Publications

Refereed Journal Articles

Rhim, W.K., Ohsaka, K., Paradis, P.F., Spjut, R.E., "Noncontact Technique for Measuring Surface Tension and Viscosity of Molten Materials Using High Temperature Electrostatic Levitation ," Rev. Sci. Instrum., **70** (6), 2796-280 (1999)

Rhim, W.K., Chung, S.K., Rulison, A.J., Spjut, R.E., "Measurements of Thermophysical Properties of Molten Silicon by a High-Temperature Electrostatic Levitator," Int. J. Thermophys., **18** (2), 459-470 (1997).

Bowman, R.C., Jr., Freeman, B.D., Ryba, E.L., Spjut, R.E., Liu, E.A., Penso, J.M., Lynch, F.E., "Performance testing of a vanadium hydride compressor," Z. Phys. Chem. (Germany), **183**, pt.1-2, 245-50 (1994)

Rhim, W.K., Chung, S.K., Barber, D., Man, K.F., Gutt, G., Rulison, A., Spjut, R.E., "An electrostatic levitator for high-temperature containerless materials processing in 1-g," Rev. Sci. Instrum. **64** (10), 2961-2970 (1993).

DeVries, J., Wakisaka, S.S., and Spjut, R.E., "Measurement of the Work-Function of $Y_1Ba_2Cu_3O_{7-\delta}$ Under Ambient Conditions," J. Mater. Res. **8** (7) 1497-1500 (1993).

Spjut, R.E., "Transient Response of Least-Squares Based Multiwavelength Pyrometers," Optical Engineering, **32** (5), 1068-1072 (1993).

Bolsaitis, P.P., Spjut, R.E., and Elliott, J.F., "High-Temperature Pulses in Small Alumina Particles," High-Temp.-High Pressures **21**, 601-611 (1989).

Bar-Ziv, E., Jones, D. B., Spjut, R. E., Dudek, D. R., Sarofim, A. F., Longwell, J. P., "Measurement of combustion kinetics of a single char particle in an electrodynamic thermogravimetric analyzer," Combustion and Flame **75** (1), 81-106 (1989).

Libera, M.R., Bolsaitis, P.P., Spjut, R.E. and VanderSande, J.B., "Liquid Supercooling and Droplet Cooling rates of Remelted Argon-Atomized Fe-30Ni Powder Particles," J. Mater. Res. **3** (3) 441-452 (1988).

Fincke, J.R., Jeffery, C.L. and Spjut, R.E., "Measurement of the Emissivity of Small Particles at Elevated Temperatures," Optical Engineering, **27** (8), 684-690 (1988).

Greene, W.M., Spjut, R.E., Bar-Ziv, E., Sarofim, A.F. and Longwell, J.P., "Photophoresis of Irradiated Spheres: Absorption Centers: errata," Journal of the Optical Society of America B, **5**, 866 (1988).

Spjut, R.E., "Transient Response of One- and Two-Color Optical Pyrometry Systems," Optical Engineering, **26** (5), 467-472 (1987).

Spjut, R.E., Bar-Ziv, E., Sarofim, A.F. and Longwell, J. P., "Electrodynamic Thermogravimetric Analyzer," Rev. Sci. Instrum. **57**, 1604-1610 (1986).

Spjut, R.E., Sarofim, A.F. and Longwell, J.P., "Laser Heating and Particle Temperature Measurement in an Electrodynamic Balance," Langmuir **1**, 355-360 (1985).

Greene, W.M., Spjut, R.E., Bar-Ziv, E., Sarofim, A.F. and Longwell, J.P., "Photophoresis of Irradiated Spheres: The Complex Index of Refraction," Langmuir **1**, 361-365 (1985).

Greene, W.M., Spjut, R.E., Bar-Ziv, E., Sarofim, A.F. and Longwell, J.P., "Photophoresis of Irradiated Spheres: Absorption Centers," Journal of the Optical Society of America B, **2**, 998-1004 (1985).

