

Outputs and Interactions – Process Measurements Division

1. Publications

1a. Publications in Print

Barker, S.L., Ross, D.J., Tarlov, M.J., Gaitan, M., and Locascio, L.E., **“Control of Flow Direction in Microfluidic Devices with Polyelectrolyte Multilayers,”** Anal. Chem. 72, p. 5925-5929 (2000).

Berg, R.F., Tison, S.A., **“Laminar Flow of Four Gases Through a Helical Rectangular Duct,”** AIChE Journal 47, p. 263-270 (2001).

Berg, R.F., Green, D.S., and Mattingly, G.E., **“Workshop on Mass Flow Measurement and Control for the Semiconductor Industry,”** NIST SP 400-101 (2001).

Berg, R.F., Green, D.S., and Mattingly, G.E., **“Mass Flow Research and Standards: NIST Workshop Results,”** Future FAB Intl. 10, p. 235-238 (2001).

Bundy, M., Widmann, J.F., Hamins, A., Tsa, B.K., and Maslar, J.E., **“Non-Contact Thermometry Measurements Using an Infrared Spectrograph,”** Proc. of NIST Internal Workshop on Non-Contact Thermometry, NISTIR-6572 (2001).

Cavicchi, R.E., Walton, R.M., Aquino-Class, M.I., Allen, J.D., and Panchapakesan, B., **“Spin-on Nanoparticle Tin Oxide for Microhotplate Gas Sensors,”** Sensors and Actuators B, Chemical 77, p. 145-154 (2001).

Chung, I.P., and Presser, C., **“Fluid Properties Effects on Liquid Sheet Disintegration of a Simplex Pressure-Swirl Atomizer,”** J. of Propulsion and Power 17, 1, p. 212-216 (2001).

Crocker, D.S., Giridharan, M.G., Widmann, J.F., and Presser, C., **“Simulation of Methanol Combustion in the NIST Reference Spray Combustor,”** Proc. Combustion, Fire, and Computational Modeling of Industrial Combustion Systems, FACT-Vol. 23, HTD-Vol. 367 (C. Presser and A.K. Gupta, Eds.), p. 95-102, Am. Soc. Mech. Eng., NY (2000).

Crocker, D.S., Giridharan, M.G., Widmann, J.F., and Presser, C., **“Issues Related to Spray Combustion Modeling Validation,”** AIAA 2001-0363, Am. Inst. Aero. Astro., Washington, DC (2001).

Davis, R.W., Moore, E.F., Maslar, J.E., Burgess, D.R., Kremer, D.M., Ehrman, S.H., **“A Numerical/Experimental Investigation of Microcontamination in a Rotating Disk Chemical Vapor Deposition Reactor,”** Proc. Intl. Conf. on Characterization and Metrology for ULSI Technology Conf., (D.G. Seiler et al, eds.) Amer. Inst. of Physics 550, p.292-296 (2001)

Ding, J., McAvoy, T.J., Cavicchi, R.E., and Semancik, S., "**Surface State Trapping Models for SnO₂-Based Microhotplate Sensors,**" Sensors and Actuators B: Chemical 77, p. 597-613 (2001).

Ellefson, R.F., and Miiller, A.P., "**Recommended Practices for Calibrating Vacuum Gauges of the Thermal Conductivity Type,**" J. Vac. Sci. Technol. A 18 (5), p. 2568-2577 (2000).

Esch, M.B., Locascio, I.E., Tarlov, M.J., and Durst, R.A., "**Detection of Viable Cryptosporidium Parvum using DNA-Modified Liposomes in a Microfluidic Chip,**" Anal. Chem. 73, p. 2952-2958 (2001).

Espina, P.I., "**A Question of Accuracy,**" Flow Control 7, (1), p. 30-35 (2001).

Etz, E.S., Hurst, W.S., and Feldman, A., "**Correlation of the Raman Spectra with the Thermal Conductivity of a Set of Diamond Wafers Prepared by Chemical Vapor Deposition,**" J. of Mats. Res. 16, No. 6, p. 1694-1711 (2001).

Grosshandler, W., Hamins, A., McGrattan, K., Charagundla, S.R., and Presser, C., "**Suppression of a Non-Premixed Flame Behind a Step,**" Proc. of the Combustion Inst., Vol. 28, p. 2957-2964 (2000).

Grosshandler, W., Hamins, A., McGrattan, K., and Presser, C., "**Transient Application, Recirculating Pool Fire, Agent Effectiveness Screen: Final Report, NGP Project 3A/2/890,**" NISTIR-6733 (2001).

Grosshandler, W., Hamins, A., Yang, J., McGrattan, K., and Presser, C., "**Transient Application, Recirculating Pool Fire, Agent Effectiveness Screen: Final Report,**" Proc. Halon Options Technical Working Conf. (HOTWC-2001), New Mexico Engineering Research Institute, p. 155-159 (2001).

Hovde, D.C., Hodge, J.T., Scace, G.E., and Silver, J.A., "**Wavelength Modulation Laser Hygrometer for Ultrasensitive Detection of Wafer Vapor in Semiconductor Gases,**" Appl. Opt. 40, p. 829-839 (2001).

Hurly, J.J., Moldover, M.R., "**Ab Initio Values of the Thermophysical Properties of Helium as Standards,**" J. of Res. of the National Institute of Standards and Technology 105 (5), p. 667-688 (2000).

Johnson, A., and Wright, J.D., "**The Effect of Vibrational Relaxation of the Discharge Coefficient of Critical Flow Venturis,**" Flow Measurement and Instrumentation, 11, p. 315-327 (2000).

Kreider, K.G., "**In Situ Calibration of Light Pipe Radiation Thermometers Using Thin Film Instrumented Silicon Wafers,**" Proc. 8th Intl. Conf. on Advanced Thermal Processing of Semiconductors, IEEE, p. 64-70 (2000).

Kreider, K.G., DeWitt, D.P., Tsai, B.K., and Lojek, B. eds., ***“Workshop on Temperature Measurement of Semiconductor Wafers Using Thermocouples,”*** NISTIR-6566 (2001).

Kreider, K.G., ***“Surface Temperature Measurements”*** in Workshop on Temperature Measurements of Semiconductor Wafers Using Thermocouples, NISTIR-6566 (2001).

Kreider, K.G., Allen, D.W., Chen, D.H., DeWitt, D.P., Meyer, C.W., and Tsai, B.K., ***“Effects of Wafer Emissivity on Light-Pipe Radiometry in RTP Tools,”*** Proc. 9th Intl. Conf. on Advanced Thermal Processing of Semiconductors, IEEE, p. 163-168 (2001).

Levin, I., Chan, J.Y., Geyer, R.G., Maslar, J.E., and Vanderah, T.A., ***“Cation Ordering and Dielectric Properties in the Complex Perovskite $\text{Ca}(\text{Ca}_{1/3}\text{Nb}_{2/3})\text{O}_3$,”*** J. of Solid State Chemistry 157, p. 122-134 (2001).

Maslar, J.E., Hurst, W.E., Vanderah, T.A., and Levin, I., ***“The Raman Spectra of Cr_3O_8 and Cr_2O_5 ,”*** J. of Raman Spectroscopy, 32, p. 201-206 (2001).

Maslar, J.E., and Hurst, W.E., ***“Non-Intrusive Optical Measurements of Gas and Surface Temperatures in Hostile Environments Using Raman Spectroscopy,”*** Proc. of NIST Internal Workshop on Non-Contact Thermometry, NISTIR-6572 (2001).

Maslar, J.E., Hurst, W.S., Bowers, W.J., Hendricks, J.H., Aquino-Class, M.I., and Levin, I., ***“In Situ Raman Spectroscopic Investigation of Chromium Surfaces Under Hydrothermal Conditions,”*** Applied Surface Science 180, p. 102-118 (2001).

Maslar, J.E., Hurst, W.S., Bowers, W.J., and Hendricks, J.H., ***“In Situ Raman Spectroscopic Investigation of Zirconium-Niobium Alloy Corrosion under Hydrothermal Conditions,”*** J. of Nuclear Materials 298, p. 239-247 (2001).

