



MSC 2004 EXHIBITORS

COMPANY	WEBSITE
3D Instruments	www.3dinstruments.com
A.K.O. Torque Spec. Div.	www.akotorque.com
Accurate Instrument Repair	www.air-cal.com
Advanced Test Equipment Corp	www.atecorp.co
Agilent Technologies	www.agilent.com
Ametek Inc.	www.ametek.com
Andeen - Hagerling, Inc.	www.andeen-hagerling.com
Army Primary Standards Laboratory	www.redstone.army.mil
Artel	www.artel-use.com
Astro-Med Inc.	www.astro-med.com
Bios International Corp.	www.biosint.com
Cal Lab Magazine	www.callabmag.com
Control Solutions	www.control-solutions.com
Crystal Engineering	www.crystalengineering.net
Data Proof	www.dataproof.com
Davidson Optronics	www.davidsonoptronics.com
DH Instruments	www.dhinstruments.com
DH-Budenberg	www.dh-budenberg.com
Diversified Data Systems	www.dds-inc.com
Dresser Instruments	www.dresserinstruments.com
Druck	www.druck.com
DynCorp	www.dyncorp.com
Edgetech	www.edgetech.com
Edison ESI	www.edisonesi.com
eDoc Publish Inc.	www.edocpublish.com
Electro Rent Corporation	www.electrorent.com
Flow Dynamics	www.flow-dynamics.com
Fluke Corporation	www.fluke.com
Gauge Repair Service	www.gaugerepairservice.com
General Eastern	www.geinet.com
GIDEP	www.gidep.org
Guidline Instruments, Inc.	www.guidline.com
Hart Scientific, Inc.	www.hartscientific.com
IET Labs Inc.	www.ietlabs.com
Integrated Sciences Group	www.isgmax.com
International Radiation Detectors Inc.	www.ird-inc.com
Isotech / TTI	www.ttiglobal.com
Jaeger Enterprises	www.jaegerenterprises.com
King Nutronics Corp.	www.kingnutronics.com
Lockheed Martin Technical Operations	www.lockheedmartin.com
Measurements International, Inc.	www.mintl.com
Mensor Corp.	www.mensor.com
Mettler Toledo, Inc.	www.na.mt.com
Navy Primary Standards Lab	www.nadepni.navy.mil/npsl
NIST/Calibration Program	www.ts.nist.gov/calibrati
NIST/NVLAP	www.nist.gov
Norfox Software Inc.	www.norfox.com
Northrop Grumman Space Technology	www.st.northrupgrumman.com
Northrop Grumman SureCAL	www.surecal.com
NWAS-Measurement Science Directorate	www.corona.navy.mil
Opto-Cal, Inc.	www.optocal.com
Paroscientific Inc.	www.paroscientific.com
Pond Engineering Laboratories, Inc.	www.pondengineering.com
Pratt & Whitney Division of Siemens Measu	www.prattandwhitney.com

MSC 2004 EXHIBITORS

COMPANY	WEBSITE
Pressurements (Ruska)	www.pressurements.com
Primary Instruments Inc.	www.primaryinstruments.com
Primary Standards North America Inc.	www.primarystandards.com
Process Instruments Inc.	www.procinstr.com
Quametec Corp.	www.quametec-pt.com
RH Systems	www.rhsystems.net
Rice Lake Weighing Systems	www.rlws.com
Ruska Instrument Corporation	www.pressure.com
Sartorius Corp.	www.sartoriuscorp.com
Scott Specialty Gases	www.scottgas.com
Si Pressure / TTI	www.si-pressure.com
SIMCO Electronics	www.simco.com
Soltec Corporation	www.solteccorp.com
Technology Resource Center, Inc.	www.trcinc.net
The Bionetics Corp Newark Metrology	www.bionetics.com
Thunder Scientific	www.thunderscientific.com
Transcat	www.transcat.com
Troemner	www.troemner.com
Tustin Technical Institute	www.training@ttiedu.com
Vaisala	www.vaisala.com
Veriteq	www.veriteq.com
Verizon Electronic Repair Service	www.vzlogistics.com
Western Environmental Corp.	www.westernenvironmental.com
Workplace Training	www.state.net/wptraining.com
Yokogawa Corporation of America	www.us.yokogawa.com

