

Kevin L. Davies
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Education

Georgia Institute of Technology Ph.D. in Mechanical Engineering	Atlanta, GA <i>expected Dec. 2010</i>
Purdue University M.S.E. in Interdisciplinary Engineering	West Lafayette, IN <i>Aug. 2004</i>
Carnegie Mellon University B.S. in Electrical and Computer Engineering with University Honors	Pittsburgh, PA <i>May 2001</i>

Experience

Hawaii Natural Energy Institute Assistant Specialist	Honolulu, HI <i>Jun. 2005–Jul. 2007</i>
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- Created Modelica/Dymola-based object-oriented model libraries to simulate the dynamic behavior of fuel cells (FCs) and hybrid electric vehicles (HEVs)
- Developed design methodologies for unmanned underwater vehicles (UUVs)
- Designed printed circuit boards (PCBs) for segmented FC testing
- Produced FC membrane electrode assemblies (MEAs) with the painted decal method

Ford Motor Company Product Development Engineer	Dearborn, MI <i>Aug. 2001–May 2005</i>
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- Tested, analyzed, and validated FC system controls for the Ford Focus fuel cell electric vehicle (FCEV)
- Created a FC hardware-in-the-loop (HiL) simulator to confirm the stability of the FCEV high voltage bus
- Designed and implemented engine state control logic for the Ford Escape HEV
- Coordinated the system interfaces for FC based emissions control equipment at Ford's Dearborn Assembly Plant

Microelectromechanical Systems (MEMS) Laboratory Research Assistant	Carnegie Mellon University <i>Jan. 1999–May 2001</i>
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- Designed and produced analog and digital PCBs demonstrating MEMS technology
- Developed the basis of the Fundamentals of Electrical Engineering course's lab sequence

Electric Minivan Program, DaimlerChrysler Vehicle Engineering Intern	Auburn Hills, MI <i>May 2000–Aug. 2000</i>
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- Tested and modeled the heating, ventilation, and air conditioning system's performance
- Designed, built, and programmed a microcontroller-based diagnostic tool

CFW Wireless Intern	Waynesboro, VA <i>May 1998–Aug. 1999</i>
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- Studied radio frequency coverage and tested new wireless phone and data products
- Created software to analyze system loading data and roaming lists

Electric Vehicle Team Electrical Engineer and Technical Coordinator	Central Shenandoah Valley Regional Governor's School <i>Sep. 1995–Jun. 1997</i>
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- Led students to design and improve data acquisition, battery, and propulsion systems
- Designed and tested improvements to the power controller and rewired the vehicle

Computer Skills

- **Programs:** Simulink, Dymola, LabVIEW, ControlDesk, Mathematica, Origin, Visio, OpenOffice, MS Office, and Endnote
- **Languages:** MATLAB, Modelica, C/C++, Visual Basic, Verilog, Assembly, L^AT_EX

Achievements

- Robert G. Shackelford Graduate Fellow, Georgia Tech Research Institute, *2008*
- Co-inventor, U.S. Patent No. 7197382, “Method and System for Determining Engine State of a Hybrid Electric Vehicle,” *2007*
- First place, Motorola Software Solutions Competition, Carnegie Mellon University, *2001*
- Dean’s List, Carnegie Institute of Technology, *1998–2001*
- Member, Eta Kappa Nu National Electrical and Computer Engineering Honor Society, *2000*
- Rotary Code of Ethics Award, Buffalo Gap High School, Swoope, VA, *1997*

Publications

- [1] K. L. Davies, R. M. Moore, and G. Bender, “Model library of polymer electrolyte membrane fuel cells for system hardware and control design,” in *Modelica Conference*, (Como, Italy), Modelica Association, September 2009.
- [2] K. L. Davies, C. L. Haynes, and C. J. Paredis, “Modeling reaction and diffusion processes of fuel cells within Modelica,” in *Modelica Conference*, (Como, Italy), Modelica Association, September 2009.
- [3] K. L. Davies and R. M. Moore, “Object-oriented fuel cell model library,” *ECS Transactions*, vol. 11, no. 1, pp. 797–808, 2007.
- [4] K. L. Davies and R. M. Moore, “PEMFCSim: A fuel cell model library in Modelica,” in *Fuel Cell Seminar*, (San Antonio, TX), October 2007.
- [5] K. L. Davies and R. M. Moore, “Unmanned underwater vehicle fuel cell energy/power system technology assessment,” *Oceanic Engineering, IEEE Journal of*, vol. 32, pp. 365–372, April 2007.
- [6] M. Milačić and K. Davies, “Polarization based statistical approach to fuel cell vehicle diagnostics,” *ECS Transactions*, vol. 5, no. 1, pp. 781–789, 2007.
- [7] K. L. Davies and R. M. Moore, “UUV FCEPS technology assessment and design process,” tech. rep., Hawaii Natural Energy Institute, Honolulu, HI, January 2006. Sub-report under Office of Naval Research grant # N00014-04-0682.

Volunteer Activities and Hobbies

- Volunteer, Georgia Aquarium, *2009–present*
- Engineering mentor, Hawaii Underwater Robotics Challenge, *2006*
- Ironman triathlon finisher, *2005, 2007, and 2009*
- Engineering mentor for a national-qualifying team, FIRST robotics, *2004–2005*
- Tutor and instructor, Deeper Life Outreach Ministries, Detroit, MI, *2003–2005*
- Founding president, Carnegie Mellon University Habitat for Humanity, *2000–2001*
- Men’s Captain, Carnegie Mellon University Rowing Club, *1998*