Mattingly, G.E., ***“Flow Measurement Proficiency Testing”*** Inst. Soc. of America, Flow Measurement, Practical Guides for Measurement and Control, p. 761-776 (2001).

Meyer, C.W., DeWitt, D.P., Kreider, K.G., Lovas, F.J., and Tsai, B.K., ***“ITS-90 Calibration of Radiation Thermometers for RTP Using Wire/Thin Film Thermocouples on a Wafer,”*** AIP Conf. Proc. 550, Proc. Intl. Conf. on Characterization and Metrology for ULSI Technology, p. 254-258 (2001).

Miller, C.C., van Zee, R.D., and Stephenson, J.C., ***“Mechanism of the Reaction, $\text{CH}_4 + \text{O}(^1\text{D}_2) \rightarrow \text{CH}_3 + \text{OH}$, Studied by Ultrafast and State-Resolved Photolysis/Probe Spectroscopy of the $\text{CH}_4 \cdot \text{O}_3$ van der Waals Complex,”*** J. of Chemical Physics, 114, 3, p. 1214-1232 (2001).

Moldover, M.R., Gillis, K.A., Hurly, J.J., Mehl, J.B., and Wilhelm, J., ***“Acoustic Measurements in Gases: Applications to Thermodynamic Properties, Transport Properties, and the Temperature Scale,”*** Handbook of Elastic Properties of Solids, Fluids, and Gases, Vol. IV, 12, p. 329-370 (2000).

Moldover, M.R., and Buckley, T.J., "**Reference Values of the Dielectric Constant of Natural Gas Components Determined with a Cross Capacitor**," *Intl. J. of Thermophysics*, 22, p. 859-885 (2001).

Olson, D.A., "**Heat Transfer in Supercritical Carbon Dioxide with Convective Boundary Conditions**," *Proc. of the 20th Intl. Congress of Refrigeration*, Sydney, Australia, CD-Rom (2001).

Olson, D.A., "**Heat Transfer of Supercritical Carbon Dioxide Flowing in a Cooled Horizontal Tube**," *Proc. of 4th IIR-Gustav Lorentzen Conf. on Natural Working Fluids*, p. 251-258 (2001).

Pipino, A.C., and Hodges, J.T., "**Evanescent Wave Cavity Ring-Down Spectroscopy for Trace Water Detection**," *Advanced Environmental and Chemical Sensing Technology*, T. Vo-Dinh and S. Büttgenback, Eds., *Proc. SPIE*, Vol. 4205, p.1-11 (2001).

Presser, C., "**Metrology for Non-Contact Rainbow Thermometry**," *Proc. of NIST Internal Workshop on Non-Contact Thermometry*, NISTIR-6572 (2001).

Presser, C., Widmann, J.F., DesJardin, P.E., and Gritzko, L.A., "**Measurements and Numerical Predictions of Liquid Agent Dispersal Around Solid Obstacles**," *Proc. Halon Options Technical Working Conf. (HOTWC-2001)*, New Mexico Engineering Research Institute, p. 122-130 (2001).

Ripple, D.C., "**Temperature Scales, Uncertainty, and Traceability, and Thermocouples and Thermocouple Wires**," *Workshop on Temperature Measurement of Semiconductor Wafers Using Thermocouples*, NISTIR-6566 (2001).

Ross, D.J., Bonn, D., and Meunier, J., "**Wetting of Methanol on the n-Alkanes: Observation of Short-Range Critical Wetting**," *J. of Chem. Phys.* 114, 6, p.2784-2792 (2001).

Ross, D.J., Johnson, T.J., and Locascio, L.E., "**Imaging of Electro-Osmotic Flow in Plastic Microchannels**," *Analytical Chemistry* 73, 11, p. 2509-2515 (2001).

Ross, D.J., Gaitan, M., and Locascio, L.E., "**Temperature Measurement in Microfluidic Systems Using a Temperature-Dependent Fluorescent Dye**," *Analytical Chem.* 73 (17), p. 4117-4123 (2001).

Ross, D.J., Bonn, D., Posazhennikova, A.J., Indekeu, J.O., and Meunier, J., "**Crossover From First-Order to Critical Wetting: Short-Range Tricritical Wetting**," *Phys. Rev. Let.* 87 (17), p. 176103 (2001).

Semancik, S., Cavicchi, R.E., Wheeler, M.C., Tiffany, J.E., Walton, R.M., Suehle, J.S., Panchapakesan, B., and DeVoe, D.E., "**Microhotplate Platforms for Chemical Sensor Research**," *Sensors and Actuators B: Chemical* 77, p. 579-591 (2001).

Sobolewski, M.A., ***“Sheath Model for Radio-Frequency-Biased, High-Density Plasmas, Valid for all Omega-Omega (sub i),”*** Phys. Rev. E. 62 (6), p. 8540-8553 (2000).

Sobolewski, M.A., ***“Monitoring Ion Current and Ion Energy during Plasma Processing Using Radio-Frequency Current and Voltage Measurements,”*** AIP Conf. Proc. 550, Proc. Intl. Conf. on Characterization and Metrology for ULSI Technology, p. 263-267 (2001).

Sobolewski, M.A., ***“Measuring the Ion Current in High-Density Plasmas Using Radio-Frequency Current and Voltage Measurements,”*** J. of Appl. Phys. 90, (6), p.2660-2671 (2001).

Steele, A.B., Levicky, R.L., Herne, T.M., and Tarlov, M.J., ***“Immobilization of Nucleic Acids at Solid Surfaces: Effect of Oligonucleotide Length on Layer Assembly,”*** Biophysical J. 79, p. 975-981 (2000).

Steffens, K.L., and Sobolewski, M.A., ***“Investigation and Control of Spatial Characteristics of Chamber-Cleaning Plasmas,”*** AIP Conf. Proc. 550, Proc. Intl. Conf. on Characterization and Metrology for ULSI Technology, p. 233-237 (2001).

Tsai, B.K., Meyer, C.W., Lovas, F.J., ***“Characterization of Lightpipe Radiation Thermometers for the NIST Test Bed,”*** Proc. 8th Intl. Conf. on Adv. Therm. Process of Semicond-RTP '2000 (Edited by D.P. DeWitt, J. Kowalski, B. Lojek, A. Tillmann) IEEE, p. 83-93 (2000).

Wheeler, M.C., Tiffany, J. E., Cavicchi, R.E., and Semancik, S., ***“A Study of Interactions Between Heated Gas Microsensor Elements Operating in Close Proximity,”*** Sensors and Actuators B, 77, p.167-176 (2001).

Widmann, J.F., Charagundla, S.R., and Presser, C., ***“Aerodynamic Study of a Vane-Cascade Swirl Generator,”*** Chem Eng. Sci., 55, p.5311-5320 (2000).

Widmann, J.F., Presser, C., and Leigh, S.D., ***“Effect of Burst-Splitting Events on Phase Doppler Interferometry Measurements,”*** AIAA 2001-1130, Am. Inst. Aero. Astro., Washington, DC (2001).

Widmann, J.F., Presser, C., and Papadopolous, G., ***“Benchmark Database for Input and Validation of Spray Combustion Models: Inlet Air Characterization,”*** AIAA 2001-1116, Am. Inst. Aero. Astro., Washington, DC (2001).

Widmann, J.F., Presser, C., and Leigh, S.D., ***“Burst Splitting Detection in Phase Doppler Interferometry,”*** Proc. 14th Annual Conf. on Liquid Atomization and Spray Systems (ILASS Americas '01) p. 210-214 (2001).

Widmann, J.F., Presser, C., and Papadopolous, G., ***“Characterization of the Inlet Air for the NIST Benchmark Spray Combustion Database,”*** Proc. 14th Annual Conf. on Liquid Atomization and Spray Systems (ILASS Americas '01), p. 236-240 (2001).

