

Jacob W. Leachman
Curriculum Vitae

Assistant Professor • Mechanical and Materials Engineering • Washington State University
PO Box 642920 • Pullman, WA 99164-2920 • (509) 335-7711 • jacob.leachman@wsu.edu

Education:

Ph.D. in Mechanical Engineering, University of Wisconsin-Madison, Graduate: 08/20/2010

"Thermophysical Properties and Modeling of Hydrogenic Pellet Production Systems"

Advisors: John Pfotenhauer and Greg Nellis

Minor: Nuclear Engineering/Engineering Physics

M.S. in Mechanical Engineering, University of Idaho, Graduate: 05/12/2007

"Fundamental Equations of State for Parahydrogen, Normal Hydrogen, and Orthohydrogen"

Advisors: Richard Jacobsen and Steve Penoncello

B.S. in Mechanical Engineering, University of Idaho, Graduate: 12/10/2005

Research Experience:

Hydrogen Properties for Energy Research (HYPER) Laboratory Director, Washington State University, 8/2010 to present

Assistant Professor Mechanical and Materials Engineering, Washington State University, 08/2010 to present.

Guest Researcher, Oak Ridge National Laboratory (ORNL), 07/2008 to 08/2008, 10/2009

Research to support the development of pellet production systems for the ITER fusion reactor.

Guest Researcher, National Institute of Standards and Technology (NIST), 07/2006 to 08/2006,

Development of thermophysical property standards for fluid hydrogen.

Teaching Experience:

Classes listed below by section: Semester taught-students enrolled-overall performance assessment/5:

MATSE 593 Seminar in Materials Science, Fall 2013-NA, Spring 2013-NA, Fall 2012-NA, Spring 2012-NA.

ME 579 Nuclear Fusion Technology, Fall 2013-3-4/5.

ME 516 Macroscale Heat Transfer, Spring 2013 (outreach)-15-4.46/5.

ME406 Experimental Design, Spring 2014-54-4/5, Fall 2013-20-4.9/5, Spring 2013-18-4.8/5, Fall 2012-24-4.8/5, Summer 2012-18-5/5, Spring 2012-21-4.67/5, Fall 2011-20-4.43/5.

ME301 Thermodynamics, Spring 2012-71-4.59/5, Spring 2011-72-4.48/5, Fall 2010-62-4.02/5, Summer (U. Wisc.-Madison) 2010-22-4.68/5.

Service Experience:

K7 Committee on Thermophysical Properties, American Society for Mechanical Engineering, 06/2012 to 06/2015.

Executive Committee of the Fusion Energy Division, American Nuclear Society, 06/2012 to 06/2015.

Faculty Mentor, Genii UAS, Project Title: Genii: The first university based liquid hydrogen fueled unmanned aerial system (UAV/UAS), Status: In Progress, Duration: 6/2012-8/2014.

Faculty Mentor, International Hydrogen Student Design Competition, Results: 1st Place in 2014, 2nd Place in 2012 World Competition.

Affiliate Faculty Member, University of Idaho Department of Mechanical Engineering, 2010 to present.

Community Outreach, "Ultra-Cold Engineering: Liquid Nitrogen Demonstrations," Imagine Tomorrow at WSU, 05/2012, Whitman County Branch Libraries, 05/2011 to 08/2011, Warden High School 11/2011, CURE 2011-2012, Golden Grads 2012.

Faculty Hiring Committee, School of Mechanical and Materials Engineering, Washington State University, Responsible for filling seven vacancies, 09/2010 to 05/2011, and 09/2013 to 05/2014.

Graduate Studies Committee, School of Mechanical and Materials Engineering, Washington State University, Chair of Nuclear Engineering Certificate, 08/2010 to 08/2013.

Laboratory and Equipment Committee, School of Mechanical and Materials Engineering, Washington State University, 08/2010 to 08/2013.

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Funding Record:

Total: **\$1,371,382** lead-PI: **\$651,339** co-PI/Investigator: **\$147,043** Gifts/Equipment: **\$573,000**

Funded Proposals:

Washington Joint Center for Aerospace Technology and Innovation (JCATI) PI: J.W. Leachman, "Development of an Insulation-Free Cryogenic Hydrogen Fuel Tank for ScanEagle," Industry Partner: Insitu, Amount: \$175,000, Duration: 1 years.

NASA Space Technology Research Fellowship PIs: J.W. Leachman, I. Richardson, "Hydrogen-Helium Mixtures: Fundamental Measurements, Neutral Droplet Buoyancy, Evaporation, and Boiling;" Amount: \$68,000; Duration: 8/2014-8/2016.

