnical audiences.

EDUCATION

California Institute of Technology, Pasadena, CA

PhD in Physics, Expected 2021

University of North Carolina at Chapel Hill, Chapel Hill, NC

BS in Physics with Highest Distinction, 2015, GPA 3.97

RESEARCH EXPERIENCE

The Atwater Group, Caltech

Graduate Researcher, 2016-present

- Investigating new materials, 2D transition metal dichalcogenides (TMDs), for ultrathin solar cells that use 100 times less material than existing silicon solar cells. Performed one of the first efficiency characterizations of TMD solar cells under simulated solar illumination.
- Developed technique for transferring metal contacts onto 2D materials to make electrical contact without damaging the underlying material. Paper published in *Science Advances*.
- Analyzed materials challenges for the Breakthrough Starshot project, which aims to send a spacecraft to the nearest star traveling at a quarter of the speed of light. Co-authored and designed cover art for perspective paper in *Nature Materials*.

The Lopez Group, UNC Chapel Hill

Undergraduate Researcher, 2015

- Built a transient photovoltage setup to characterize the density of trap states within the bandgap of lead sulfide (PbS) colloidal quantum dot solar cells.

Fraunhofer Institute for Solar Energy Systems, Freiburg, Germany

Research Intern, 2014

- Identified correlation between power-dependent photoluminescence and defect states, leading team to implement new gauge of material quality for III-V semiconductor growth.

The McNeil Group, UNC Chapel Hill

Undergraduate Researcher, 2014

- Improved optical efficiency in a photoluminescence setup by two orders of magnitude and measured photoluminescence spectra of charge transfer complexes and quantum dots.

HONORS & AWARDS

John S. Stemple Memorial Prize (for excellent performance on oral candidacy), Caltech, 2020
Nanoscale Poster Award, Nanophotonics of 2D Materials Conference, Shanghai, China, 2019
France Cordova Graduate Fellowship Thomas Tombrello Scholar, Caltech, 2018
Resnick Sustainability Institute First-Year Fellow, Caltech, 2016
National Science Foundation Graduate Research Fellow, 2016
Morehead-Cain Scholarship (full-tuition merit scholarship), UNC Chapel Hill, 2011-2015
Paul E. Shearin Award for the Outstanding Senior in Physics, UNC Chapel Hill, 2015
Daniel Johnson Award for the Outstanding Junior in Physics, UNC Chapel Hill, 2014

PUBLICATIONS

1. C. M. Went, J. Wong, P. R. Jahelka, M. Kelzenberg, S. Biswas, M. S. Hunt, A. Carbone, H. A. Atwater, A new metal transfer process for van der Waals contacts to vertical Schottky-junction transition metal dichalcogenide photovoltaics. *Sci. Adv.* **5**, eaax6061 (2019).
2. W.-H. Lin, W.-S. Tseng, C. M. Went, M. L. Teague, G. R. Rossman, H. A. Atwater, N.-C. Yeh, Nearly 90% Circularly Polarized Emission in Monolayer WS₂ Single Crystals by Chemical Vapor Deposition. *ACS Nano*. **14**, 1350–1359 (2020).
3. M. C. Sherrott, W. S. Whitney, D. Jariwala, S. Biswas, C. M. Went, J. Wong, G. R. Rossman, H. A. Atwater, Anisotropic Quantum Well Electro-Optics in Few-Layer Black Phosphorus. *Nano Lett.* **19**, 269–276 (2019).
4. O. Ilic, C. M. Went, H. A. Atwater, Nanophotonic Heterostructures for Efficient Propulsion and Radiative Cooling of Relativistic Light Sails. *Nano Lett.* **18**, 5583–5589 (2018).
5. H. A. Atwater, A. R. Davoyan, O. Ilic, D. Jariwala, M. C. Sherrott, C. M. Went, W. S. Whitney, J. Wong, Materials challenges for the Starshot lightsail. *Nat. Mater.* **17**, 861–867 (2018).
6. A. W. Walker, S. Heckelmann, C. Karcher, O. Höhn, C. Went, M. Niemeyer, A. W. Bett, D. Lackner, Nonradiative lifetime extraction using power-dependent relative photoluminescence of III-V semiconductor double-heterostructures. *J. Appl. Phys.* **119**, 155702 (2016).