MSC ORGANIZATION

Chairman of the Board Mark Kaufman NSWC Corona Division 909-2735725	Secretary Dewain Wilcox Consultant 714-524-1744
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Intranet & e-Commerce Rich Schumacher NSWC Corona Division 909-273-5221	Publications Douglas Sugg NSWC Corona Division 909-273-5380
Guest Programs Pamela Thames Consultant 714-897-3442	NCSL Liaison & Logistics Cathy Oaxaca-Hoot NSWC Corona Division 909-273-3478

MSC 2004 TIMELINE

NIST SEMINARS

Monday, January 12, 2004

7:00 AM

Registration Opens for NIST Seminars

WORKSHOPS

Wednesday, January 14, 2004

7:00 AM

Registration Opens for MSC Tutorial Workshops

12:00 PM

Lunch for MSC Tutorial Workshop Attendees

4:00 PM

MSC Early Bird Conference Registration

6:00 PM till 9:00 PM

Exhibits Opening Speech

CONFERENCE

Thursday, January 15, 2004

7:00 AM

Registration Opens for the MSC

8:00 AM to 7:00 PM

MSC Exhibits Open

9:00 AM

Conference Opening Session

and Keynote Speaker

10:45 AM

Conference Registration

12:15 PM

Group I Sessions

12:15 PM

Exhibits Viewing

Lunch and Luncheon

1:45 PM

Speaker

1:45 PM

Exhibits Viewing

2:30 PM

Group II Sessions

4:45 PM

Group III Sessions

7:00 PM

Presidents Reception

Friday, January 16, 2004

7:00 AM

Conference Registration

8:00 AM to 3:00 PM

Exhibits Viewing

8:30 AM

Group IV Sessions

10:45 AM

Group V Sessions

12:15 PM

Lunch and Luncheon

Speaker

2:00 PM

Group VI Sessions

4:00 PM

Door Prize Giveaway

Session

DOOR PRIZES

The Conference will end with a Door Prize Drawing supported by Exhibitors, Sponsors and the MSC Committee. If you wish to donate, please contact Roger Hickey (949) 660-3164 or roger.hickey@bbraun.com

Non-Profit
Organization U.S.
Postage Paid
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Permit No. 356

Corporate Address

Measurement Science Conference Inc.
1280 Bison Ave., Suite B9-530
Newport Beach, CA 92660

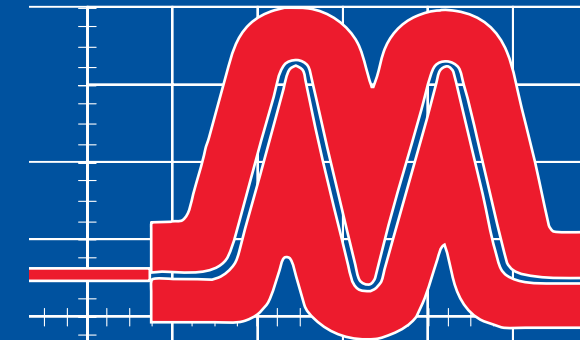
Return Address

Measurement Science Conference Inc.
c/o John Schulz, Publicity Chairman
Safetran Systems Corp.
10655 7th Street
Rancho Cucamonga, CA 91730



DATED MATERIAL

MEASUREMENTS
AND CONTINUOUS
EDUCATION



January 15 & 16

MEASUREMENT
SCIENCE
CONFERENCE

SYMPOSIUM AND WORKSHOP

Tutorial Workshops on January 14
NIST Seminars on January 12 & 13

DISNEYLAND HOTEL
Anaheim, California

<http://www.msc-conf.com>

INVITATION FROM THE CONFERENCE PRESIDENT YEAR 2004 MSC

The Measurement Science Conference (MSC) Board of Directors and the 2004 MSC Committee invite you and your guests to our 34th annual conference. Since its founding in 1970 MSC has brought value to the measurement science community by promoting education and professionalism. The seminars, tutorials and the technical program provide an opportunity for educational and professional development. MSC is also a forum to communicate new technical ideas, changes in philosophy, techniques and practices, and first hand knowledge. MSC is where you can see the latest technology, and have an opportunity to say hello to friends. Exhibitors and sponsors will be there to share and exchange information.

