David Gohlke, Ph.D.

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Education

12/2012 Ph.D. in Physics, The Ohio State University (OSU): "Tuning the Properties and Interactions of Manganese Acceptors in Gallium Arsenide with STM"

6/2009 M.S. in Physics, The Ohio State University

5/2006 B.S. in Physics and Mathematics, *magna cum laude*, Youngstown State University (YSU)

Professional Appointments

9/17–present Environmental Lifecycle Analyst; Argonne National Laboratory, Energy Systems Division

9/15–8/17 AAAS Science & Technology Policy Fellow; U.S. Department of Energy (DOE), Office of Energy Efficiency and Renewable Energy, Vehicle Technologies Office

1/13–3/15 Postdoctoral scientist; Universität Regensburg, Fakultät für Physik

Research Grants – Primary Investigator

2017–18 DOE, Energy Efficiency and Renewable Energy Sustainable Transportation Offices: Segmentation Analysis

Publications

"Impacts of Electrification of Light-Duty Vehicles in the United States, 2010 – 2017," David Gohlke and Yan Zhou. Argonne National Laboratory Technical Report ANL/ESD-18/1 (2018).

"Current and Future US Light-Duty Vehicle Pathways: Cradle-to-Grave Lifecycle Greenhouse Gas Emissions and Economic Assessment," Amgad Elgowainy, Jeongwoo Han, Jacob Ward, Fred Joseck, David Gohlke, Alicia Lindauer, Todd Ramsden, Mary J. Biddy, Mark Alexander, Steven Barnhart, Ian Sutherland, Laura Verduzco, and Timothy J. Wallington. Environ. Sci. Technol., 52(4), 2392–2399 (2018).

"Vehicle Technologies and Fuel Cell Technologies Office Research and Development Programs: Prospective Benefits Assessment Report for Fiscal Year 2018," T.S. Stephens, A. Birky, and D. Gohlke. Argonne National Laboratory Technical Report ANL/ESD-17/22 (2017).

"Historical Review of the Transportation Analysis Fact of the Week, 1996–2017," David Gohlke and Stacy Davis. Oak Ridge National Laboratory Technical Report ORNL/TM-2017/695 (2017).

"The Importance of Powertrain Downsizing in a Benefit–Cost Analysis of Vehicle Lightweighting," J. Ward, D. Gohlke, and R. Nealer. JOM, 69, 9, 1065 (2017).

"Estimated Bounds and Important Factors for Fuel Use and Consumer Costs of Connected and Automated Vehicles," T.S. Stephens, J. Gonder, Y. Chen, Z. Lin, C. Liu, and D. Gohlke. NREL Lab Report NREL/TP-5400-67216 (2016)

"Revolution...Now, 2016 Updates", Paul Donohoo-Vallett, Patrick Gilman, David Feldman, James Broderick, David Gohlke, Roland Gravel, Amy Jiron, Carol Schutte, Sunita Satyapal, Tien Nguyen, Paul Scheihing, Blake Marshall, and Sarah Harman. Department of Energy Report DOE/EE-1478 (2016).

"Cradle-to-Grave Lifecycle Analysis of U.S. Light-Duty Vehicle-Fuel Pathways: A Greenhouse Gas Emissions and Economic Assessment of Current (2015) and Future (2025–2030) Technologies," A. Elgowainy, J. Han, J. Ward, F. Joseck, D. Gohlke, A. Lindauer, T. Ramsden, M. Biddy, M. Alexander, S. Barnhart, I. Sutherland, L. Verduzco, and T.J. Wallington. Argonne Lab Report ANL/ESD-16/7 (2016).

"Influence of the local environment on Mn acceptors in GaAs," Donghun Lee, David Gohlke, Anne Benjamin, Jay Gupta. J. Phys.: Cond. Matter 27, 154202 (2015).

"Atomic-scale Engineering of the Electrostatic Landscape of Semiconductor Surfaces," David Gohlke, Oscar D. Restrepo, Rohan Mishra, Donghun Lee, Wolfgang Windl, and Jay Gupta. Nano Letters, 13, 6, 400305q, (2013).

"Emergence of band structure in nanoscale Cu_2N islands," C.D. Ruggiero, M. Badal, T. Choi, D. Gohlke, D. Stroud and J.A. Gupta. Phys. Rev. B, 83, 245430, (2011).