Book Chapters

"Chapter 6 Design Modeling, Analysis and Optimization", *Engineering Design: A Project Based Introduction*, 3rd Ed, C. Dym, & P. Little, with E. Orwin, & R.E. Spjut, Wiley, New York (2008)

"Chapter 7 Communicating the Design Outcome (I): Building Models and Prototypes", *Engineering Design: A Project Based Introduction*, 3rd Ed, C. Dym, & P. Little, with E. Orwin, & R.E. Spjut, Wiley, New York (2008)

"Chapter 24. An Introduction to Signal Processing with Csound", *The Csound Book, Tutorials in Software Synthesis and Sound Design*, R. Boulanger Ed., MIT Press (March 2000)

"Chapter 30. Convolution: Traditional and Novel Applications", *The Csound Book, Tutorials in Software Synthesis and Sound Design*, R. Boulanger Ed., MIT Press (March 2000)

Conference Proceedings

Nancy K Lape, Christopher Clark, Lori Bassman, Matthew Spencer, Angela Lee, R Erik Spjut, AM Dato, LP Blake, TJ Tsai, "Erasing a Gender Gap in Performance in a Multidisciplinary Introductory Engineering Course", 2018 CoNECD - The Collaborative Network for Engineering and Computing Diversity Conference: Crystal City, Virginia Apr 29 (2018). https://peer.asee.org/29534

Elizabeth Orwin, Chris Clark, Nancy Lape, Lori Bassman, Matthew Spencer, Albert Dato, Angie Lee, TJ Tsai, Erik Spjut, Laura Palucki-Blake, Joseph Betser, Roberta M Ewart, "Definition and Application of Student Readiness Level (SRL) Metrics for Evaluating Student Preparation for Solving Real-World Problems", in AIAA SPACE and Astronautics Forum and Exposition, p5175 (2017).

Nancy K Lape, Lori Bassman, Christopher Clark, Albert Dato, Angela M Lee, Matthew Spencer, Erik Spjut, Laura Palucki Blake, "Integrating Theory and Hands-On Practice using Underwater Robotics in a Multidisciplinary Introductory Engineering Course" in 2017 ASEE Annual Conference & Exposition. ASEE Conferences, Columbus, Ohio. https://peer.asee.org/28561 (2017).

Mary Cardenas, R. Erik Spjut, "Design and Application of High-Speed Data Acquisition Aboard a High-Power Rocket in an Undergraduate Experimental Engineering Course", 2016 ASEE Annual Conference & Exposition (2016). https://peer.asee.org/26657

S. A. Severson, P. I. Choi, K. E. Badham, D. Bolger, D. S. Contreras, B. N. Gilbreth, C. Guerrero, E. Littleton, J. Long, L. P. McGonigle, et al. “Kapao first light: the design, construction and operation of a low-cost natural guide star adaptive optics system.” In SPIE Astronomical Telescopes+ Instrumentation, pages 914839–914839. International Society for Optics and Photonics, (2014).

Severson, S.A.; Choi, P.I.; Contreras, D.S.; Gilbreth, B.N.; Littleton, E.; McGonigle, L.P.; Morrison, W.A.; Rudy, A.R.; Wong, J.R.; Xue, A.; Spjut, E.; Baranec, C.; Riddle, R. “KAPAO: a MEMS-based natural guide star adaptive optics system”, SPIE MOEMS-MEMS, 861709-861709-10, International Society for Optics and Photonics (2013).

W. Rhim, K. Ohsaka, and R. E. Spjut. Undercooling limits and thermophysical properties in glass forming alloys. NASA Conference Publication, pages 547–552, (1999).

Ryba, E.L., Freeman, B.D., Bowman, R.C. Jr., Spjut, R.E., Liu, E.A., Budic, P., Okado, C.,“Assessment of a Hydrogen Joule-Thomson Expander and Vanadium Hydride Sorption Beds for 20K Cryocoolers”, 7th International Cryocooler Conference Proceedings, Phillips Laboratory, Kirtland A.F.B., NM (April 1993).

Spjut, R.E., and Bolsaitis, P.P., “Three Channel Optical Temperature Measurement of Laser-Heated Reacting Particles,” Materials Processing in the Reduced Gravity Environment of Space, MRS Symposia Proceedings, Vol. 87 Doremus, R.H., Nordine, P.C., *ed*., Materials Research Society (1987).

Spjut, R.E., Elliott, J.F., and Bolsaitis, P.P., “Thermogravimetric Measurements in an Electrodynamic Balance,” Materials Processing in the Reduced Gravity Environment of Space, MRS Symposia Proceedings, Vol. 87 Doremus, R.H., Nordine, P.C., *ed*., Materials Research Society (1987).

Conference Presentations

“KAPAO: a MEMS-based natural guide star adaptive optics system”, Scott A. Severson ; Philip I. Choi ; Daniel S. Contreras ; Blaine N. Gilbreth ; Erik Littleton, et al. , *Proc. SPIE* 8617, MEMS Adaptive Optics VII, 861709 (March 5, 2013);

“KAPAO: A natural guide star adaptive optics system for small aperture telescopes.” S. A. Severson, P. Choi, E. Spjut, D. Contreras, B. Gilbreth, L. McGonigle, W. Morrison, A. Rudy, A. Xue, C. Baranec, et al., In American Astronomical Society Meeting Abstracts# 220, volume 220, (2012).