Widmann, J.F., Presser, C., and Leigh, S.D., ***“Improving Phase Doppler Volume Flux Measurements in Low Data Rate Applications,”*** Measurement Science Technology **12**, p. 1180-1190 (2001).

Wright, J.D., ***“Laboratory Primary Standards,”*** Flow Measurement Handbook, ISA, p. 731-759 (2001).

Yeh, T.T., Espina, P.I., and Osella, S.A., ***“An Intelligent Ultrasonic Flow Meter for Improved Flow Measurement and Flow Calibration Facility,”*** Proc. IEEE Instrumentation & Measurement Technology Conf., IMTC2001-3112 (2001).

Yeh, T.T., and Espina, P.I., ***“Special Ultrasonic Flowmeters for In-Situ Diagnosis of Swirl and Cross Flow,”*** Proc. ASME Fluids Engineering Division Summer Meeting, FEDSM2001-18037 (2001).

1b. Manuscripts in review

(manuscripts that have been approved by the NIST internal review process and submitted for publication, but have not yet appeared in print)

Afridi, M. Y., Suehle, J. S., Zaghoul, M. E., Tiffany, J. E. and Cavicchi, R. E., ***“Implementation of CMOS compatible conductance-based micro-gas-sensor system,”*** Proc. of the European Conference on Circuit Theory and Design: Circuit Paradigm in the 21st Century (in press).

Barker, S.L., Tarlov, M.J., Ross, D.J., Waddell, E.A., and Locascio, L.E., ***“Fabrication, Derivatization and Applications of Plastic Microfluidic Devices,”*** Proc. of SPIE (in press).

Benz, S. P., Martinis, J. M., Nam, S. W., Tew, W. L. , White, D. R., ***“A New Approach to Johnson Noise Thermometry using a Josephson Quantized Voltage Source for Calibration”***, Proc. TEMPMEKO 2001 (in press).

Blevins, L., Fernandez, G., Mulholland, G., Davis, R.W., Moore, E.F., Steel, E., and Scott, J., ***“COSMIC: Carbon Monoxide and Soot in Microgravity Inverse Combustion,”*** Proc. 6th NASA Intl. Microgravity Combustion Workshop (in press).

Campbell, S.A., He, B., Smith, R.C., Ma, T., Hoilen, N., Taylor, C.J., and Gladfelter, W.L., ***“Group IVB Metal Oxides High Permittivity Gate Insulators Deposited from Anhydrous Metal Nitrates,”*** Proc. IEEE Transactions on Electron Devices (in press).

Driver, R.G., and Schmidt, J.W., ***“NCSL Pressure Comparison at 0.69 Mpa (1200 psi) and 1.4 Mpa (200 psi),”*** Proc. of NCSL Conf. 2000, Toronto, Canada (in press).

Ehrlich, C.D., and Schmidt, J.W., ***“IUPAC Experimental Thermodynamics Volume VI: Measurement of the Thermodynamic Properties of Single Phases: CH. 3 Pressure; b) Piston Gauges,”*** Experimental Thermodynamics Intl. Union of Pure and Applied Chemistry (in press).

Fellmuth, B., Head, D., Pavese, F., Szmyra-Grzebyk, Tew, W. L. , ***“Special Problems when Realizing the Triple Point e-H₂ as a defining fixed point of the ITS-90”***, Proc. TEMPMEKO 2001 (in press).

Furukawa, G.T., and Strouse, G.F., ***“Investigation of the Non-Uniqueness of the ITS-90 in the Range 660 °C to 962 °C,”*** Proc. TEMPMEKO 2001 (in press).

Green, D.S., Herron, J.T., and Sieck, L.W., ***“Chemical Kinetics Database and Predictive Schemes for Humid Air Plasma Chemistry. Part I: Positive Ion-Molecule Reactions,”*** J. of Plasma Chemistry and Plasma Processing (in press).

Green, D.S., Herron, J.T., and Sieck, L.W., ***“Chemical Kinetics Database and Predictive Schemes for Humid Air Plasma Chemistry. Part II: Neutral Species Reactions”*** J. of Plasma Chemistry and Plasma Processing (in press).

Green, D.S., Looney, J.P., and Rubloff, G.W., ***“Application of CW-CRDS to Monitor and Control Chemical Vapor Deposition,”*** Proc. IEEE/LEOS Summer Topicals 2000, Optical Sensing in Semiconductor Manufacturing, (in press).

Hagwood, C.H. Miiller, A.P., and Lee, A., ***“Bayesian Methods in Calibration,”*** Proc. NCSL Intl. 2001 Workshop and Symposium (in press).

Huang, P.H., Scace, G.E., and Hodges, J.T., ***“Measuring Techniques for Quantifying the Performance of Dilution-Based Trace Moisture Generators,”*** Proc. TEMPMEKO 2001 (in press).

Hurly, J.J., and Moldover, M.R., ***“Progress Report: Thermophysical Properties of Semiconductor Manufacturing Process Gases,”*** Proc. of SEMICOM West 2000: Workshop on Gas Distribution Systems (in press).

Hurly, J.J., ***“Thermophysical Properties of Chlorine from Speed-of-Sound Measurements,”*** Intl. J. of Thermophysics (in press).

Hurst, W.S., Hodes, M.S., Bowers, W.J., Bean, V.E., Maslar, J.E., and Smith, K.A., ***“Optical Flow Cell and Apparatus for Solubility, Salt Deposition and Raman Spectroscopic Studies in Aqueous Solutions near the Water Critical Point,”*** J. of Supercritical Fluids (in press).

Mangum, B.W., Furukawa, G.T., Kreider, K.G., Meyer, C.W., Moldover, M.R., Ripple, D. C., Strouse, G.F., Tew, W.L., Saunders, R.D., Johnson, B.C., Yoon, H.W., and Gibson, C.E., ***“The Kelvin and Temperature Measurements,”*** J. of Res. of the National Institute of Standards and Technology (in press).

Mangum, B.W., Strouse, G.F., and Guthrie, W.F., ***“CCT-K3 Final Report: Key Comparison of Realizations of the ITS-90 over the Range 83.8058 K to 933.473 K,”*** Report for the Consultative Committee for Thermometry (in press).

Maslar, J.E., Hurst, W.S., Bowers, W.J., and Hendricks, J.H., and Aquino-Class, M.I., ***“In Situ Raman Spectroscopic Investigation of Nickel Hydrothermal Corrosion,”*** Corrosion (in press).

Maslar, J.E., Hurst, W.S., Bowers, W.J., and Hendricks, J.H., ***“In Situ Raman Spectroscopic Investigation of Stainless Steel Hydrothermal Corrosion,”*** Corrosion (in press).

Maslar, J.E., Hurst, W.S., Kremer, D.M., and Ehrman, S.H., ***“In Situ Gas-Phase Optical Measurements of Silane Decomposition in a Thermal Chemical Vapor Deposition Reactor,”*** Proc. 199th Mtg. Electrochemical Society (in press).

Meyer, C.W., ***“Effects of Extraneous Radiation on the Performance of Lightpipe Radiation Thermometers,”*** Proc. TEMPMEKO 2001 (in press).

Miiller, A.P., Bergoglio, M., Bignell, N., Fen, K.M.K., Hong, S.S., Jousten K., Mohan, P., Redgrave, F.J., and Sardi, M., ***“Report on the Key Comparison CCM. P-K4 in Absolute Pressure from 1 Pa to 1000 Pa,”*** Report of the Consultative Committee for Mass and Related Quantities (in press).

Miiller, A.P., Cignolo, G., Fitzgerald, M.P., and Perkin, M.P., ***“Report on the Key Comparison CCM. P-K5 in Differential Pressure from 1 Pa to 1000 Pa,”*** Report of the Consultative Committee for Mass and Related Quantities (in press).

Olsen, K.G., Ross, D.J., and Tarlov, M.J., ***“Immobilization of DNA Gel Plugs in Microfluidic Channels,”*** Analytical Chem. (in press).

