Wennie Wang

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Education

University of Chicago, Pritzker School of Molecular Engineering (PME) — Chicago, IL
Postdoctoral Scholar, Adviser: Giulia Galli — Summer 2018-current

University of California, Santa Barbara (UCSB): — Santa Barbara, CA
Ph.D. in Computational Materials, Adviser: Chris G. Van de Walle — Spring 2018

Massachusetts Institute of Technology (MIT): — Cambridge, MA
B.S. in Materials Science and Engineering — June 2013

Research Experience

University of Chicago, Pritzker School of Molecular Engineering (PME) — Chicago, IL
Postdoctoral Scholar — current

- First-principles calculations for surfaces and interfaces of complex oxides in water-splitting technologies and neuromorphic computing

UCSB Materials Department — Santa Barbara, CA
Graduate Student Researcher — Fall 2013 – Spring 2018

- First-principles calculations for defects and impurities in complex oxides for energy efficient applications

MIT NECST Lab — Cambridge, MA
Student researcher, Undergraduate Research Opportunities Program (UROP) — Fall 2011- Spring 2013

- Structural health monitoring in carbon nanotube reinforced aerospace composites

Fraunhofer Institute CSP — Halle (Saale), Germany
Student Intern — Summer 2012

- Modeling mechanical properties and fracture mechanics of solar cell metallization systems

Siemens AG — Berlin, Germany
Student intern — Summer 2011

- Optimization of stator in radial magnetic bearings using finite element analysis and genetic algorithm

Publications/Patents

- A. Lindberg*, **W. Wang***, S. Zhang, G. Galli, K.-S. Choi. "Can a $PbCrO_4$ photoanode perform as well as isoelectronic $BiVO_4$?" (2020) Submitted.
- D. Lee,* **W. Wang***, C, Zhou*, X. Tong, M. Liu, G. Galli, K.-S. Choi. "Modifying interfacial energetics in $BiVO_4$ photoanodes by surface termination." (2020) Submitted.
- H. Ma, **W. Wang**, S. Kim, M.H. Cheng, M. Govoni, G. Galli. "PyCDFT: a Python package for constrained density functional theory." *J. Comp. Chem.* Accepted (2020) [doi: 10.1002/JCC.26354]
- **W. Wang,** P. Strohbeen, D. Lee, C. Zhou, J. Kawasaki, K.-S. Choi, M. Liu, G. Galli. "The role of surface oxygen vacancies in $BiVO_4$." *Chemistry of Materials.* 32, 2899-2909 (2020). [doi: 10.1021/acs.chemmater.9b05047]
- **W. Wang**, Y. Kang, H. Peelaers, K. Krishnaswamy, C.G. Van de Walle. "First-principles study of transport in WO_3." *Phys. Rev. B.* **101**, 045116 (2020). [doi: 10.1103/PhysRevB.101.045116]

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- X. Zhang, J.X. Shen, **W. Wang**, C.G. Van de Walle. "First-principles Analysis of Radiative Recombination in Lead-Halide Perovskites." *ACS Energy Letters*. 3, 2329-2334 (2018). [doi: 10.1021/acsenergylett.8b01297]
- **W. Wang**, H. Peelaers, J.X. Shen, C.G. Van de Walle. "Carrier-induced absorption as a mechanism for electrochromism in WO_3." *MRS Communications.* **8**, 926-931 (2018), [doi:10.1557/mrc.2018.115]
- **W. Wang**, H. Peelaers, J.X. Shen, A. Janotti, C.G. Van de Walle. "Impact of point defects on electrochromism in WO_3." Proc. SPIE 10533, Oxide-based Materials and Devices IX; 10533C (2018), [doi:10.1117/12.2303688]
- **W. Wang**, A. Janotti, C.G. Van de Walle. "Phase transformations upon doping in WO_3." *J. Chem. Phys.*, 146, 214504 (2017), [doi: 10.1063/1.4984581]
- **W. Wang**, A. Janotti, C.G. Van de Walle. "Role of oxygen vacancies in crystalline WO_3." *J. Mat Chem. C*, 4, 6641 – 6648 (2016), [doi: 10.1039/C6TC01643J]
- F. Kaule, **W. Wang**, S. Schoenfelder. "Modeling and Testing the Mechanical Strength of Solar Cells." *Solar Energy Materials and Solar Cells.* 120A, 441-447 (2014) [doi: 10.1016/j.solmat.2013.06.048]
- **W. Wang**, M. Hoesle, M. Lang. "*Active Radial Magnetic Bearings with Highly Permeable Stator Material (Cobalt-Iron Alloy)*" German Patent: 2011E22406 DE/ 201206715. (2011)
- S.S. Wicks, **W. Wang**, M.R. Williams, B.L. Wardle. "Multi-scale interlaminar fracture mechanisms in woven composite laminates reinforced with aligned carbon nanotubes." *Composites Science and Technology*. 100, 128-135 (2014). [doi: 10.1016/j.compscitech.2014.06.003]