PRESENTATIONS

1. C. M. Went, J. Wong, P. Jahelka, S. Biswas, M. Kelzenberg, M. Mandigo-Stoba, M. Hunt, A. Carbone, H. A. Atwater, A new metal transfer process for van der Waals contacts to vertical Schottky-junction transition metal dichalcogenide photovoltaics. Oral presentation at Materials Research Society Fall Meeting, Boston, MA, December 2019.
2. C. M. Went, J. Wong, S. Biswas, P. Jahelka, D. Jariwala, H. A. Atwater, Transferred contacts for high open-circuit voltage in 2D transition metal dichalcogenide photovoltaics. Poster at Nanophotonics of 2D Materials, Shanghai, China, January 2019.
3. C. M. Went, J. Wong, P. Jahelka, D. Jariwala, H. A. Atwater, Towards high open-circuit voltage in 2D transition metal dichalcogenides. Oral presentation at Materials Research Society Fall Meeting, Boston, MA, November 2018.
4. C. M. Went, J. S. DuChene, Y. Lin, W. Lin, M. C. Sherrott, Z. Al-Balushi, D. Jariwala, J. Wong, H. A. Atwater, Exploring radiative efficiency in MOCVD-grown and exfoliated MoS₂ before and after superacid treatment. Oral presentation at Materials Research Society Spring Meeting, Phoenix, AZ, April 2018.

TEACHING EXPERIENCE

Solid State Physics – Electrons in Solids, Caltech

Teaching Assistant (including guest lectures), 2020

Principles of University Teaching and Learning in STEM, Caltech

Course Participant, 2019

Sophomore Undergraduate Physics Lab, Caltech

Teaching Assistant, 2018

LEADERSHIP EXPERIENCE

Women in Physics, Math & Astronomy, Caltech

President, 2018-2019

Treasurer & Co-Founder, 2017-2018

- Founded and led group to support women in the division by providing community-building events, discussions of gender in STEM fields, and professional development.

FUTURE of Physics Conference for Undergraduate Women in Physics, Caltech

Founding Co-Chair, 2018

- Organized first annual FUTURE conference, bringing 35 undergraduate women in physics from across the country to Caltech for two-day workshop on applying to graduate school.

Campus Y, UNC's Center for Social Justice, UNC Chapel Hill

Co-President, 2013-2014 • Executive Board, 2011-2014

- Elected to lead UNC's Center for Social Justice, which includes over 1500 student members working on issues ranging from environmental justice to immigrant equality.

OTHER EXPERIENCE

Frontiers in Energy Research Newsletter, United States Department of Energy

Editorial Board, 2019-present

- Authored newsletter articles describing research done by Energy Frontier Research Centers within the Department of Energy for a nontechnical audience.

Student Experience Committee of the Board of Trustees, Caltech

Graduate Student Representative, 2019-present

- Selected as one of two graduate representatives to the Board of Trustees. Engaged with stakeholders to develop a list of priorities for improving the graduate student experience.

Graduate Dean Search Committee, Caltech

Graduate Student Representative, 2020

- Selected as one of two graduate student representatives to sit on the search committee to select the next graduate dean at Caltech.

Caltech Y Science Policy Trip, Washington D.C.

Participant, 2019

- Visited the White House, the National Science Foundation, the National Oceanic and Atmospheric Administration, and other government organizations to learn about careers in science policy.

SKILLS

Technical Communication: writing for scientific and nonscientific audiences, data presentation, oral presentations to scientific and nonscientific audiences

Coding: Python, Matlab, Mathematica

Simulation: Sentaurus TCAD, Lumerical FDTD, Lumerical Device

Research: nanofabrication, optical & electrical characterization, 2D heterostructure fabrication

Teaching: incorporating active learning

REFERENCES

Available upon request.