Panchapakesan, B., Devoe, D., Cavicchi, R.E., and Semancik, S., ***“Nanoparticle Engineering and Control of Tin Oxide Microstructures for Chemical Microsensor Applications,”*** J. of Nanotechnology (in press).

Pipino, A.C., and Hodges, J.T., ***“Evanescent Wave Cavity Ring-Down Spectroscopy: A Future Technology for Process Sensing,”*** J. of Process Analytical Chemistry (in press).

Pugmire, D.L., Waddell, E.A., Haasch, R., Tarlov, M.J., and Locascio, L.E., ***“Surface Characterization of Laser Ablated Polymers Used for Microfluidics,”*** Analytical Chem. (in press).

Ripple, D.C., and Burns, G.W., ***“Variations in the Thermoelectric Behavior of Palladium Following Heat Treatment,”*** Proc. TEMPMEKO 2001 (in press.)

Ross, D.J., Gaitan, M., and Locascio, L.E., ***“Temperature Measurement and Control in Microfluidic Systems,”*** Proc. of Micro Total Analysis Systems 2001 (in press).

Scace, G.E., and Hodges, J.T., ***“Uncertainty of the NIST Low Frost-Point Humidity Generator,”*** Proc. TEMPMEKO 2001 (in press).

Strouse, G.F. and Lippiatt, J., "***Small Fixed-Point Cells for Use in Dry Well Block Calibrators,***" Proc. TEMPMEKO 2001 (in press).

Strouse, G.F., "***New NIST Mercury Triple-Point Cells,***" Proc. TEMPMEKO 2001 (in press).

Taylor, C.J. and Semancik, S., "***The Use of Microhotplate Arrays as Microdeposition Substrates for Materials Exploration,***" Chemistry of Materials (in press).

Tew, W.L., Steele, A.G., and Pavese, F., "***Archival and Theoretical Considerations for Isotopic Dependence in the e-H₂ Fixed Points,***" Proc. TEMPMEKO 2001 (in press).

Tiffany, J.E., Cavicchi, R.E., and Semancik, S., "***Microarray Study of Temperature Dependent Sensitivity and Selectivity of Metal/Oxide Sensing Interfaces,***" Proc. of SPIE (in press).

Vaughn, C.D., and Strouse, G.F., "***Overview of the NIST Industrial Thermometer Calibration Laboratory,***" Proc. TEMPMEKO 2001 (in press).

Widmann, J.F., Presser, C., and Leigh, S.D., "***Extending the Dynamic Range of Phase Doppler Interferometry Measurements,***" Atomization and Sprays (in press).

Wilhelm, J., Gillis, K.A., Mehl, J.B., and Moldover, M.R., "***An Improved Greenspan Acoustic Viscometer,***" Intl J. of Thermophysics (in press).

2. Talks

Abbott, P.J., "***Vacuum Metrology at NIST***," Korean Vacuum Society Intl. Symposium on Nano Device and Display Technology, Seoul, Korea, February 23, 2001. Invited

Abbott, P.J., "***Pressure and Vacuum Standards at NIST***," Electro-Technical Laboratory, Tsukuba, Japan, March 27, 2001. Invited

Barker, S.L.R., "***Fabrication, Derivatization and Applications of Plastic Microfluidic Devices***," SPIE Intl. Symp. on Environmental and Industrial Sensing, Boston, MA, November 6, 2000.

Berg, R.F., "***Critical Point Measurements on the Space Shuttle***," Northern Virginia Community College, Annandale, VA, September 21, 2001. Invited

Berg, R.F., "***Model of a Quartz Capillary Transfer Standard for Flow***," Primary Low Gas Flow Standards Meeting, Laboratoire National D'Essais, Paris, France, September 24, 2001.

Cavicchi, R.E., "***Microarray Study of Temperature Dependent Sensitivity and Selectivity of Metal/Oxide Sensing Interfaces***," SPIE Intl. Symp. on Environmental and Industrial Sensing, Boston, MA, November 7, 2000.

Cavicchi, R.E., "***Microhotplate Gas Sensor Arrays***," 222nd American Chemical Society National Meeting, Chicago, IL, August 30, 2001.

Davis, R.W., "***A Numerical/Experimental Investigation of Microcontamination in a Rotating Disk CVD Reactor***," Annual Conference of the Amer. Assoc. for Aerosol Research, St. Louis, MO, November 7, 2000.

Espina, P. I., "***The Flow Metrology Program at the National Institute of Standards and Technology***," University of Puerto Rico, Mayagüez Campus, Mechanical Engineering Department, October 23, 2000.

Espina, P. I., "***Overview of NIST***," University of Puerto Rico, Mayagüez Campus, October 24, 2000.

Espina, P. I., "***Tele-Calibration of Gas Flow Meters***," Measurement Science Conference, Anaheim, California, January 18, 2001. Espina, P. I., "***SIM Flow Comparison Efforts***," Measurement Science Conference, Anaheim, California, January 19, 2001.

Espina, P. I., "***SIM MWG-Flow Efforts***," 2nd CIPM CCM WGFF Meeting, Istanbul, Turkey, April 2, 2001.

Espina, P. I., "***Inter-laboratory Comparison Program among North American Natural Gas Flow Calibration Facilities***," GTI MTAG Meeting, San Antonio, Texas, April 10, 2001.

Espina, P. I., "***The Flow Metrology Program at the National Institute of Standards and Technology***," ISA, Central New Jersey Section, Princeton, NJ, May 17, 2001.

Espina, P. I., "***SIM MWG-Flow Efforts***," NCSL International 2001, Washington DC, August 1, 2001.

Espina, P. I., ***“Round-robin Testing Project to Review the Performance of North American Meter Calibration Facilities,”*** GTI MTAG Meeting, San Antonio, Texas, September 12, 2001.

Garrity, K.M. ***“Thermocouple Thermometry,”*** 2001 Regional Measurement Assurance Program Training, Gaithersburg, MD, March 21-22, 2001.

Hall, J. M. ***“Ultrasonic Anemometer Testing at NIST,”*** Measurement Science Conference, Anaheim, California, January 19, 2001.

Hodges, J.T., ***“Cavity Ring-Down Spectroscopy and Quantitative Measurements of Gas Phase Concentration,”*** IFPAC 2001, Amelia Island, FL, January 21-24, 1001.

Huang, P.H., ***“Humidity Measurements,”*** 2001 Regional Measurement Assurance Program Training, Gaithersburg, MD, March 21-22, 2001.

Huang, P.H., ***“Measuring Techniques for Quantifying the Performance of Dilution-Based Trace Moisture Generators,”*** TEMPMEKO 2001, Berlin, Germany, June 19, 2001.

Huang, T.H. ***“New Immobilization Methods for DNA Analysis,”*** Merck Research Colloquium, Bucknell University, Lewisburg, PA, December 6, 2000. Invited

Huang, T.H. ***“Immobilization of DNA Copolymers on Microhotplates for DNA Melting and Hybridization Reaction,”*** 198th Meeting of The Electrochemical Society, Phoenix, AZ, October 24, 2000.

Hurst, W., ***“Standards for Calibration of Raman Spectral Intensity,”*** 15th Annual IFPAC (International Forum for Process Analytical Chemistry), Amelia Island, FL, January 21, 2001.

Johnson, A.N., ***“A First Principles Method for Predicting Critical Nozzle Performance for Various Gases,”*** Measurement Science Conference, Anaheim, CA, January 19, 2001.

Kremer, D., ***“In Situ Gas Phase Optical Measurements of Silane Decomposition in a Thermal Chemical Vapor Deposition Reactor,”*** 199th Meeting of the Electrochemical Society, Washington, DC, March 26, 2001.

Lee, A., ***“Recent Activities in Pressure and Vacuum Metrology at NIST and Areas of Italy-US Cooperation,”*** Cooperation in Metrology, Equivalence of the National Standards and Dissemination of SI Units Meeting, Turin, Italy, November 16, 2000.

Looney, J.P., ***“A Quantitative Test of Slip-Flow Theory using the Spinning Rotor Gauge,”*** American Vacuum Society Meeting, Boston, MA, October 4, 2000.