Washington State University Energy Sustainability & Innovation Center PIs: J.W. Leachman, A. Mehrizi-Sani, and K. Casavant, "Energy and Economic Impacts of Siting a Liquid Hydrogen Plant in the Northwest;" Amount: \$10,000; Duration: 5/2014-12/2014.

Washington Blueberry Commission PIs: M. Karkee, M. Taylor, J.W. Leachman, and Q. Zhang, "Unmanned Aerial Systems (UASs) for Mitigating Bird Damage in Blueberry Crops," Amount: \$19,543; Duration: 1/2014-12/2015.

US Department of Commerce co-I: J.W. Leachman, "Investing in Community Partnerships: UAV manufacturing in the Gorge Tri-County area," Amount: \$10,000; Duration: 12/2013-09/2014.

US ITER/UT-Batelle PI: J.W. Leachman, "Deuterium Modeling and Measurements in Support of US-ITER Extruder Development," Amount: \$67,000; Duration: 10/2013-08/2014.

United Launch Alliance (ULA) PI: J.W. Leachman, "Parahydrogen-Orthohydrogen Conversion to Minimize Boil-off from LH2 and LO2 Fuel Tanks;" Amount: \$59,531; Duration: 10/2011-12/2012.

Aerojet & the Washington Joint Center for Aerospace Technology and Innovation (JCATI) PI: J.W. Leachman, "Characterization Facility for Gelled Cryogenic Fuels," Amount: \$55,000; Duration: 02/1/2013-06/30/2013.

Washington State University Energy Sustainability & Innovation Center PIs: A. Mehrizi-Sani, J.W. Leachman, S. Ha, and P. Pedrow, "Energy Efficiency: Dynamic Modeling of Islanded and Grid-Integrated Fuel Cells;" Amount: \$40,000; Duration: 11/2012-08/2013.

Washington State University Research Advancement Challenge PIs: S. Clark, D. Wall, K. Lynn, C. Yu, J.W. Leachman, "Nuclear Engineering Symposia;" Amount: \$75,000; Duration: 10/2012-08/2013.

Washington State University College of Engineering Innovation Fair, PI: J.W. Leachman, "Construction of HYPER-1: The first liquid hydrogen fueled Unmanned Aerial Vehicle developed by University students;" Amount: \$25,000; Duration: 06/2012-05/2013.

Army Office of Scientific Research, Research and Engineering Apprenticeship Program (REAP) PI: J.W. Leachman, "Fabrication of a Thermal Radiation Shield with a Pullman High School Student;" Amount: \$7,800; Duration: 06/2011-09/2013 (renewed 2012, 2013).

Washington State University Samuel and Patricia Smith Teaching and Learning Grants PI: J.W. Leachman, "Improving ME 301 Thermodynamics through student engagement in sustainability topics via stand-alone computer applications;" Amount: \$3,100; Duration: 10/2011-05/2012.

Washington State University Faculty Seed Grant, PI: J.W. Leachman, "Catalytic pressurization of liquid hydrogen tanks for Unmanned Aerial Vehicles;" Amount: \$24,890; Duration: 06/2011-05/2012.

Gifts and Equipment Donations:

Paul Laufman, J.W. Leachman, Rocket team and laboratory support; Amount: \$20,000; Duration: 1/2015-Present.

Devlieg Foundation, J.W. Leachman, AIAA/UAV team student travel; Amount: \$10,000; Duration: 1/2014-Present.

Cascade Chapter of Autonomous and Unmanned Vehicle Systems International (AUVSI) J.W. Leachman, UAV team student travel to Northwest Companies; Amount: \$5,000; Duration: 1/2014-Present.

Barry Family, Retrofit of the Rubotherm Isosorp 2000; Amount: \$40,000; Duration: 1/2013-1/2014.

Scorpius Space Launch Systems PI: J.W. Leachman, "Cryogenic Compatible Composite Fuel Tank rated to 3,000 psi," Estimated Value: \$16,000.

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Colmac Industries PI: J.W. Leachman, "In-series water-coupled heat pumps for ME 406 Experimental Design;" Estimated Value: \$12,000.

NASA Marshall Space Flight Center/Pratt & Whitney Rocketdyne PIs: J.W. Leachman and D. Field, "Hydrogen Embrittlement Test Facility;" Estimated Value: \$470,000.

Pending Proposals:

ARPA-E PI: J.W. Leachman, "Kinetic Orthohydrogen-Parahydrogen Separation to Enable Small Modular Hydrogen Liquefaction," Amount: \$350,000, Duration: 1 years.