“Kapao-alpha: An on-the-sky testbed for adaptive optics on small aperture telescopes.”, W. Morrison, P. Choi, S. Severson, E. Spjut, D. Contreras, B. Gilbreth, L. McGonigle, A. Rudy, A. Xue, C. Baranec, et al. In American Astronomical Society Meeting Abstracts# 220, volume 220, 2012.

“Remelting and Solidification of Individual Gas-Atomized Metal Powder Particles,” with M.R. Libera, P.P. Bolsaitis, J.B.VanderSande and J.F. Elliott, AAAR Annual Meeting, Chapel Hill NC, Oct. 1988.

"Combustion Kinetics of Spherocarb as Measured In an Electrodynamic Thermogravimetric Analyzer," with D.B. Jones and A.F. Sarofim, AAAR Annual Meeting, Chapel Hill NC, Oct. 1988

"The Use of an Electrodynamic Thermogravimetric Analyzer to Measure Carbon Oxidation Kinetics," with D.B. Jones and A.F. Sarofim, Eastern Section Combustion Institute, Bethesda MD, Nov. 1987

"The Use of an Electrodynamic Thermogravimetric Analyzer to Measure Carbon Oxidation Kinetics," with D.B. Jones and A.F. Sarofim, AAAR Annual Meeting,Seattle WA, Oct. 1987

"High-Temperature Single-Particle Behavior of Alumina and Silica,"with P.P. Bolsaitis, and J.F. Elliott, TMS-AIME Annual Meeting, Denver CO, Feb. 1987.

"Design of Experiments for the Electrodynamic Thermogravimetric Analyzer," with P.P. Bolsaitis, and J.F. Elliott, TMS-AIME Annual Meeting, New Orleans LA, March 1986.

"A High-Temperature Single Particle Thermogravimetric Analyzer," with P.P. Bolsaitis, and J.F. Elliott, TMS-AIME Annual Meeting, New Orleans LA, March 1986

"The Application of an Electrodynamic Balance for measuring heterogeneous kinetics at High Temperatures," with A.F. Sarofim and J.P. Longwell, ACS Annual Meeting, Philidelphia PA, August 1984.

Invited Lectures

"Containerless Processing of Materials in an Electrostatic Levitator" Caltech Chemical Engineering Seminar, 2001.

"Multi-Ratio Pyrometry" Joint N.I.S.T.–A.S.T.M. workshop on advances in non-contact temperature measurement, N.I.S.T. Headquarters, Gaithersburg MD, May 1991.

"Non-Contact Temperature Measurement," Los Angeles Chapter, A.I.Ch.E., May 1989.

"Supercooling and Recalescence of Individual Metal Powder Particles," Jet Propulsion Laboratory, Pasadena CA, March 1989.

"Non-Contact Temperature Measurement," Engineering Seminar, Harvey Mudd College, March 1989.

"Advances in Multi-Color Pyrometry," NASA workshop on Non-Contact Temperature Measurement Techniques, Pasadena Hilton, Pasadena CA January 1989.

"Common but Unappreciated Sources of Error in One, Two, and Multiple Color Pyrometry," NASA workshop on Non-Contact Temperature Measurement Techniques, NASA HQ, Washington DC April 1987.

"High-Temperature Gas-Solid Kinetics in an Electrodynamic Thermogravimetric Analyzer," Materials Engineering and Science Seminar Series, MIT, 1986.

Other Publications

Spjut, R.E., “Report on the Multicolor Pyrometry Session,” in *Proceedings of the Second NCTM Workshop* , JPL Publication 89-16 , Pasadena CA, 1989 pp. 317-318.

Spjut, R.E., “Electrodynamic Thermogravimetric Analyzer,” Freshman Engineering Seminar, Harvey Mudd College, April 1989

Spjut, R.E., “Common but Unappreciated Sources of Error in One, Two, and Multiple Color Pyrometry,” in *Non-Contact Temperature Measurement* , NASA Conference Publication 2503, Washington DC, 1988 pp.182-213.

Jones, D. B., Spjut, R. E., Dudek, D. R., Sarofim, A. F., “Study of Oxidation Kinetics of Submillimeter Spherocarb in an Electrodynamic Balance,” Chem. Phys. Processes Combust., 23/1-23/4 (1987).

Spjut, R.E., Bolsaitis, P.P., and Elliott, J.F., “High Temperature Gas-Solid Reactions,” Proceedings, Proc. Process Technol. Conf., 6th, Iron Steel Soc.,Warrendale PA, (1986).