Maslar, J.E., ***“A Numerical/Experimental Investigation of Microcontamination in a Rotating Disk Chemical Vapor Deposition Reactor,”*** AIChE Annual Meeting, Los Angeles, CA, November 17, 2000.

Maslar, J.E., ***“In Situ Determination of GaAs Free Carrier Concentration and Temperature by Raman Spectroscopy,”*** 10th Biennial Workshop on Organometallic Vapor Phase Epitaxy, San Diego, CA, March 12, 2001.

Maslar, J.E., ***“Non-Destructive, Non-Contact Optical Measurement of Majority Carrier Properties in Compound Semiconductors,”*** Compound Semiconductor Manufacturing Expo, Boston, MA, July 10, 2001.

Mattingly, G.E., ***“Current Status of the New CIPM Working Group for Fluid Flow,”*** Working Group Chairmen meeting of the Consultative Committee for Mass and Related Quantities, NPL, Teddington, United Kingdom, October 12, 2000.

Mattingly, G.E., ***“The New CIPM Working Group for Fluid Flow: Strategies, Structures, Schedules, and Status,”*** Measurement Science Conference, Anaheim, CA., January 19, 2001.

Mattingly, G.E., ***“The New CIPM Working Group for Fluid Flow: Strategies, Structures, Status, and Schedules,”*** Measurement of Fluid Flow in Closed Conduits Meeting of the ASME, Gaithersburg, MD, April 19, 2001.

Mattingly, G.E., ***“Improving the Acceptability of Flow Measurements,”*** American Society of Mechanical Engineers Spring Meeting, New Orleans, LA, May 30, 2001. Invited

Mattingly, G.E., ***“Establishing the Degree of Equivalence of National Flow Measurement Standards Maintained by the National Metrology Institutes,”*** Flow 2001, Prague, Czech Republic, June 19, 2001.

Mattingly, G.E., ***“The New CIPM Working Group for Fluid Flow: Objectives, Strategies, Status, and Schedules,”*** NCSLI Conference, Washington, DC, August 1, 2001.

Mattingly, G.E., ***“Improving the Acceptability of Flow Measurements,”*** ISA/IMEKO Conference, Millennium Series, Houston, TX, Sept. 11, 2001. Invited

Meyer, C.W., ***“Uncertainty Budgets for SPRT Calibrations at the Defining Fixed Points,”*** CCT Working Group 3/Euromet Workshop on Uncertainties in Measurement and Calibration Measurement Capabilities (CMCs) in the Field of Thermometry, Berlin, Germany, February 5, 2001.

Moldover, M.R., ***“Standards of Temperature, Pressure, and Transport Properties from Ab Initio Calculations for Helium,”*** University of Delaware, Physics Dept., Newark, DE, December 8, 2000. Invited

Pipino, A. C., ***“Evanescent Wave Cavity Ring-Down Spectroscopy for Trace Water Detection,”*** SPIE Conference on Advanced Environmental and Chemical Sensing Technology, Boston, MA, November 5, 2000.

Pipino, A.C., ***“Evanescent Wave Cavity Ring-Down Spectroscopy,”*** IFPAC-2001, Amelia Island, FL, January 24, 2001. Invited

Pipino, A.C., ***“Evanescent Wave Cavity Ring-Down Spectroscopy,”*** DOW Chemical Corporation, Freeport, TX, March 21, 2001. Invited

Presser, C., ***“Highlights of the NIST Benchmark Spray Combustion Database,”*** John Zink Company, Tulsa, OK, March 6, 2001. Invited

Presser, C., ***“Measurements and Numerical Predictions of Liquid Agent Dispersal Around Solid Obstacles,”*** Halon Optics Technical Working Conference, Albuquerque, NM, April 24, 2001.

Presser, C., ***“Burst Splitting Detection in Phase Doppler Interferometry,”*** 14th Annual Conference on Liquid Atomization and Spray Systems, 14th Annual Conference on Liquid Atomization and Spray Systems, Dearborn, MI, May 22, 2001.

Presser, C., ***“Characterization of the Inlet Air for the NIST Benchmark Spray Combustion Database,”*** 14th Annual Conference on Liquid Atomization and Spray Systems, Dearborn, MI, May 23, 2001.

Ripple, D.C., ***“Variations in the Thermoelectric Behavior of Palladium Following Heat Treatment,”*** TEMPMEKO 2001, Berlin, Germany, June 19, 2001.

Ross, D.J., ***“Measurement and Control of Electroosmotic Flow in Plastic Microchannels,”*** American Physical Society, Washington, DC, November 19, 2000.

Ross, D.J., ***“Design, Fabrication and Characterization of Plastic Microfluidic Systems,”*** IFPAC, Amelia Island, FL, Jan 21, 2001.

Savage, N.O., ***“Sol-Gel Tin-Oxide Gas Sensors for the Detection of Trichloroethylene,”*** Mid-Atlantic Regional Meeting of the American Chemical Society, Towson, MD, May 31, 2001.

Scace, G.E., ***“Uncertainty of the NIST Low Frost-Point Humidity Generator,”*** TEMPMEKO 2001, Berlin, Germany, June 21, 2001.

Schmidt, J.W., ***“A Primary Dead-Weight Tester for Pressures (35-175) kPa in Gage Mode,”*** National Physical Laboratory, New Delhi, India, February 10, 2001.

Semancik, S., ***“Efficient Microarray Studies of Temperature-Dependent Materials Processing and Performance,”*** NIST Non-Contact Thermometry National Workshop, NIST, Gaithersburg, MD, October 16, 2000.

Semancik, S., ***“Microarray Studies of the Formation and Properties of Oxide Films and Metal/Oxide Interfaces,”*** 2nd Intl. Workshop on Oxide Surfaces, Taos, NM, January 15, 2001. Invited

Semancik, S., ***“Microarray Studies for Efficient Processing, Testing, and Optimization of Sensing Materials,”*** 199th Meeting of the Electrochemical Society, Washington, DC, March 27, 2001.

Semancik, S., ***“Development of an Application-Tunable Gas Microsensor Array Technology,”*** Workshop on Aircraft Fire Detection, NIST, Gaithersburg, MD, March 29, 2001. Invited

Semancik, S., ***“Microarray Studies of Processing and Gas Sensing Performance for Oxide Films,”*** 103rd Annual Meeting of the American Ceramics Society, Indianapolis, IN, April 24, 2001. Invited

Semancik, S., ***“Microhotplate Array Studies of the Processing and Performance of Gas Sensing Thin Films,”*** Industrial Candidates Meeting of the NIST Combinatorial Methods Center, Gaithersburg, MD, July 10, 2001.

Sobolewski, M.A., ***“Using Radio-Frequency Electrical Measurements as a Plasma Diagnostic,”*** 53rd Gaseous Electronics Conference, Houston, TX, October 25, 2000. Invited

Sobolewski, M.A., ***“Determining Ion Flux and Ion Energies from RF Electrical Measurements,”*** SEMATECH RF Plasma Processing Technology Forum, Sunnyvale, CA, November 1, 2000. Invited

Sobolewski, M.A., ***“Determining Ion Current and Ion Energies from Radio-Frequency Current and Voltage Measurements,”*** Plasma Etch Users Group of the Northern California Chapter of the American Vacuum Society, Santa Clara, CA, June 14, 2001. Invited

Steffens, K.L., ***“Planar Laser-Induced Fluorescence Investigation of Fluorocarbons Plasmas,”*** 47th Intl. Symp. of the American Vacuum Society, Boston, MA, October 3, 2000.

Steffens, K.L., ***“PLIF Investigation of CF₂ in Fluorocarbon Etching Plasmas with and without Si Wafers,”*** 53rd Annual Gaseous Electronics Conference, Houston, TX, October 26, 2000.

Strouse, G.F., ***“Thermometric Fixed Points, Resistance Thermometers, and Digital Thermometers,”*** 2001 Regional Measurement Assurance Program Training, Gaithersburg, MD, March 21-22, 2001.