DOE Fuel Cells Technology Office PI: J.W. Leachman, "Cryogenic Thermal Compression Module for 700 bar containerized dispensing systems," Amount: \$500,000, Duration: 2 years.

DOE Fuel Cells Technology Office co-PI: J.W. Leachman, "Small Hydrogen liquefier," Amount: \$500,000, Duration: 2 years.

DARPA PI: J.W. Leachman, "Continuous synthesis, testing, and production design of (H₂)₄-CH₄ clathrate for rocket fuel," Amount: \$950,000, Duration: 3 years.

Research Publication Record:

Total: **25** Journal: **13** Proceedings: **12** Pending: **3**

Sum of Citations: **235** Average Citations/Publication: **7.66** Average Citations/Year: **26** H-index: **5**

Journal Publications:

I.A. Richardson, J.T. Fisher, P.E. Frome, B.O. Smith, S. Guo, S. Chanda, M.S. McFeely, A.M. Miller, and **J.W. Leachman**, "Low-cost, Transportable Hydrogen Fueling Station for Early Market Adoption of Fuel Cell Electric Vehicles," *International Journal of Hydrogen Energy* (In Review) (2015).

T. Blackham, **J.W. Leachman**, and E.W. Lemmon, "Thermodynamic Property Models for Binary Mixtures Containing Methanol (CH₃OH)," *Journal of Physical and Chemical Reference Data* (In Review) (2015).

J.T. Fisher and **J.W. Leachman**, "Diagnostic Twin Screw Extruder: Initial Measurements of Continuous Ne, H₂, and D₂ Extrusions," *Fusion Science and Technology* (In Review) (2015).

J. Bahrami, P. Gavin, R. Bliesner, S. Ha, P. Pedrow, A. Mehrizi-Sani, and **J.W. Leachman**, "Effect of Orthohydrogen-Parahydrogen Composition on Performance of a Proton Exchange Membrane Fuel Cell," *International Journal of Hydrogen Energy*, 39 (2014) 14965-14958, DOI: 10.1016/j.ijhydene.2014.07.014

R. Bliesner, P. Adam, and **J.W. Leachman**, "Parahydrogen-orthoxygen conversion for enhanced Vapor-Cooled Shielding of Liquid Oxygen Tanks," *AIAA Journal of Thermophysics and Heat Transfer*, (In Press) DOI: 10.2514/1.T4366

I. Richardson, **J.W. Leachman**, and E.W. Lemmon, "Fundamental Equation of State for Deuterium," *Journal of Physical and Chemical Reference Data*, 43 (2014) 013103.

M.B. Pecha, E. Chambers, R.C. Levensgood, J. Bair, S.S. Liaw, S. Ha, M. Garcia-Perez, and **J.W. Leachman**, "Novel Concept for the Conversion of Wheat Straw into Hydrogen, Heat, and Power: A Preliminary Design for the Conditions of Washington State University," *International Journal of Hydrogen Energy*, 28 (2013), 4967-4974.

J.T. Fisher and **J.W. Leachman**, "Development of a Diagnostic Twin Screw Extruder to Characterize Fuel Production for Tokamaks," *Fusion Science and Technology*, 63(3), (2013) 525-529.

J.W. Leachman, J.M. Pfothenhauer, and G.F. Nellis, "Dynamic Shear Stress and Heat Transfer of Solid Hydrogen, Deuterium, and Neon" *Journal of Applied Physics*, 111, (2012), 083513.

J.W. Leachman, "Visco-plastic flow predictions of solidified deuterium-tritium mixtures," *Fusion Science and Technology*, 60(2), (2011), 486-490.

S.K. Combs, **J.W. Leachman**, S.J. Meitner, L.R. Baylor, C.R. Foust, N. Commaux, and T.C. Jernigan, "A technique for producing large dual-layer pellets in support of disruption mitigation experiments," *Fusion Science and Technology*, 60(2), (2011), 473-479.

V. Utgikar, R.T. Jacobsen, and **J.W. Leachman**, "The future of hydrogen research in Idaho," *Journal of the Idaho Academy of Sciences*, 45(2), (2009), 21-32.