The world has been changing at an accelerating pace. We must change the way we do business and even the way we think about business. The 2004 MSC theme, "Measurements and Continuous Education" reflects this need to change.

You can get the most recent information at the MSC web site at www.msc-conf.com. You can also sign up for the MSC electronic newsletter at the web site. If you prefer the phone you can call 866 MSC-MEAS.

I look forward to seeing you at the Disneyland Resort in Anaheim California next January for the 34th MSC.



Sincerely,
Mohamed Samman
President MSC 2004

WOODINGTON AWARD

The Woodington is the most prestigious award sponsored by the Measurement Science Conference. It is a memorial and tribute to the late Andrew J. Woodington and is presented to a member of the measurement community who represents the highest level of professionalism, and dedication to the metrology profession. Nominees for the Woodington are exemplary professionals, noteworthy for achievement in Measurements.

Nominations can be made by contacting Dave Lorenzen at Dave@Lorenzen.com or (909) 866-4858.

MSC SCHOLARSHIPS

The Measurement Science Conference has an established fund to award scholarships to students in an Engineering, Science or Quality Assurance degree program.

The scholarship program places emphasis on papers or projects that discuss the advancement of measurement science technology. These scholarships will be awarded to the students at the luncheon on Friday, January 16, 2004.

Students from participating schools must submit scholarship applications by November 28, 2003 to be eligible for the 2004 MSC Scholarship Awards. An MSC sub-committee evaluates all applications and provides a list of finalists to the MSC Board of Directors. The Board selects the scholarship recipients from this list of finalists.

If you are interested in more information regarding the MSC Scholarship Program, please contact: John Fishell @ (909) 273-5135 or e-mail: FishellJV@corona.navy.mil or alternate: Diana Poulton @ (909) 273-5524 or e-mail: PoultonDL@corona.navy.mil

TECHNICAL PAPERS PRELIMINARY PROGRAM

- P1 Dr. Dennis Jackson** NSWC Corona
The Calibration Interval Analysis Process Using Binomial Data and the Intercept Exponential Model
- P2 Ricardo Nicholas** The Boeing Company
Covariance and Correlation Demystified
- P3 Ken Soley & Jeff Hawkins** GE General Eastern Instruments
Developments of a Bench-top Time Proportional Humidity Generator with Chilled Mirror Reference Standard
- P4 J. Song, L. Ma, E. Whittenton, T. Vorburger** NIST
Initial Measurement Results for 20 NIST RM 8240 Standard Bullets
- P5 Xumo Li, Mingjian Zhao, Deming Chen** Hart Scientific
Realization of the Freezing Point of Indium Using Stainless Steel-Cased Cells
- P6 John Raffaldi**
Software Uncertainty and Associated Errors
- P7 Dilip A. Shah** E = mc³ Solutions
The Spreadsheet as a Statistical Analysis Tool in Metrology
- P8 Phil Stein** PG. Stein Consultants
Special Topics in SPC of Measurement
- P9 Duane Allen** NSWC Corona
Statistical Tools and Uncertainty Evaluation (session)
- P10 T.O. Maginnis** Celerity
Test for Gas Species Dependence in the motion of a Small Bell Prover
- P11 Karl Anderson** Valid Measurements
The Trifunctional Amplifier, Theory and Applications
- P12 Emil Hazarian** Los Angeles County AC/Weights and Measures Metrology Laboratory
Un-Certainty for Un-Conventional Masses
- P13 Richard W. Caron, Charles L. Britton, Thomas M. Kegel** Visteon Corporation Colorado Engineering Experiment Station Inc.
The Premature Unchoking Phenomena of Critical Flow Venturis
- P14 Dr. Li Pi Su, Mr. Van Q. Black** US Army Primary Standards Laboratory
ISO/IEC 17025-based Quality Systems: Vector Network Analyzer Measurement Systems
- P15 G. E. Mattingly** NIST
The CIPM Working Group for Fluid Flow (WGFF): Plans and Progress for Establishing the International Acceptability of Flow Measurements
- P16 Frank E. Jones** Independent Consultant (Retired from NIST)
Youden Plots Applied to Interlaboratory Comparison Mass Measurements
- P17 Paul Roberts** Fluke Corporation
High Frequency Error Sources in Oscilloscope Calibration
- P18 Dave Deaver** Fluke Corporation
Confidence, Guardbanding and Specifications
- P19 Duangrat Eungdamrong** Sirindhorn International Institute of technology Thammasat University
Noise modeling of the oscillators
- P20 Gary Gartman** Yokogawa Corporation of America
Test Equipment Networking Solution