Strouse, G.F., ***“New NIST Mercury Triple-Point Cells,”*** TEMPMEKO 2001, Berlin, Germany, June 19, 2001.

Strouse, G.F., ***“Small Fixed-Point Cells for Use in Dry Well Block Calibrators,”*** TEMPMEKO 2001, Berlin, Germany, June 21, 2001.

Strouse, G.F., ***“Investigation of the Non-Uniqueness of the ITS-90 in the Range 660 °C to 962 °C,”*** TEMPMEKO 2001, Berlin, Germany, June 21, 2001.

Tarlov, M.J., ***“New Approaches for Detecting Hybridization of Immobilized DNA,”*** Biomaterials-The New Frontiers: Biomedical, Bioelectric, Bioanalytical, University of Delaware, Newark, DE, October 20, 2000. Invited

Tarlov, M.J., ***“Molecular and Biomolecular Electronics Research at NIST,”*** 1st Intl. Conf. on Molecular Electronics and Bioelectronics (M&BE1), Hyogo, Japan, March 6, 2001. Invited

Taylor, C.J. and Semancik, S., "**Microhotplate Arrays as Microdeposition Substrates for Materials Exploration**," Poster Presentation, Gordon Research Conference on Chemistry of Electronic Materials, Connecticut College, New London, CT, June 2001.

Tew, W. L. , "**Stable Isotope Geochemistry and the ITS-90**," 6th Italy-USA Bilateral Seminar, Torino, Italy, November 17, 2000.

Tew, W. L. , "**A New Approach to Johnson Noise Thermometry using a Josephson Quantized Voltage Source for Calibration**," TEMPMEKO 2001, Berlin, Germany, June 21, 2001. Invited

van Zee, R.D., "**Precision Measurements Using Laser Spectroscopy**," Center for Analysis of Structures and Interfaces, City College of New York, New York, NY, February 21, 2001.
Invited

van Zee, R.D., "**Molecular Electronics for Metrologists**," Annual DARPA Meeting, Santa Fe, NM, March 6, 2001.

van Zee, R.D., "**Moletronics at NIST**," Hewlett Packard Laboratories, San Jose, CA., May 29, 2001. Invited

Vaughn, C. D., "**Liquid in Glass Thermometry**," 2001 Regional Measurement Assurance Program Training, Gaithersburg, MD, March 21-22, 2001.

Whetstone, J.W., "**Solid State Chemical Sensor R&D**," IFPAC 2001, Amelia Island, FL, January 21-24, 2001.

Widmann, J.F. "**Doppler Burst Splitting: Implications for Droplet Cluster Studies**," 6th Intl. Congress on Optical Particle Characterization, Brighton, United Kingdom, April 2-5, 2001.

Widmann, J.F., "**Benchmark Database for Input and Validation of Spray Combustion Models: Inlet Air Characterization**," 39th AIAA Aerospace Sciences Meeting & Exhibit, Reno, NV, January 8-11, 2001.

Widmann, J.F., "**Effect of Burst-Splitting Events on Phase Doppler Interferometry Measurements**," 39th AIAA Aerospace Sciences Meeting & Exhibit, Reno, NV, January 8-11, 2001.

Yeh, T.T., "**An Intelligent Ultrasonic Flow Meter for Improved Flow**," IEEE Instrumentation and Measurement Technology Conference, Budapest, Hungary, May 21, 2001.

Yeh, T. T. "**Special Ultrasonic Flowmeters for In-Situ Diagnosis of Swirl and Cross Flow**," ASME Fluids Engineering Division Summer Meeting, New Orleans, LA, May 31, 2001.

3. Cooperative Research and Development Agreements (CRADAs) and Consortia

Advanced Ultrasonic Flow Meter, P.I. Espina

Daniel Industries, Inc. (CRADA)

High Temperature Microhotplate-Based Gas Sensor Arrays, S. Semancik

Boston Microsystems, Inc. (CRADA)

Investigation of the Detection of Halogens (Cl, Br, I) Carbon Monoxide and Carbon Dioxide (CO/CO₂), A.C.R. Pipino

Informed Diagnostics, Inc. (CRADA)

Research and Development in Advanced Semiconductor Manufacturing Technology, K.G. Kreider

International SEMATECH, Inc. (Consortia)

4. Patent Awards and Applications

Locascio, L.E., Ross, D.J., Tarlov, M.J., and Barker, S.L.R., "Polyelectrolyte Derivatization of Microfluidic Devices," (NIST Docket No. 00-031, Patent Pending)

Johnson, T.J., Waddell, E.A., Ross, D.J., Locascio, L.E., "Surface Charge Modification Within Preformed Microchannels to Modulate Flow and Fabrication of Microarrays by Laser Ablation in Performed Polymer Microchannels," (NIST Docket No. 01-005 and 01-006, Patent Pending)

Pipino, A.C.R., "Sensitive and Selective Chemical Sensor with Nanostructured Surfaces," (NIST Docket No. 01-001, U.S. Provisional Patent Application Serial No. 60,260,501, Patent Pending)

Pipino, A.C.R., Hodges, J.T., "Sensitive and Selective Biosensor Employing Nanostructured Surfaces," (NIST Docket No. 01-002, Patent Pending)

Ross, D.J., Locascio, L.E., "Simplified Methods for Electrokinetic Focusing in Microfluidic Devices," (NIST Docket No. 01-029, Patent Pending)

5. Measurement Services

5a. SRM Activities (Certificates issued in FY2001)

1750	Standard Platinum Resistance Thermometer
2114	ISO-Octane Liquid Density
211d	Toluene Liquid Density

5b. SRD Activities

SRD 60 was converted into the web-based NIST ITS-90 Thermocouple Database (Project Leader: D.C. Ripple)

5c. Calibrations/Special Tests

Calibrations have been provided for the following customers:

Abbott Laboratories	Arizona Public Service Company
Accurate Calibration Inc.	ASL, Inc.
ACS/PMEL	AW Company, Ltd.
Air Products & Chemicals Inc.	Baxter Healthcare Corporation
Alcoa Inc.	BBWI, Inc.
Alcor Petroleum Instruments	Bechtel BWXT Idaho, LLC
Allied Signal Technical Service Corporation	Boeing Commercial Airplane Group
American Thermocouple Fabrications	Boeing North American, Inc.
Amphenol Corporation	Boonton Electronics Corporation
AppMet Inc.	Brooklyn Thermometer Company Inc.
ARi Industries Inc.	BWXT Y-12, L.L.C.
Arizona Dept. of W & M	C-TEMP

Calvert Cliffs Nuclear
Carmel Forge Ltd.
Carolina Power & Light Co.
Carpenter Specialty Alloys
Carrier Corporation
Catholic University of America
Certified Measurement Services, Inc.
CI Systems Ltd.
City of Amarillo, Texas
City of Everett Environmental Laboratory
Cleveland Electric Laboratories
Clinton Power Station
Conax Buffalo Technologies LLC
Conrad Kacsik Instrument Systems, Inc.
Consumers Energy
Control Solutions Ltd., LLC
Coors Brewing Company
CT Department of Public Health
Cummins Engine Co., Inc
Detroit Edison
DHHS/FDA/CDRH/OSM
Duke Engineering & Services
Durex Industries
Duro-Sense Corp.
Ebtron, Inc.
EdgeTech
Eli Lilly & Company
Emerson Electric Company
Energy Northwest
Engelhard-Clal
Environmental Systems Corp.
Equimeter
Ernie Graves Co., Inc.
Eustis Company Inc.
Ever Ready Thermometer Co. Inc
Exelon Energy Company
Fisher-Rosemount
FL Dept of Environ. Protection
Flow Technology, Inc.
Fluke Corporation
FMC Energy Systems
Ford Motor Company
Furnace Parts, LLC
Future Technologies, Inc.
GA Department of Agriculture
GE Engine Services-Miami Inc