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- J.W. Leachman, R.T Jacobsen, S.G. Penoncello, and E.W. Lemmon, "Fundamental Equations of State for Parahydrogen, Normal Hydrogen, and Orthohydrogen." *Journal of Physical and Chemical Reference Data*, 38, (2009), 721-748.
- E.W. Lemmon, M.L. Huber, and J.W. Leachman, "Revised Standardized Equation of State for Hydrogen Gas Densities for Fuel Consumption Applications." *Journal of Research of the National Institute of Standards and Technology*, 113, (2008), 341-350.
- J.W. Leachman, R.T Jacobsen, S.G. Penoncello, and M.L. Huber, "Current Status of Transport Properties of Hydrogen." *International Journal of Thermophysics*, 28, (2007), 773-795.
- R.T Jacobsen, J.W. Leachman, S.G. Penoncello, and E.W. Lemmon, "Current Status of Thermodynamic Properties of Hydrogen." *International Journal of Thermophysics*, 28, (2007), 758-772.

Pending Publications:

- J.W. Leachman, I. Richardson, J. Essler, and E.W. Lemmon, "Thermophysical properties of orthohydrogen-parahydrogen mixtures," *Fluid Phase Equilibria*, (In Preparation).

Invited Publications and Peer-Reviewed Conference Proceedings:

- C.M. Leachman and J.W. Leachman, "If the Engineering Literature Fits, Use It! Student Application of Grey Literature and Engineering Standards," *Proceedings of the American Society for Engineering Education Conference* (Seattle,WA) (2015).
- P.M. Adam, and J.W. Leachman, "Design and performance of a reconfigurable liquid hydrogen fuel tank for use in the Genii unmanned aerial vehicle," *Transactions of the Cryogenic Engineering Conference-CEC: Advances in Cryogenic Engineering*, 1573 (2014), 1299.
- I.A. Richardson, T.M. Blackham, J.W. Leachman, and S.G. Penoncello, "Retrofit of a Rubotherm Isosorp 2000 for PVT-x and Sorption Measurements at Cryogenic Temperatures," *Transactions of the Cryogenic Engineering Conference-CEC: Advances in Cryogenic Engineering*, 1573 (2014), 1086.
- C. Chaney, P. Adam, J. Leachman, and K.I. Matveev, "Development of the Genii-UAS Demonstrator: a Small-Class Vehicle with Low Wing Loading and Fuel Cell Propulsion," *31st AIAA Applied Aerodynamics Conference* (June 2013).
- J.W. Leachman and I. Richardson, "Thermophysical Properties of Hydrogen and Deuterium at all Ortho-para concentrations," *European Cryogenic Engineering Conference*, (Invited).
- I. Richardson and J.W. Leachman, "Thermodynamic properties status of deuterium and tritium," *Advances in Cryogenic Engineering-Proceedings of the 2011 Cryogenic Engineering Conference-CEC*, 57 (2012) 1841-1848.
- J.W. Leachman, M. Street, and T. Graham, "Catalytic pressurization of liquid hydrogen fuel tanks for Unmanned Aerial Vehicles," *Advances in Cryogenic Engineering-Proceedings of the 2011 Cryogenic Engineering Conference-CEC*, 57 (2012) 1261-1267.
- C. Nixon, and J.W. Leachman, "Design of a solid hydrogen target cryostat for positron moderation studies," *Advances in Cryogenic Engineering-Proceedings of the 2011 Cryogenic Engineering Conference-CEC*, 57 (2012) 384-390.
- J.W. Leachman, J.M. Pfothenauer, and G.F. Nellis, "Thermophysical property modeling of a hydrogenic pellet production system" *Transactions of the Cryogenic Engineering Conference-CEC: Advances in Cryogenic Engineering*, 1218, (2010), 1570-1577.
- J.W. Leachman, J.M. Pfothenauer, G.F. Nellis, and T.M. Steiner, "A cryogenic Couette viscometer for the measurement of dissipation and heat transfer during solidification." *Transactions of the Cryogenic Engineering Conference-CEC: Advances in Cryogenic Engineering*, 1218, (2010), 329-336.
- S.J. Meitner, L.R. Baylor, S.K. Combs, D.T. Fehling, J.M. McGill, D.A. Rasmussen, and J.W. Leachman, "Twin-Screw Extruder Development for the ITER Pellet Injection System." *Proceedings of the 2009 Symposium on Fusion Engineering*, June, 2009.

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J.W. Leachman, J.M. Pfothenauer, and G.F. Nellis, "Model of a Twin-Screw Extruder Operating with a Gifford-McMahon Cryocooler for the Solidification of Deuterium" *Proceedings of the 15th International Cryocooler Conference*, June, 2009.

Research Supervised Students:

Ph.D.: **5** M.S.: **2** Non-Advisor Thesis Committees: **6** Undergrads and High School: **16**

Ph.D. Students:

Jake Fisher, 10/2010 to present, Thesis Title: A Diagnostic Extruder for Hydrogenic Pellet Production; Internships: Oak Ridge National Laboratory (ORNL), Pellet Fueling of Fusion Plasmas Group; Summer 2011; Current Position: Ph.D. Graduate Student, Washington State University.