"Coulomb excitation of a ^{242}Am isomer target: E2, E3 strengths, rotational alignment and collective enhancement," A.B. Hayes, D. Cline, K.J. Moody, I. Ragnarsson, C.Y. Wu, J.A. Becker, M.P. Carpenter, J.J. Carroll, D. Gohlke, J.P. Greene, A.A. Hecht, R.V.F. Janssens, S.A. Karamian, T. Lauritsen, C.J. Lister, R.A. Macri, R. Propri, D. Seweryniak, X. Wang, R. Wheeler and S. Zhu. Phys. Rev. C, 82, 044319, (2010).

"Search for low-energy induced depletion of ^{178m2}Hf at the SPring-8 synchrotron," J.J. Carroll, S.A. Karamian, R. Propri, D. Gohlke, N. Caldwell, P. Ugorowski, T. Drummond, J. Lazich, H. Roberts, M. Helba, Z. Zhong, M.-T. Tang, J.-J. Lee and K. Liang. Phys. Lett. B, 679, 3, 203-208, (2009).

"Coulomb excitation of the ^{242m}Am isomer," A.B. Hayes, D. Cline, K.J. Moody, C.Y. Wu, J.A. Becker, M.P. Carpenter, J.J. Carroll, D. Gohlke, J.P. Greene, A.A. Hecht, R.V.F. Janssens, S.A. Karamian, T. Lauritsen, C.J. Lister, R.A. Macri, R. Propri, D. Seweryniak, X. Wang, R. Wheeler and S. Zhu. Laser Phys., 17, 5, 745-750, (2007).

"Design and characterization of a compact multi-detector array for studies of induced gamma emission: spontaneous decay of ^{178m2}Hf as a test case," P. Ugorowski, R. Propri, S.A. Karamian, D. Gohlke, J. Lazich, N. Caldwell, R. S. Chakrawarthy, M. Helba, H. Roberts and J.J. Carroll. Nucl. Instrum. Meth. A, 565, 657 (2006).

"$K^{\pi} = 0^{+}$ 2.29 s isomer in neutron-rich ^{174}Tm," R.S. Chakrawarthy, P.M. Walker, J.J. Ressler, E.F. Zganjar, G.C. Ball, M.B. Smith, A.N. Andreyev, S. Ashley, R.A.E. Austin, D. Bandyopadhyay, J.A. Becker, J.J. Carroll, D.S. Cross, D. Gohlke, J.J. Daoud, P.E. Garrett, G. Grinyer, G. Hackman, G.A. Jones, R. Kanungo, W.D. Kulp, Y. Litvinov, A.C. Morton, W.J.M. Mills, C.J. Pearson, R. Propri, C.E. Svensson, R. Wheeler, and S.J. Williams. Phys. Rev. C 73, 024306 (2006).

Invited Presentations

5/17 "Market Dynamics of the Autonomous Vehicle" panel presentation; Invited panelist at the Fuels Institute Annual Meeting; Denver, CO

1/17 "Energy impacts of connected and automated vehicles;" Invited panelist at the Society for Automotive Engineers Government-Industry Meeting; Washington, DC

9/16 "Artificial intelligence in mobility"; Panel presentation, American Council for Technology-Industry Advisory Council (ACT-IAC), Community of Interest Cognitive Computing, AI, & Machine Learning Workgroup Symposium; Washington, DC

4/15 "Measuring and Manipulating Electron Energies with Scanning Tunneling Microscopy"; California State University, Bakersfield; Bakersfield, CA

10/12 "Probing interactions on semiconductor surfaces using scanning tunneling microscopy"; Youngstown State University; Youngstown, OH

5/12 "Tuning Magnetic Interactions in Semiconductors by STM"; Presented at:

- Institut für Festkörper- und Werkstoffforschung, Dresden, Germany;
- Institute of Applied Physics and Microstructure Research Center, Hamburg, Germany;
- Centre for Free-Electron Laser Science, Hamburg, Germany;
- Universität Regensburg, Regensburg, Germany

Contributed Presentations

3/17 "Quantitative Assessment of Vehicle Technology Office and Fuel Cell Technology Office Benefits"; EERE Analysis Community of Practice; Washington, DC

12/15 "Integrated Vehicle Analysis for the Government Performance and Results Act Report, 2012–2016"; Presentation, UC-Davis STEPS Lookback Modeling Workshop; Davis, CA

4/14 "Growth and characterization of ultrasmall cobalt nanoislands on Cu(111)" (poster); DPG Frühjahrstagung, Sektion Kondensierte Materie (SKM); Dresden, Germany