General Eastern Instruments
Geocorp Industrial Controls
GlaxoSmithKline
Hart Scientific, Inc.
Hartford Hospital
HELIX TECHNOLOGY CORP.
HERMetric, Inc.
Hoffer Flow Controls, Inc.
Honeywell
Honeywell Inc.,SGP
Hoskins Manufacturing Company
ICL Calibration Laboratories, Inc.
IES Utilities Inc.
Industronics Service Company
INSCO Metrology, Inc.
Inspectorate
Institute for Transfusion Medicine
Instituto Argentino de Siderurgia
Instrulab Inc.
International Depot Services
Jim Beam Brands Company
Johnson Matthey
Joliet Metallurgical Laboratories, Inc.
Kahn Companies
Kaiser-Hill Company L.L.C.
Kaman Aerospace Corporation
Kanthal
Kanthal Driver Harris Italiana S.P.A.
Kaydon Ring and Seal, Inc.
Kelly Completion Services LLC
Key Technologies
KRISS
Kulas Systems Inc.
Kurz Instrument, Inc.
Ladish Co., Inc.
LDS Vacuum Products, Inc.
Leico Industries Inc.
Linco-Electromatic, Inc.
Liquid Meter Services Inc.
Lockheed Martin
Lockheed Martin Aeronautics Company
Lockheed Martin Astronautics
Lockheed Martin Technical Operations
Mahr Federal
Marlin Manufacturing Corp.
McDonnell Douglas Corporation

Measurement Technology Laboratories
Mettech
Mid-Atlantic Regional Calibration Center
Miller & Weber, Inc.
Miller Wire & Cable
MJ Research, Inc.
MKS Instruments, Inc.
Modern Instrument Co. Inc.
Motion Industries Inc.
MTL Corporation
NASA JSC White Sands
NASA KSC
NASA Langley Research Center
National Stds of Puerto Rico
Naval Air Weapons Station
Naval Surface Warfare Center
Navy Aviation Depot, North Island
Navy Standards Laboratory
NAWCAD
Nelson Instrument Services Co., Inc.
NIST
NIST-Thermometry Group
Northrop Grumman
Omega Engineering, Inc.
Omega Protective Services
Oremet-Wah Chang
OSHA
Pemberton Fabricators Inc
Philip Morris USA
Pittsburgh Control Systems, Inc.
Plantation Pipeline Company
Pratt & Whitney (The Bernd Group, Inc.)
Precision Surveillance Corp.
Primary Standards North America Inc.
Pyco, Inc.
Pyromation, Inc.
Pyrometric Service Company
Raytheon Company
RdF Corporation
Rice Lake Weighting Systems
Rolock of California, Inc.
Ruska Instrument Corporation Inc.
S. Himmelstein and Company
Sandelius Instruments, Inc.
Sandia National Laboratories
Santa Barbara Infrared, Inc.
Scientific Instruments
Sensing Devices, Inc.
Shortridge Instruments Inc.
SmithKline Beecham
South Carolina Electric & Gas Co.
Southern California Edison Co.
Special Metals Corporation
Spectrodyne Inc.
Spectrumoem Products
State of Kansas
State of Minnesota
State of Wisconsin
Stillings Instrument Systems Company
STMicroelectronics
Teledyne Electronic Technologies -
Hastings Instruments
Tennessee Valley Authority
Thermo Electric Wire & Cable L.L.C.
Thermo-Temp Incorporated
TRAK-r Loggers/GS Energy Corp
TRW Space & Electronics
TSI Incorporated
Turbo Combustor Technology
U.S. Army Criminal Investigation
Laboratory
US Army Aviation and Missile Command
US Army TMDE Support-Region 1
US EPA
Vacuum Instrument Services
Vacuum Technology Inc.
Vacuum Technology Incorporated
Vaisala Inc.
Vaisala Oyj
Varian Vacuum Technologies
W.L. Walker Co., Inc.
Watlow Gordon
Watson Cogeneration Company
Wyeth-Ayerst Pharmaceuticals
Wyle Laboratories
YSI Incorporated

6. Committee Assignments

P.J. Abbott

AVS Recommended Practices Standards Committee
AVS Recommended Practices Subcommittee on Ionization Gauge Calibration

M.J. Carrier

NIST Information Technology Services Planning Team

R.E. Cavicchi

NIST Research Advisory Committee

R.W. Davis

Combustion Institute Program Review
Subcommittee

P.I. Espina

CIPM Consultative Committee on Mass and Related Quantities
WG Fluid Flow, Delegate
Gas Technology Institute MTAG
SIM TWG10: Flow and Related Quantities, Chair
NORAMET TC: Mechanical Area
ISA Flow Technology Committee, Chair

K.M. Garrity

ASTM E020 Temperature Measurement
ASTM SC.04 Thermocouples

K.A. Gillis

NIST Information Technology Services Planning Team
NIST Scientific Computing Working Group

P.H. Huang

SEMI Gases Committee
SEMI SC.02 Gases/Semiconductor
SEMI WG.02 Moisture Measurements in Gases
CIPM International Committee on Weights and Measures
CCT Consultative Committee on Thermometry
Chair, WG.06, Humidity Measurements and Standards
ASTM D022 Sampling and Analysis of Atmospheres
ASTM SC.09 ISO Tag for ISO/TC146 (Air Quality)
ASTM SC.11 Meteorology

J.J. Hurly

Semiconductor Equipment and Materials International (SEMI), International Standards, Gases
Committee

Semiconductor Equipment and Materials International (SEMI), International Standards, Facilities Committee

W.S. Hurst

ASTM E013 Molecular Spectroscopy
ASTM SC.08 Raman Spectroscopy

K.G. Kreider

ASTM E020 Temperature Measurement
ASTM SC.02 Radiation Thermometry
ASTM SC.04 Thermocouples

A. Lee

CIPM Consultative Committee on Mass and Related Quantities, Delegate
Low Pressure Working Group
Medium Pressure Working Group
High Pressure Working Group
Combustion Institute, 27th Symposium (International) on Combustion, Program Review Subcommittee
SEMI, MFC Test Methods Task Force
SEMI, Pressure Measurement Task Force
NIST Diversity Advisory Board
CSTL Diversity Committee, Chair

J.P. Looney

AVS 43rd National Symposium Program Committee
AVS Vacuum Technology Division Executive Committee, Past Chair
AVS Recommended Practices Committee on Spinning Rotor Gages, Chair
CIPM Consultative Committee on Mass and Related Quantities, Low Pressure Working Group

G.E. Mattingly

ASME C008 Measurement of Fluid Flow in Closed Conduits
ASME SC.1 Determination of Uncertainties
ASME SC.06 Glossary of Terms for Flow Measurements
ASME SC.14 Flow Measurement by Weighing and Volumetric Techniques, Chair
ASME SC.15 Installation Effects
ASME SC.16 Vortex Shedding Flow Meters
ASME SC.19 Flow Conditioning
ASME SC.22 Critical Flow Meters
ASME SC.23 Small Bore Orifice Meters
IMEKO TC-09 Flow Measurement
US TAG for ISO/TC30 Measurement of Fluids Committee

C.W. Meyer

ASTM E020 Temperature Measurement
ASTM SC.03 Resistance Thermometers

ASTM SC.04 Thermocouples
ASTM SC.06 New Thermometers and Techniques
CIPM International Committee on Weights and Measures
CCT Consultative Committee on Thermometry
WG.03 International Traceability in Temperature Measurements

A.P. Müller

ASTM E037 Thermal Measurements
ASTM SC.01 Test Methods and Recommended Practices
ASTM WG.17 Thermal Expansion
AVS Recommended Practices Subcommittee on Thermal Conductivity Gauging
AVS C0009 Low Pressure Gauges
CIPM Consultative Committee on Mass and Related Quantities, Medium Pressure Working Group
CIPM Consultative Committee on Mass and Related Quantities, Low Pressure Working Group

M.R. Moldover

NASA Review Panel, Fluid Dynamics Discipline Working Group
NASA Review Panel, Fundamental Processes Discipline Working Group
CIPM International Committee on Weights and Measures
CCT Consultative Committee on Thermometry
WG.04 Thermodynamic Temperature Determination and Extension of ITS-90 to Lower Temperatures