Ian Richardson, 8/2010 to 8/2011 as undergraduate, 9/2011 to present as Ph.D. student; Thesis Title: Thermophysical Properties of Deuterium and Tritium; Internships: National Institute of Standards and Technology (NIST) Theory and Modeling of Fluids Group, Boulder Laboratory, Summer 2011; Awards: NASA Space Grant Fellowship 2013, NASA Space Grant Fellowship 2012, Curtis Fellowship for Graduate Research 2011, Auvil Fellowship for Undergraduate Student Research; Current Position: Ph.D. Graduate Student, Washington State University.

Patrick Adam, 5/2012 to present, Thesis Title: Preparation and Storage of Cryogenic Fuel for Aerospace Vehicles; Awards: NASA Space Grant Fellowship 2013, Curtis and Suksdorff Fellowship 2012; Current Position: Ph.D. Graduate Student, Washington State University.

Thomas Blackham, 8/2012 to present, Thesis Title: Thermodynamic Property Model for Cryogenic Mixtures of Helium, Hydrogen, Neon, and Methane; Current Position: Ph.D. Graduate Student, Washington State University.

Brandt Pedrow, 8/2014 to present, Thesis Title: Continuous Production of (H₂)₄-CH₄ Clathrate Fuel; Current Position: Ph.D. Graduate Student, Washington State University.

M.S. Students:

Elijah Shoemake, 1/2014 to Present, Thesis Title: Kinetic Separation of Orthohydrogen and Parahydrogen in Vortex Tubes; Awards: NASA Space Grant Scholarship 2012; Current Position: Graduate Student, Washington State University.

Chad Nixon, 1/2013 to 8/2014, Thesis Title: Design of a Solid Hydrogen Target Cryostat for Positron Moderation Studies; Awards: NASA Space Grant Scholarship 2012, Devlieg Fellowship for Undergraduate Research 2011, American Nuclear Society Undergraduate Scholarship Fall 2011; Current Position: Graduate Student, Oregon State University.

Ronald Bliesner, 1/2012 to 5/2013, Thesis Title: Orthohydrogen-parahydrogen Conversion to Minimize Boil-off from LH₂ and LO₂ Rocket Fuel Tanks; Awards: NASA Space Grant Scholarship 2012, WSU Undergraduate Research Poster Competition Novice Researcher Award; Current Position: Thermo-Fluids Engineer Blue Origin.

Thesis Committees (Not advisor):

Mohammad Mustafa, "Molecular Dynamics Study of Electrophoretic Alignment of Carbon Nanotubes and Their Deposition on Substrates," M.S. Non-Thesis, Washington State University; Status: Passed.

Christopher Chaney, "Mathematical Model of steady and un-steady plane motion in ground effect vehicle." M.S. Thesis, Washington State University; Status: Passed.

Behrang Asgharian, "Numerical modeling of thermoacoustic phenomena in intermittent stacks," Ph.D. Thesis, Washington State University; Status: In Progress.

Aric McLanahan, "MEMS thermal switch activation and wetting," Ph.D. Thesis, Washington State University; Status: Graduate May 2011.

Jake Schroeder, "Fundamental Equation of State for Ethanol," Masters Thesis, University of Idaho; Status: Graduate December 2011.

Undergraduate and High School Students:

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- Hanna Raine**, 10/2013 to 5/2014; Project: Solid Argon Piston Extrusion; Awards: NASA Space Grant Fellowship 2014.
- Edwin de Jesus**, 6/2013 to 8/2013 Research Experience for Undergraduates (NSF REU) Project: Strength of 3-D Printed Composite Materials at Cryogenic Temperatures.
- Eric Westerband**, 6/2013 to 8/2013 Research Experience for Undergraduates (NSF REU) Project: Solid Hydrogen Extruder Recirculation Loop.
- Elijah Shoemake**, 6/2013 to 5/2014 Research Experience for Undergraduates (NSF REU) Project: Superconducting LH2 Fuel Level Gauge; Awards: NASA Space Grant Fellowship 2014.
- Rachel and Jackie Davis**, 6/2013 to 8/2013, REAP High School Student Project: Operation of a Quadcopter for video data collection.
- Patrick Gavin**, 11/2012 to present, Undergraduate Project: Proton Exchange Membrane Fuel Cell Transient Response Experiment; Awards: Goldsmith Fellowship for Undergraduate Research, NASA Space Grant Fellowship 2013.
- Justin Bahrami**, 11/2012 to 11/2013, Undergraduate Project: Proton Exchange Membrane Fuel Cell Transient Response Experiment.
- Ruston (Cale) Levengood**, 1/2013 to 5/2013, Undergraduate Project: Design of a cryogenic hydrogen fuel conditioning system for the HYPER-L Unmanned Aerial Vehicle; Awards: Devlieg Fellowship for Undergraduate Research.
- Uriel Naranjo**, 9/2011 to 5/2013, Undergraduate Project: Construction of a Solid Hydrogen Target Cryostat for Positron Moderation Studies; Internships: WSU ME NSF Research Experience for Undergraduates (REU) program (Summer 2012); Awards: Louis Stokes Partnership for Minority Participation (LSAMP).
- Timothy Hall**, 5/2012 to 8/2012, Undergraduate Project: Estimating thermodynamic properties of Tritium with the Quantum Law of Corresponding States and Statistical Mechanics; Internships: WSU ME NSF Research Experience for Undergraduates (REU) program (Summer 2012).
- Oceana Chamberlin**, 6/2012 to 8/2012, REAP High School Student Project: Construction of a liquid nitrogen freeze dryer.
- Melissa Street**, 11/2010 to 5/2011, Undergraduate Project: Condensed Hydrogen Fueling of Unmanned Aerial Vehicles; Awards: NASA Space Grant Scholarship, WSU Representative to the Goldwater Scholarship, Barry M. Goldwater Scholarship Honorable Mention, WSU Undergraduate Research Poster Competition Novice Researcher Award.
- Teira Graham**, 5/2011 to 8/2011, Undergraduate Project: Construct a Liquid Hydrogen Catalysis Facility.
- Jack Qiu**, 7/2011 to 8/2011, REAP High School Student Project: Fabrication of Thermal Radiation Shields for Cryogenics Experiments.
- Erik Hemstadt**, 6/2011 to 8/2011, Research Experience for Undergraduates (NSF REU) Project: Orthohydrogen-Parahydrogen Catalysis.
- Ted Steiner**, 8/2009 to 5/2010, Undergraduate Project: Assist in the development of a Cryogenic Couette Viscometer.

Award matrix of students I have mentored in individual research. Note that this matrix is all encompassing to include graduate, undergraduate, and high-school students.

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Name	Period Mentored	(P)h.D. Grad, (M)aster's Grad, (G)rad, (U)ndergrad, (H)igh school, (N)SF REU, Army (R)EAP	National Graduate Fellowship	Outstanding Student Nominee (n) School Award(s), College Award (c)	NASA Space Grant Fellowship	Goldwater Meritorious Recognition	Deveig Fellowship	Auvil Fellowship	Curtis/Suksdorff Fellowship	Louis Stokes Partnership	Professional Society Scholarship	SURCA Meritorious Recognition	Targeted Summer Internship	Grant Funded Research
Ian Richardson	8/10-pr.	U,P	NASA	n	3x			x	x				x	x
Jake Fisher	9/10-pr.	P			x								x	
Patrick Adam	7/12-pr.	P			2x				x					
Thomas Blackham	9/12-pr.	P											x	
Ron Bliesner	8/11-6/13	U,M			x							x	x	x
Chad Nixon	12/10-pr.	U,M			x	x	x			x				
Hanna Raine	8/13-pr	U			x							x		
Elijah Shoemake	5/13-pr	U,N			x									
Patrick Gavin	12/12-pr.	U		c,n	x									x
Justin Bahrami	12/12-11/13	U,G		s										x
R. Cale Levengood	9/11-12/12	U					x							
Uriel Naranjo	9/11-5/13	U,N								x				
Timothy Hall	5/12-9/12	U,N												
Oceana Chamberlin	6/12-9/12	H,R												
Melissa Street	11/10-5/11	U		c,s,n	x	x						x		
Teira Graham	5/11-8/11	U												x
M. Jack Qiu	7/11-9/11	H,R												
Erik Hemstadt	6/11-8/11	U,N												

Scholarly Activities:

Conferences/Workshops Attended: **20** Invited Seminars: **18** Journals Refereed: **8**
Active Professional Society Memberships: **3** Patents: **0.5** International Honors/Awards: **1**

Conferences/Workshops Attended:

Alternative and Clean Vehicle Technologies Expo, Long Beach California, 5/2014.

Washington Clean Technology Alliance, "2025: What's in Your Tank?" 5/2014.

DOE Hydrogen Transmission and Distribution Workshop, NREL, Golden, CO 2/2014.

