

Curtis H. Stern

Director of the Dual Degree Engineering Program
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College Level Education

- University of California, Berkeley, September 1982 - August 1986, Mechanical Engineering, M.S., June 1984; Ph.D., August 1986.
- Massachusetts Institute of Technology, September 1978 - May 1982, Mechanical Engineering, S.B., May 1982.

Academic Employment Experience

- Covenant College, Professor of Engineering & Director of the Dual Degree Engineering Program, Department of Physics, July 2012 – present.
- Grove City College, Visiting Professor, Department of Mechanical Engineering, January 2024 – May 2024.
- Virginia Polytechnic Institute & State University, Associate Professor of Practice, Department of Mechanical Engineering, August 2010 – July 2012.
- Virginia Polytechnic Institute & State University, Part-time engineering instructor, Department of Mechanical Engineering, July 2005 – July 2010.
- Virginia Polytechnic Institute & State University, Associate Professor, Department of Mechanical Engineering, August 1992 – August 1999.
- Virginia Polytechnic Institute & State University, Assistant Professor, Department of Mechanical Engineering, September 1986 - August 1992.
- University of California, Berkeley, Graduate Research and Teaching Assistant, Department of Mechanical Engineering, September 1982-August 1986.

Professional Non-Academic Employment Experience

- Enersyst Development Center, Dallas, Texas, Senior Research Engineer, August 1996 - July 1997.
- National Renewable Energy Laboratory (NREL), Golden, Colorado, Faculty Summer Research Internship, summer 1988.
- National Renewable Energy Laboratory, Golden, Colorado, Engineering Intern, summers 1981 and 1982, conducted research.

- RCA, Lancaster, Pennsylvania,
Engineering Intern, summer 1980, assisted with design specifications.

Consulting Experience

Energyst Development Center, Dallas, Texas, 10 days, July 1996.

Membership in Honor Societies

Pi Tau Sigma (Mechanical Engineering Honor Society)

Tau Beta Pi (Engineering Honor Society)

Professional Honors and Awards

Vulcan Materials Company Teaching Excellence Award, Covenant College, 2024

Certificate of Teaching Excellence, College of Engineering, Virginia Tech, 2000.

Sporn Award for the Teaching of Engineering Subjects, Virginia Tech, 1998.

Certificate of Teaching Excellence, College of Engineering, Virginia Tech, 1989.

NSF Research Initiation Award, National Science Foundation, 1989.

Young Investigator Research Initiation Award, Center for Composite Materials
and Structures, Virginia Tech, 1989.

Charles Fish Scholarship, University of California, Berkeley, 1982-83.

National Merit Scholarship, Massachusetts Institute of Technology, 1978-82.

Professional Registration

Massachusetts, E.I.T.

Membership in Professional Societies

American Society of Mechanical Engineering (ASME)

Christian Engineering Society

Committee Service

Covenant College Athletic Committee, 2021 – present

Covenant College Ad Hoc Coursera Implementation Committee, 2023

Covenant College Academic Standards Committee, 2021 – 2022

Covenant College Presidential Scholarship Committee, 2017 – 2020

Covenant College Curriculum Committee, 2013 – 2018

Student Activity Advising

Covenant College Robotics Club, 2017 – 2023

Teaching at Covenant College

Fall 2025

COS 131, Computing for Engineers
MAT 145, Calculus I
NSC 170, Introduction to Engineering
PHY 321, Statics

Spring 2025

PHY 322, Dynamics
PHY 328, Thermodynamics
MAT 258, Differential Equations
PHY 492, Capstone Project

Other courses taught at Covenant College

MAT 142, Precalculus
PHY 211/411, Physics Internship

Teaching at Virginia Tech

ME 3304, Heat and Mass Transfer
ME 3614, Mechanical Design I
ME 4006, ME Laboratory II
ME 2124, Introduction to Thermal Fluid Sciences
EngE 1114, Exploration of Engineering Design
ME 3114, Engineering Thermodynamics
ME 3134, Fundamentals of Thermodynamics
ME 3105, Thermodynamics I
ME 3106, Thermodynamics II

Graduate Student Advising – Master of Science

- Curtis, John, August 1999, "Experimental Verification for Microwave Processing of Materials in a Single Mode Rectangular Resonant Cavity."
- Skinner, Daniel B., November 1995, "Microwave Heating of a Coating on a Temperature-Sensitive Substrate."
- Ludman, John P., March 1994, "Evaluation and Design of Polymer Systems for Enhanced Microwave Heating."
- Jackson, Mitchell L., June 1993, "Modeling the Microwave Frequency Permittivity of Thermoplastic Composite Materials."
- Villeneuve, Pierre V., August 1992, "A Parametric Study of the Validity of the Weak-Line and Strong-Line Limits of Infrared Band Absorption."