D. Olson

NCSL Recommended Intrinsic/Derived Standards Practice Committee on Deadweight Pressure Gauges

C. Presser

AIAA Terrestrial Energy Systems Technical Committee
ASME HTD Committee on Heat Transfer in Energy Systems
ASME FACT Committee for Academic and Industrial Research
AIAA C004 Computational Fluid Dynamics Committee on Standards
ASTM E029 Particle Size Measurement
ASTM SC.03 International Cooperation on Terminology, Standards, and Methods
ASTM SC.04 Liquid Particle Measurement
ASTM SC.05 Reference Materials
Combustion Institute Program Review Subcommittee
ILASS Diesel and Automatic Spray Technical Committee
ILASS Computation and Modeling Technical Committee
JANAF Modeling and Simulation Subcommittee

D.C. Ripple

ASME C019 Performance Test Codes
ASME SC.03 Temperature Measurement, Chair
CIPM International Committee on Weights and Measures

CCT Consultative Committee on Thermometry
WG.03 International Traceability in Temperature Measurements
ASTM E020 Temperature Measurement
ASTM SC.04 Thermocouples, Secretary

J.W. Schmidt

CIPM Consultative Committee on Mass and Related Quantities, High Pressure Working Group
NCSL Recommended Intrinsic/Derived Standards
NCSL Dead-Weight Pressure Gauge RISP Committee

S. Semancik

Program Committee, 9th International Meeting on Chemical Sensors

G.F. Strouse

ASTM E020 Temperature Measurement
ASTM SC.03 Resistance Thermometers
ASTM SC.06 New Thermometers and Techniques
ASTM SC.07 Fundamentals in Thermometry
CIPM International Committee on Weights and Measures
CCT Consultative Committee on Key Comparisons
WG.08 Calibration and Measurement Capability
SIM MWG3 Thermometry

M.J. Tarlov

AVS Biochemical Interfaces Steering Committee

W.L. Tew

ASTM E020 Temperature Measurement
ASTM SC.03 Resistance Thermometers
ASTM SC.06 New Thermometers and Techniques
ASTM SC.07 Fundamentals in Thermometry
IEC TC065 Industrial Process Measurements and Control
IEC SC65B Elements of Systems
IEC WG05 Temperature Sensors

C.D. Vaughn

ASTM E020 Temperature Measurement
ASTM SC.05 Liquid-in-Glass Thermometers and Hydrometers, Secretary

T.T. Yeh

ASME MFC Subcommittee 9, Ultrasonic Flowmeters
ASME Fluids Engineering Division Summer Meeting, Section Co-Chair

7. Editorships

C. Presser

Combustion, Fire, and Computational Modeling of Industrial Combustion Systems, FACT-Vol. 23, HTD-Vol. 367, Am. Soc. Mech. Eng., NY (2000).

8. Seminars

November 1, 2000

Steve Doty and Doug Faison, NIST NVLAP

“NVLAP, An Overview of the Calibration Laboratory Accreditation Program” (Division Sponsor: D. Ripple)

November 2, 2000

Dr. Nicholae Bârsan, Institute of Physical & Theoretical Chemistry, University of Tubingen, Germany

“Thick Films Sensing Layers on Micro-Machined Substrates; A Novel Concept in Gas Sensing with Metal Oxides-Base Sensors” (Division Sponsor: S. Semancik)

November 16, 2000

Prof. Howard Fairbrother, Johns Hopkins University, Baltimore, MD

“Polymer Surface Reactions” (Division Sponsor: M. Tarlov)

November 16, 2000

Pamela Moore, University of Strathclyde and the National Engineering Laboratory, Glasgow, Scotland, UK

“Modeling of Installation Effects on Transit Time Ultrasonic Flow Meters in Circular Pipes” (Division Sponsor: P. Espina)

January 31, 2001

Sivaram P. Gogineni, Innovative Scientific Solutions, Inc., Dayton, OH

“Analysis of Transition Process in a Forced Wall Jet Using High Resolution PIV and 3D-DNS” (Division Sponsor: G. Mattingly)

March 14, 2001

Shawn P. Mulvaney, Dept. of Chemistry, Pennsylvania State University, University Park, PA

“SERS-Based Sensing Platforms: Multi-Layer Thin Films and Core-Shell Structures” (Division Sponsor: M. Tarlov)

April 10, 2001

Prof. Lawrence Sita, Dept. of Chemistry, University of Maryland, College Park, MD

“Control of Electron Transport via Self-Assembled Molecular Constructs,” (Division Sponsor: R. van Zee)

April 18, 2001

Reggie Williams, Rolls Royce, Indianapolis, IN

“Fluidic Injection Exhaust Nozzle Research,” (Division Sponsor: A. Johnson)

May 14, 2001

Dr. David Kittelson, Dept. of Mechanical Engineering, Univ. of Minnesota, Minneapolis, MN

“Particle Emissions from Diesel and Spark Ignition Engines,” (Division Sponsor: J. Whetstone)

May 16, 2001

Gloria Thomas, Dept. of Chemistry, Louisiana State University, Baton Rouge, LA

“Capillary and Microdevice Technology for Genetic Applications,” (Division Sponsor: M. Tarlov)

May 23, 2001

Karl Booksh, Dept. of Chemistry and Biochemistry, Arizona State University, Tempe, AZ

“Chemometrics for Instrument Design and Calibration,” (Division Sponsor: S. Semancik)

June 11, 2001

Michael Rider, Dept. of Chemistry, University of South Carolina, Columbia, SC

“Atomic Spectroscopy-Making Chemical Measurements at Temperatures as Hot as the Sun,” (Division Sponsor: S. Semancik)

June 13, 2001

Kevin Denis, Northeastern University, Boston, MA

“A MEMS Scanning Fabry-Perot Interferometer with Feedback Control,” (Division Sponsor: S. Semancik)

June 18, 2001

Owen Thomas, Dept. of Chemistry, Johns Hopkins University, Baltimore, MD

“Understanding the Electronic Structure of Metal Containing Clusters through Mass Spectrometry and Negative Ion Photoelectron Spectroscopy,” (Division Sponsor: S. Semancik)

July 11, 2001

Hui Meng, Dept. of Mechanical & Aerospace Engineering, State University of New York,

Buffalo, NY, “Development of Holographic Particle Image Velocimetry,” (Division Sponsor: G. Mattingly)

July 13, 2001

Anna Karion, The Aerospace Corporation, El Segundo, CA

“Shear Flows of Granular Materials,” (Division Sponsor: P. Espina)

July 17, 2001

Douglas C. Meier, Dept. of Chemistry, Texas A&M University, College Station, TX

“Infrared Reflection Absorption Spectroscopy: A Versatile Tool for Surface Analysis.” (Division Sponsor: S. Semancik)

August 1, 2001

Alan Steele, Barry Wood, and Rob Douglas, National Research Council, Ottawa, Canada
“Probability Calculus for Metrology: Statistics, Equivalence, and the MRA” (Division
Sponsor: G. Strouse)

9. Conferences/Workshops/Sponsored or Co-Sponsored Sessions

December 6, 2000

AVS Mid-Atlantic Chapter Meeting-Invited Speaker, Joseph Strosio, “A Low Temperature
STM System for the Study of Quantum and Spin Electronic Systems,” (P.J. Abbott)

March 26-30, 2001

Precision Thermometry Workshop, Gaithersburg, MD (D.C. Ripple)

April 18, 2001

Symposium on Fluid Science, Gaithersburg, MD (R.F. Berg, K.A. Gillis, & R.D. Mountain)

August 14-15, 2001

NIST Fixed-Point Cell Mini Workshop, Gaithersburg, MD (G.F. Strouse & S.L. Cooper)

September 17-20, 2001

Vacuum Gage Calibrations using the Spinning Rotor Gauge, Short Course given at Arnold Air
Force Base, Manchester, TN (P.J. Abbott)