Cascade Chapter of the Autonomous Unmanned Vehicle Systems International (AUVSI), Pendleton, Oregon, 10/2013.

Washington Clean Technology Alliance, "Golden Age of Agriculture", 7/2013.

Washington State Joint Center for Aerospace Technology and Innovation (JCATI), 6/2013

Commercial and Government Responsive Access to Space Technology Exchange (CRASTE), Bellevue, Washington, 6/2013.

Cascade Chapter of the Autonomous Unmanned Vehicle Systems International (AUVSI), Bend, Oregon, 9/2012.

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International Institute of Refrigeration 12th European Cryogenics Conference, Dresden, Germany, 9/2012.

18th Symposium on Thermophysical Properties, Boulder, Colorado, 6/2012.

10th International Symposium on Fusion Nuclear Technology (ISFNT), Portland, Oregon, 8/2011.

2011 Cryogenic Engineering Conference (CEC), Spokane, Washington, 6/2011.

2010 Winter Meeting of the American Nuclear Society (ANS), Las Vegas, Nevada, 11/2010.

2009 Cryogenic Engineering Conference (CEC), Tucson, Arizona, 6/2009.

17th Symposium on Thermophysical Properties, Boulder, Colorado, 6/2009.

15th International Cryocooler Conference (ICC), Long Beach, California, 5/2008.

2007 Meeting of the Idaho Academy of Sciences (IAS), Idaho Falls, Idaho, 4/2007.

16th Symposium on Thermophysical Properties, Boulder, Colorado, 6/2006.

2006 Meeting of the Idaho Academy of Sciences (IAS), Moscow, Idaho, 3/2006.

Invited Seminars:

TEDx WSU, "The Future of Universities is..." 4/26/2014, available on-line: <http://youtu.be/E1qtXOVcXZg>.

DOE Hydrogen Transmission and Distribution Workshop, "Cryocompressed Hydrogen Storage and Liquid Delivery," 2/26/2014.

University of Washington Aeronautics and Astronautics Seminar, "Pondus Hydrogenii - The Power of Hydrogen," 11/25/2013.

Cascade Autonomous and Unmanned Aerial Systems International (AUVSI), "Pondus Hydrogenii - The Power of Hydrogen," 10/9/2013.

Washington State University Biological Systems Engineering Seminar Series, "Hydrogen, Drones, and Ag," 9/6/2013.

Insitu, "HYPER Hydrogen technologies for UAVs," 9/25/2013.

Washington Clean Technologies Alliance Breakfast with Industry, "Hydrogen, Drones, and Ag," 7/30/2013.

Pacific Northwest National Laboratory (PNNL), "HYdrogen Properties for Energy Research (HYPER)," 2/20/2013.

Aerojet-Redmond, "HYPER Laboratory at WSU," 11/20/2012.

Blue Origin, "HYPER Laboratory at WSU," 11/20/2012.

International Course on Cryogenics Honorary Speaker, "Thermophysical Properties and Equations of State," Dresden, Germany; 09/08/2012.

International Course on Cryogenics Honorary Speaker, "HYdrogen Properties for Energy Research (HYPER)," Dresden, Germany; 09/08/2012.

Washington State University Materials Science & Engineering Program Graduate Seminar Series, "HYdrogen Properties for Energy Research (HYPER)," 01/27/2012.

Idaho National Laboratory Center for Advanced Energy Studies (CAES), "HYdrogen Properties for Energy Research (HYPER)," Colloquium Keynote Speaker, 08/15/2011.

Washington State University Mechanical and Materials Engineering Graduate Seminar Series, "Hydrogen Properties for Energy Research," 09/30/2010.

California Institute of Technology Department of Mechanical Engineering Seminar Series, "Thermophysical Properties of Hydrogen and Energy Research," 04/14/2010.

University of Wisconsin-Madison Lindbergh Lecture, "Thermophysical Properties of Hydrogen and Energy Research," 02/18/2010.

University of Idaho Department of Mechanical Engineering Graduate Seminar Series, "Hydrogen Fueling of Fusion Energy Machines," 12/3/2009.

Journal Referee:

Review of Scientific Instruments, American Institute of Physics (AIP); Impact Factor: 1.5.

Fusion Science and Technology, Impact Factor: 0.654.

Cryogenics, Elsevier; Impact Factor: 1.124.

International Journal of Hydrogen Energy, Elsevier; Impact Factor: 4.053.

Fusion Engineering and Design, Elsevier; Impact Factor: 0.965.