3/13 "Deviation from Coulombic behavior in short-range interactions of atoms on the GaAs(110) surface"; DPG Frühjahrstagung SKM; Regensburg, Germany

4/12 "Characterization of metallic adatoms on GaAs"; APS Ohio Section Spring Meeting; Columbus, OH

2/12 "Tuning the magnetic interaction between Mn dopants in GaAs"; APS March Meeting, Boston, MA

9/11 "Interactions between surface-layer Mn atoms in GaAs(110) studied by STM" (poster); 2011 OSU Materials Week; Columbus, OH; and QIMP11; Dresden, Germany

3/11 "Controlled layer-by-layer depth-profiling of GaAs(110) using scanning tunneling microscopy"; APS March Meeting; Dallas, TX

4/10 "Magnetism of Few-Atom Clusters on Ultrathin Insulating Films" (poster); Ohio Innovation Summit; Columbus, OH

3/10 "STM studies of spin excitations in few-atom cobalt clusters"; APS March Meeting; Portland, OR
3/08 "Scanning Tunneling Microscopy and Spectroscopy on Cu(111)"; APS Ohio Section Spring Meeting; Youngstown, OH
9/05 "The search for triggering of metastable isomers" (poster), Joint Meeting of the Nuclear Physics Divisions of the APS and the Physical Society of Japan; Maui, HI

Awards

1/18 DOE Vehicle Technologies Office "Gorilla Award"
Peer-recognition award inside of DOE's Vehicle Technologies Office

6/17 DOE Vehicle Technologies Office Team Award
"For enhancing our understanding of the energy implications of CAVs and their applicability to EEMS and our SMART Mobility laboratory consortium"

6/16 Joint DOE Hydrogen and Fuel Cells Program and Vehicle Technologies Office Special Recognition Award
"For outstanding technical contributions and collaborative efforts to the U.S. DRIVE Cradle-to-Grave lifecycle greenhouse gas emissions, cost, and technology readiness analyses of current and advanced vehicle-fuel pathways"

3/16 EERE Rock Star Award
"For outstanding technical contributions and extraordinary editorial efforts to the final reporting of the Cradle-to-Grave lifecycle greenhouse gas emissions, costs, and technology readiness analyses of current and advanced vehicle-fuel pathways"

5/12 David DeMartini Scholarship, Ohio State University Department of Physics
"In recognition of outstanding graduate student research and to support future professional development"

3/12 Career Development Grant, awarded by OSU Council of Graduate Students
Grant awarded to defray costs of career development activities.

9/06–9/07 University Fellowship, awarded by OSU Graduate School
One-year, full tuition and stipend.

8/02–5/06 Leslie H. Cochran University Scholarship, awarded by YSU
Four-year, full tuition, room and board.

Teaching

9/14, 10/13 Übungsleiter; Mathematik-Vorkurs (exercise leader, introductory math methods for physicists)
5/14–8/14 Research advisor for undergraduate thesis
4/14–7/14 Übungsleiter, Physik II für Chemiker (exercise leader, electricity and magnetism recitation for chemists and science teachers)
4/13–7/13 Betreuer; Physikalisches Praktikum A2 (laboratory instructor, electricity, circuits. and electronics lab – taught in German)
9/07–6/08 Recitation instructor; Physics 131, 132, 133, Fundamentals of Engineering for Honors (full-year freshman sequence for honors engineering students)

Professional Leadership

4/16–10/16 DOE Young Professionals Group, Deputy Director for Career Development
- First deputy director for Young Professionals Group at DOE
- Planned multiple career development events for young professionals

4/11–5/12 OSU, Council of Graduate Students (CGS), Delegate from Physics Department
- Represented department in university-wide student body
- Served on COTA/OSU committee for local busing
- Co-organized Ohio State University Sustainability Summit, April 18, 2012

1/12 OSU, Physics Department
- Planned and hosted departmental colloquium, Y.Y. Ahn, January 3, 2012

9/10–12/12 OSU, Center for Emergent Materials, Outreach Committee
- Planned public outreach activities for students, judged the Ohio Science Fair, volunteered at local schools, and presented demonstrations at COSI science center and Columbus Zoo

8/04–5/06 YSU, Pi Mu Epsilon, Executive Committee (chapter president and historian)
- Planned fundraisers, colloquia, and helped organize travel to regional and national conferences

Professional Service

9/16 Peer reviewer for the Transportation Research Board Annual Meeting (ADC70)
2/14 Peer reviewer for Physical Review Letters

Languages

English, native
German, CEFR level B1 (intermediate)