

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 2022

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

- Conducted techno-economic analysis of an offshore oceanwater CO₂ capture system that uses bipolar membrane electrodialysis to acidify oceanwater and extract dissolved CO₂.
- Investigated new materials, the 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

Certificate of Practice in Effective Teaching, Caltech, 2021

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

Phi Beta Kappa, 2014

Order of the Golden Fleece, UNC Chapel Hill, 2014

Order of the Grail-Valkyries, UNC Chapel Hill, 2014

PUBLICATIONS

1. Y.-R. Lin, W.-H. Cheng, M. H. Richter, J. S. DuChene, E. A. Peterson, C. M. Went, Z. Y. Al Balushi, D. Jariwala, J. B. Neaton, L.-C. Chen, H. A. Atwater, Band Edge Tailoring in Few-Layer Two-Dimensional Molybdenum Sulfide/Selenide Alloys. *J. Phys. Chem. C*. **124**, 22893–22902 (2020).
2. 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).
3. 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).
4. 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).
5. 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).
6. 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).
7. 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 & MENTORSHIP EXPERIENCE

Principles of University Teaching and Learning in STEM, Caltech

Teaching Assistant (including guest lectures), 2021

Solid State Physics – Electrons in Solids, Caltech

Teaching Assistant (including guest lectures), 2020

Summer Undergraduate Research & Senior Thesis Mentorship, Caltech

Graduate Mentor, 2019-2020

- Mentored Morgaine Mandigo-Stoba in her summer research and senior thesis: “Towards Achieving High Voltage in Vertical TMD Solar Cells via Carrier Selective Contacts.”

Principles of University Teaching and Learning in STEM, Caltech

Course Participant, 2019

Sophomore Undergraduate Physics Lab, Caltech

Teaching Assistant, 2018

LEADERSHIP EXPERIENCE

Sunrise Movement Los Angeles, Los Angeles

Governance Team Lead, 2020-present

- Coordinated Sunrise LA’s representation on coalitions and served as representative to the SoCal Building Electrification Coalition.
- Directed weekly phone banks for local endorsed candidates during the 2020 elections cycle, helping four of nine endorsed candidates get elected.
- Organized members to support policy efforts, including a package of 20 climate policies for Burbank and a city-wide phase-out of oil drilling led by frontline communities.

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

- Co-chaired 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

Caltech for Black Lives, Caltech

Discussion Coordinator & Co-founder, 2020-present

- Conducted research for and presented the second in a series of three town halls about the historical connections between Caltech and the eugenics movement.
- Helped to organize a town hall attended by 1000 members of the Caltech community in response to a petition written by the Black Scientists and Engineers at Caltech.

Student Experience Committee of the Board of Trustees, Caltech

Graduate Student Representative, 2019-2021

- 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.

Frontiers in Energy Research Newsletter, United States Department of Energy

Editorial Board, 2019-2020

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

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.

Graduate Title IX Advisory Board, Caltech

Member, 2018-2019

Physics, Math & Astronomy Student Advisory Board, Caltech
Member, 2018-2019

SKILLS

Communication: Writing/presentations for scientific & nonscientific audiences, data visualization

Coding: Python, Matlab, Mathematica

Simulation: Sentaurus TCAD, Lumerical FDTD, Lumerical Device

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

Teaching: incorporating active learning

Languages: fluent in Spanish

REFERENCES

Available upon request.