HOTEL INFORMATION

The Measurement Science Conference Committee and the Disneyland Hotel Staff are happy to welcome you to the 2004 Conference.

We extend to you a friendly welcome to the Magic Kingdom and wish you an enjoyable stay.

The room rates are:
Single/Double...\$169.00

Registration:
Phone: (714) 520-5003 Fax: (714) 520-6079

Please mention the Measurement Science Conference when registering.

MSC TUTORIAL WORKSHOPS WEDNESDAY, JANUARY 14, 2003

Concurrent Tutorial Workshops will be offered the day before the regular 2004 MSC Technical Program. In general, each workshop will be 4 hours long and will run once in the morning and once again in the afternoon, making it possible to attend two workshops.

There is a fee of \$265.00 per person for any combination of two half-day workshops. This fee can be combined with other MSC registrations (see schedule of fees). Workshop registrations are limited by room size and will be accepted on a first received basis. Registrations received after December 18, 2003 will be \$365.00.

WORKSHOP A: Dynamic Pressure Calibration.
Developer: John S. Wilson

WORKSHOP B: Pipette Calibration and Use: New Methods for Reducing Variability via Uncertainty Analysis and Bench-top Verification.
Developer: George Rodrigues
Artel Corp.

WORKSHOP C: Measurement Uncertainty: Fundamentals and Application.
Developer: Dilip A. Shah
E=mc³ Solutions

WORKSHOP D: The Calibration Technician Meets Accelerometers.
Developer: Wayne Tustin

WORKSHOP E: Dynamic Pressure Calibration.
Developer: John Wilson

Other Workshops are planned as well. Please check with the MSC web-site at www.msc-conf.com for the latest updates. For more information on the Tutorial Workshops, please contact Chet Crane @ (714) 368-9000

2004 MSC GUEST PROGRAMS EXCITING GUEST PROGRAMS

Discounted Park Tickets

What would a trip to Anaheim be without a visit to fabled Disneyland and the California Adventure Theme Park? MSC will be offering discounted tickets and a special conference "Twilight" pass good for limited evening hours.

Custom MSC Bus Tours!

Thursday, January 15, 9:00 - 4:00Pasadena Arts Tour

Come with us on a fascinating tour of the 100 year old Judson Studios and Gallery and see how the large stained glass windows of the new Los Angeles cathedral were made. In Old Town Pasadena we will visit one of the world's finest private collections of European, American, and Asian art at the Norton Simon. For more information go to www.judsonstudios.com and www.nortonsimon.org.

Friday, January 16, 8:00 -1:00 Whale Watching

Come along on our fifth "Annual MSC Whale Watching Cruise" as we go out on the Long Beach Marine Institute ship in search of migrating whales. For an added thrill, this ship is equipped to bring up bottom living creatures for us to experience literally "hands on" with the help of a marine biologist. For more information go to www.longbeachmarine-inst.com and read more about the "Sea Creatures Safari" and "Incredible Journeys".

Tours cost \$40.00 each. Continental breakfast is included. Contact Pamela Thames at (714) 897-3442 or pythames@aol.com for reservations.

NIST SEMINARS 2004

The 2004 Measurement Science Conference will host the NIST Seminars on January 12 and 13.

Flow Measurement

This seminar will present the basic concepts of flow measurement. It will cover the terminology, basic principles, and practical applications. Wide ranges of flow metering techniques will be described and discussed with results of applications.

Flow meter calibrations-theory and practice will be presented so that flow meter users are informed how to make satisfactory fluid quantity and flow rate measurements.