- Mascarenhas, Wilfred J., July 1992, "An Improved Finite-Element Model for Simulating Microwave Processing of Polymers and Polymer-Composites in a Cylindrical Resonant Cavity."
- Albright, Eric V. B., June 1992, "Activation Energy of Douglas Fir Char Gasification by Carbon Dioxide."
- Gutierrez, Mauricio F., May 1992, "Masonry Heater Performance Evaluation: Efficiency, Emissions, and Thermal Modeling."
- May, Erik R., October 1991, "A Coupled Electromagnetic and Heat Transfer Finite-Element Model for Simulating Microwave Processing of Composite Materials in a Cylindrical Resonant Cavity."
- MacQuarrie, Stephen W., December 1987, "Development of the Capability of Testing the Accuracy of Thermal CAD Software for Electronic Circuit Design."

Refereed Papers in Major Technical Journals

- Stern, C. H., "A Transient Heat Transfer Model for Selective Microwave Heating of Multilayer Material Systems," *Journal of Microwave Power and Electromagnetic Energy*, Vol. 33, No. 4, 1998, pp. 207-215.
- Thomas, J. R., C. C. Goodson, C. H. Stern, M. Jackson, and G. J. Vogt, "Microwave Sintering of Ceramic Rods: Experiments and Models," *Journal of Microwave Power and Electromagnetic Energy*, Vol. 33, No. 2, 1998, pp. 113-120.
- Stern, C. H., "Microwave Processing of Nonwovens: An Introduction," *International Nonwovens Journal*, Vol. 6, No. 3, 1994, pp. 43-49.
- Stern, C. H., D. R. Jaasma, and M. R. Champion, "Masonry Fireplace Emissions Test Method: Repeatability and Sensitivity to Fueling Protocol," *Environmental Monitoring and Assessment*, Vol. 25, 1993, pp. 51-64.
- Jackson, M. L., and C. H. Stern, "Modeling the Complex Permittivity of Thermoplastic Composite Materials," *Journal of Microwave Power and Electromagnetic Energy*, Vol. 27, No. 2, 1992, pp. 103-111.
- Stern, C. H., D. R. Jaasma, J. W. Shelton, and G. Satterfield, "Parametric Study of Fireplace Particulate Matter and Carbon Monoxide Emissions," *Journal of the Air and Waste Management Association*, Vol. 42, No. 6, June 1992, pp. 777-783.
- Jaasma, D. R., C. H. Stern, and J. W. Shelton, "Progress in the Development of a Test Method for Fireplace Particulate Matter and Carbon Monoxide Emissions," *Biomass and Bioenergy*, Vol. 3, No. 2, 1992, pp. 63-70.

- Stern, C. H., D. R. Jaasma, and J. W. Shelton, "A Preliminary Test Method for Masonry Heater Particulate Matter and Carbon Monoxide Emissions," *Journal of the Air and Waste Management Association*, Vol. 41, No. 8, August 1991, pp. 1073-1078.
- Stern, C. H., R. Greif, and J. A. C. Humphrey, "An Experimental Study of Natural Convection in a Toroidal Loop," *ASME Journal of Heat Transfer*, November, 1988, pp. 877-884.
- Stern, C. H., and R. Greif, "Measurements in a Natural Circulation Loop," *Warme und Stoffübertragung*, 21, 1987, pp. 277-282.

Invited Papers and/or Presentations

Stern, C. H., "Fundamentals of Microwave Processing for Nonwovens," invited paper delivered at INDA-TEC 93, September 23, 1993, Miami Beach, Florida, *Nonwoven Technologies: Book of Papers, INDA-TEC 93*, pp. 163-181.