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Journal of Physical and Chemical Reference Data (JPCRD); American Institute of Physics (AIP);
Impact Factor: 4.273; Cited Half-Life: >10.0.
Advances in Cryogenic Engineering, American Institute of Physics.
International Journal of Thermophysics; Springer; Impact Factor: 0.702.

Professional Leadership and Organizations:

K7 Committee on Thermophysical Properties, American Society for Mechanical Engineering, 06/2012 to 06/2015.
Executive Committee of the Fusion Energy Division, American Nuclear Society, 06/2012 to 06/2015.
Affiliate Faculty Member, Energy Sustainability Institute (ESI) at Washington State University, 2011 to present.
Graduate Faculty Member, Materials Science and Engineering Partnership (MSEP) at Washington State University, 2011 to present.
Affiliate Faculty Member, University of Idaho Department of Mechanical Engineering, 2010 to present.
American Nuclear Society, (ANS) young member, 2010 to present.
Cryogenic Society of America, (CSA) member, 2009 to present.
Engineering Hall President, University of Idaho, 2003 to 2005.
Formula SAE Team Captain, University of Idaho, 2004 to 2005.
American Society of Mechanical Engineering, (ASME) student member, 2004 to 2005, 2012 to present.
American Institute of Aeronautics and Astronautics, (AIAA) student member, 2004 to 2005.

Intellectual Property:

J.W. Leachman and P. Adam, "Vapor Cooled Shielding Liner for Cryogenic Storage in Composite Pressure Vessels," *Provisional Patent Application Number 62033028*, 08/4/2014.
J.W. Leachman, "Catalytic pressurization of liquid hydrogen fuel tanks," *Provisional Patent Application Number 61500928*, 06/24/2011.

Honors and Awards:

Washington State University School of Mechanical and Materials Engineering Outstanding Teaching Award, 2/2012.
Faculty Excellence Award from the UI-WSU Naval ROTC Battalion, 2012.
University of Wisconsin-Madison Department of Mechanical Engineering Fellowship for Research in the Physical Sciences, 2008 to 2009, (Only recipient) renewed 2009-2010.
Western Association of Graduate Schools/University Manuscripts International Distinguished Thesis Award, 03/2008 (Only recipient). WAGS consists of 85 institutions in Western US and Canada.
Outstanding Presentation, University of Idaho Graduate Student Expo, 04/2007 (1 of 4 recipients).
Master of Ceremony, University of Idaho College of Engineering Graduation Commencement, 05/2006 (class of 192).
Most Outstanding Senior, Awarded by the Faculty of the University of Idaho Mechanical Engineering Department, 05/2006 (class of 67, one of three recipients).
Richard B. Stewart Thermodynamics Scholarship, for Graduate students conducting research in thermodynamic or transport properties of fluids. Recipient 05/2006 to 05/2007.
Full Scholarship to University of Idaho Football team, 08/2001 to 05/2005. Forced to go on Medical Scholarship after incurring football ending lower back injury 04/2003.
Trail Blazer Award for Innovative Leadership Service, University of Idaho Residence Halls, Golden Joes Ceremony 04/2005.
University of Idaho Bronze Pin recipient, acknowledging leadership in, dedication to and support of the University of Idaho Residence halls over a several year period, Golden Joes Ceremony 04/2005.
Man of the Year, University of Idaho Residence Halls, 2003 to 2004.
Most Outstanding Senior, Lewiston Senior High School, 2001 (class of 304, one of two recipients).

Media Features and Press Releases:

KOMO-4 Public Radio, 5/9/2014.

Jacob W. Leachman
Curriculum Vitae

Hilding, T., “Students win international prize with hydrogen fueling plant,” *Washington State University News* 5/9/2014: <https://news.wsu.edu/2014/05/09/students-win-international-prize-with-hydrogen-fueling-plan/#.U21wCPIdUxQ>

Farley, G., “Keeping Washington’s aerospace edge through state grants,” *Seattle King 5 News*, aired 6/24/2013: <http://www.king5.com/news/aerospace/Keeping-Washingtons-Aerospace-Edge-through-state-grants-212845201.html>

Dubrovin, R. “WSU Engineers are developing unmanned airplanes,” *Lewiston KLEW TV News*, aired 6/25/2013: <http://www.klewtv.com/news/local/WSU-Engineers-are-developing-unmanned-airplanes-212849191.html?tab=video&c=y>

The Seattle Times/Associated Press, “WSU Students Developing Hydrogen Powered Drone,” 6/17/2013:

http://seattletimes.com/html/localnews/2021210131_apwawsudrone.html?syndication=rss