For additional information, contact:
Geo. E. Mattingly at (301) 975-5939 or gmattingly@nist.gov or Thomas Kegel at (970) 897-2711 or Tkegel@ceesi.com

Overview of Mass & Weighing

This short course will present an overview of the calibration and uncertainty analysis for mass standards (weights) and balances. It will focus on the use of correct procedures, eliminating and minimizing sources of errors where possible, and a standardized and practical approach to complying with the GUM for uncertainty analysis. Classification schemes and procedures for both mass standards and balances/scales will be covered.

For additional technical information contact:
Val Miller at (301) 975-3602(val.miller@nist.gov) or Georgia Harris at (301) 975-4014 (georgia.harris@nist.gov).

Selection, Calibration, and Use of Contact Thermometers

Presenters: Greg Strouse and Karen Garrity
Process Measurements Division, NIST, Gaithersburg, MD 20899-8363
In this seminar, we will discuss contact thermometers commonly used in industry for relatively high accuracy applications, including platinum resistance thermometers, thermistors, thermocouples, and liquid-in-glass thermometers. For additional technical information, contact:
Greg Strouse at (301) 975-4803 or gregory.strouse@nist.gov.

Time and Frequency Measurements and Applications

Presenters: Michael Lombardi and Andrew Novick
This seminar focuses on frequency calibrations, time synchronization, and measurement methods. It will discuss the various types of frequency standards, as well as using Global Positioning System (GPS) and LF radio receivers as transfer standards. It will explain how to measure frequency offset and stability, and how to obtain traceability to NIST. Measurements will be demonstrated in the classroom. The seminar is intended for anyone who makes time and frequency measurements or who is involved in applications requiring accurate time and frequency sources.

For additional technical information, contact:
Michael Lombardi at (303) 497-3212 lombardi@boulder.nist.gov



Clip & mail

CONFERENCE REGISTRATION 2004 MEASUREMENT SCIENCE CONFERENCE SYMPOSIUM & WORKSHOP

SCHEDULE OF FEES (SEE CANCELLATION POLICY)

- MSC (2 days).....\$ 395 Prior to 12/18/03.....\$ 495 After 12/18/03
- MSC (1 day).....\$ 295 Prior to 12/18/03.....\$ 395 After 12/18/03
- NIST Tutorials.....\$ 695 Prior to 12/18/03.....\$ 795 After 12/18/03
- NIST, Workshops and Conference \$1095 Prior to 12/18/03
\$1195 After 12/18/03

If registering for one day only, please indicate which day:
 Thurs., January 16, 2003 Fri., January 17, 2003

Conference Registration Includes:

Refreshments, Lunches, one copy of the proceedings, one door prize ticket, and President's Reception.
*Cancellation Policy: if written notice of cancellation is received before December 18, 2003, the registration fee (less \$25) will be refunded.

Make conference registration check payable to:

"Measurement Science Conference"
(We will accept VISA, MasterCard, and American Express for registration)
Mail to: Measurement Science Conference
1280 Bison Ave., Suite B9-530, Newport Beach, CA 92660
Or register using the internet at <http://www.msc-conf.com>
For registration information call 909-648-2775
fax 909-273-5500 or E-mail to john.bowman@fluke.com

NAME _____
COMPANY _____
TITLE/DEPT. _____
MAILING ADDRESS _____
CITY _____ STATE _____ ZIP _____
CREDIT CARD _____
EXPIRATION DATE _____ MC VISA AMER. EXP
TELEPHONE () _____ E-MAIL _____

TUTORIAL WORKSHOP ONLY January 14, 2004
\$ 265 for two prior to Dec. 18, 2003. \$ 365 after Dec. 18, 2003
\$ 470 Tutorial Attendee + One Day. \$ 570 after Dec. 18, 2003
\$ 570 Tutorial Attendee + Two Day. \$ 670 after Dec. 18, 2003

PLEASE CHOOSE ANY 2 WORKSHOPS.

- WORKSHOP A WORKSHOP B WORKSHOP C
- WORKSHOP D WORKSHOP E

Do you have any ADA Requirements? Do you have any special meal requirements?