* = equal contribution

Honors

Fellowships

- Excellence in Research Fellowship, UCSB Institute for Energy Efficiency 2017 – 2018
- NSF Graduate Research Fellow 2014 - 2018
- Holbrook Foundation Fellowship, UCSB Institute for Energy Efficiency 2013 - 2014

Awards

- APS 2018 March Meeting Ken Hass Outstanding Student Paper Award Runner-up Winter 2018
- SPIE MKS Instruments Research Excellence Travel Award Winter 2018
- MRS Fall 2017 Graduate Student Award finalist (Silver Award) Fall 2017
- APS Ovshinsky Travel Award Honorable Mention Winter 2016
- UCSB Travel Fellowship to DMMM1 Conference on diversity Summer 2014
- National Forensics League Top 15 nationally ranked speaker, 4-time national qualifier

Selected Conferences

- **W. Wang**, M. Liu, K.-S. Choi, G.Galli, "Influence of defects on surface morphology and electronic structure in BiVO4." *APS March Meeting*. March 4-8, 2019. Boston, MA.
- (Invited) **W. Wang**. "Tuning the optical properties of complex oxides for energy applications." *APS March Meeting*. March 5-9, 2018. Los Angles, CA.
- **W. Wang**, Y. Kang, K. Krishnaswamy, C.G. Van de Walle. "Influence of spin-orbit coupling in transport of WO_3." *APS March Meeting*. March 5-9, 2018. Los Angles, CA.

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- (Invited) **W. Wang**, H. Peelaers, J.-X. Shen, C.G. Van de Walle. "Mechanisms of electrochromism in WO_3." *SPIE-Photonics West: Oxide-based Materials and Devices International Conference IX.* Jan 27-Feb 1, 2018. San Francisco, CA.

- **W. Wang**, H. Peelaers, J.-X. Shen, C.G. Van de Walle. "Influence of Structural Distortions on Optical Absorption in WO_3." *MRS Fall Meeting*. November 26 – December 2, 2017. Boston, MA.

- **W. Wang**, Y. Kang, K. Krishnaswamy, B. Himmetoglu, C.G. Van de Walle. "Electron-phonon interactions in transport properties of WO_3." *APS March Meeting.* March 13-18, 2017. New Orleans, LA.

- **W. Wang**, H. Peelaers, J.-X. Shen, C.G. Van de Walle. "Influence of Structural Distortions on Optical Absorption in WO_3." *MRS Fall Meeting*. November 26 – December 2, 2017. Boston, MA.

- **W. Wang**, A. Janotti, C.G. Van de Walle. "Phase Transformations upon doping in WO_3." *MSE Congress.* Sept 27-29, 2016. Darmstadt, Germany

- N.M. Larson, **W. Wang**, D. Hwang. ""Highlights from the Transforming the Diversity Landscape Symposium" TMS DMMM2, July 25-26, 2016. Northwestern University, Evanston, IL.

- **W. Wang**, A. Janotti, C.G. Van de Walle. "Insights into the oxygen vacancy in WO_3." *28th ICDS.* Espoo, Finland. July 27-31, 2015.

Teaching Experience

University of Chicago Materials Research Science and Engineering Center — Chicago, IL
Lead instructor, Lindblom High School Colloquium — Fall 2018 - current

UCSB MAT 188: Materials in Energy Technologies — Santa Barbara, CA
Co-Instructor, Undergraduate course — Fall 2015

UCSB MAT 228 Computational Materials — Spring 2017
UCSB MAT 211A Engineering Quantum Mechanics I & II — Spring 2016, Winter 2017
UCSB MAT 200B Electronic and Atomic Structure of Materials — Winter 2015
Teaching Assistant

MIT 3.091 Introduction to Solid State Chemistry — Cambridge, MA
Teaching Assistant — Fall 2012

Service/Outreach

Journals Reviewed

Phys. Rev. Mater., J. Appl. Phys., J. Am. Chem. Soc., Phys. Status Solidi (b), J. Chem. Theory Comput., Chem. Mat.

APS Forum for Early Career Scientists, Member-at-large — 2020-current

UCSB Beyond Academia Annual Career Conference (https://beyondacademiaucsb.org/) — 2015-2018

- Co-founder, executive Committee organizer and panel moderator

UCSB Graduate Students for Diversity in Science (http://gsds.mrl.ucsb.edu/) — 2014-2018

- President (2016-2017), Outreach Director (2015-2016)