Refereed Papers Presented at Major International or National Technical Meetings

- Thomas, J. R., C. C. Goodson, M. Jackson, C. H. Stern, and G. J. Vogt, "Modeling Experiments on Continuous Microwave Processing of Thermal Runaway Materials," 25th IEEE International Conference on Plasma Science, June 1-4, 1998, Raleigh, North Carolina.
- Stern, C. H., "Heat Transfer Modeling of the Selective Microwave Processing of Coated Materials," *Proceedings 31st Microwave Symposium*, International Microwave Power Institute, July 28-31, 1996, Boston, Massachusetts, pp. 27-28.
- Jaasma, D. R., C. H. Stern, D. H. Honeycutt, and D. Fugler, "Effect of Glass Doors on Carbon Monoxide Spillage from Masonry Fireplaces," Air and Waste Management Association 1995 Annual Meeting, 6/18-6/23/95, San Antonio, Texas, Paper 95-RP137.01.
- Ludman, J. P., and C. H. Stern, "Experimental Study of Loss Mechanisms in Polymer-Metal Composites at Microwave Frequencies," *Materials Research Society Symposium Proceedings, Volume 347: Microwave Processing of Materials IV*, 1994 MRS Spring Meeting, San Francisco, California, pp. 717-722.
- Jaasma, D. R., C. H. Stern, M. R. Champion, and R. C. McCrillis, "Field Performance of Woodburning Stoves in Crested Butte During the 1991-92 Heating Season," Air and Waste Management Association 1994 Annual Meeting, 6/19-6/24/94, Cincinnati, Ohio, Paper 94-FA150.01.

- Jaasma, D. R., E. V. Albright, and C. H. Stern, "Activation Energy of Douglas Fir Char Gasification by Carbon Dioxide," Nordic Seminar on Solid Fuel Reactivity, Chalmers University of Technology, Gothenburg, Sweden, November 24, 1993.
- Villeneuve, P. V. and C. H. Stern, "A Parametric Study of the Validity of the Weak-Line and Strong-Line Limits of Infrared H₂O Band Absorption," SPIE Conference, April 14-15, 1993, Orlando, Florida, *SPIE Proceedings Volume 1968*, pp. 766-776.
- Jaasma, D. R., C. H. Stern, and J. W. Shelton, "Progress in the Development of a Test Method for Fireplace Particulate Matter and Carbon Monoxide Emissions," Air and Waste Management Association 1992 Annual Meeting, 6/21-6/26/92, Kansas City, Missouri, Paper 92-180.23P. (Same paper published in a journal.)
- Jackson, M. L., and C. H. Stern, "Modeling the Microwave Frequency Dielectric Properties of Thermoplastic Composite Materials," *Materials Research Society Symposium Proceedings, Volume 269: Microwave Processing of Materials III*, 1992 MRS Spring Meeting, San Francisco, California, pp. 601-606.
- Stern, C. H., E. R. May, and W. J. Mascarenhas, "Modelling the Processing of Composite Materials in a Resonant Microwave Cavity," *Virginia Tech Center for Composite Materials and Structures Program Review*, 3/22-3/24/92, Blacksburg, Virginia, pp. II.E.1-II.E.12.
- Champion, M. R., D. R. Jaasma, and C. H. Stern, "Fireplace Smoke and CO Emissions: Comparison of Reference Methods with the VPI Sampler," *PM₁₀ Standards and Nontraditional Particulate Source Controls Vol. 2*, Edited by J. Chow and D. Ono, 1/12-1/15/92, Phoenix, Arizona, pp. 536-552.
- Jackson, M. L., and C. H. Stern, "Measurements of the Complex Permittivity of Fiber-Reinforced Thermoplastic Composite Materials," *Presentation Summaries: 26th Microwave Power Symposium of the International Microwave Power Institute*, August 5-7, 1991, Buffalo, New York, pp. 21-23.
- May, E. R., and C. H. Stern, "Numerical Modelling of Microwave Processing of Composite Materials in a Cylindrical Resonant Cavity," *Presentation Summaries: 26th Microwave Power Symposium of the International Microwave Power Institute*, August 5-7, 1991, Buffalo, New York, pp. 5-6.
- Stern, C. H., D. R. Jaasma, J. W. Shelton, and G. Satterfield, "Parametric Study of Fireplace Particulate Matter and Carbon Monoxide Emissions," 1991 Annual Meeting of the Air and Waste Management Association, June 16-21, 1991, Vancouver, British Columbia, Paper 91-64.7. (Same paper published in a journal.)
- Bohn, M. S., and C. H. Stern, "Drop Ejection in Molten-Salt Direct Absorption Central Receivers," *Proceedings of the 11th Annual ASME Solar Energy Conference*, San Diego, CA, April 2-5, 1989, pp. 179-186.

- Copeland, R. J., C. H. Stern, and J. W. Leach, "Long Duration Thermal Storage for Solar Thermal High Pressure Steam IPH," *Proceedings of the ASME Solar Energy Division Fifth Annual Conference*, Orlando, Florida, April 18-21, 1983, pp. 358-362.
- Copeland, R. J., J. W. Leach, and C. H. Stern, "High Temperature Molten Salt Solar Thermal Systems," *Proceedings of the 17th Intersociety Energy Conversion Engineering Conference*, Los Angeles, California, August 8-12, 1982, pp. 2032-2036.

August 13, 2025