

3rd International Metrology Conference 2010

(CAFMET 2010)

**Cairo, Egypt
18-23 April 2010**

ISBN: 978-1-61839-037-0

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2010) by Comite Africain de Metrologie (CAFMET)
All rights reserved.

Printed by Curran Associates, Inc. (2011)

For permission requests, please contact Comite Africain de Metrologie (CAFMET)
at the address below.

Comite Africain de Metrologie (CAFMET)
63 Ave Notre Dame du Lac
49000 Angers France

Phone: 33 (0) 6 73 62 32 62
Fax: 33 (0) 2 41 88 84 21

secretariat@ac-metrology.com

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2634
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

S1 - METROLOGY ORGANIZATION IN THE WORLD AND IN AFRICA; INDUSTRIAL AND ECONOMIC DEVELOPMENT

Chairmen: S. Prins, H. Shaarawy

Promotion of Cooperation Activities in Metrology between Europe and South East Asia	1
<i>Tanfer Yandayan, Ahmad M. Dahlan</i>	
Joint Research Projects in Metrology for Industry and Society	9
<i>Luc Erard</i>	
Metrology: Impact and Issues in the Management of Electric Power in the Republic of Benin	13
<i>Alain Bohoun</i>	

S2 - LEGAL METROLOGY; STANDARDIZATION; ACCREDITATION; CERTIFICATION

Chairmen: J.M. Virieux, M. Mokhtar

Developments in the OIML	17
<i>A. Johnston</i>	
Content of Prepackages The Swiss Sequential Statistical Test	25
<i>Jean-Michel Virieux</i>	
Toward the Transformation of National Metrology Legislation	28
<i>O. Velychko, S. Pronenko</i>	
Toward the Harmonization of National Documents in Field of Metrology	35
<i>O. Velychko, T. Gordiyenko</i>	
Encouraging Regional Integration by Use of Information and Communication Technologies	42
<i>Fadoua Ouerdiane, Carola Heider</i>	

S3 - UNCERTAINTIES EVALUATION AND INTERLABORATORY COMPARISONS

Chairmen: F. Pavese, M. Berrada

The Most Common Mistakes in Estimation of Measurement Uncertainty	45
<i>Visnja Gasljevic, Mladen Jakovcic</i>	
On Hierarchical vs Non-Hierarchical Comparisons in Metrology and Testing	49
<i>Franco Pavese</i>	
Proficiency Testing for Calibration Laboratories	50
<i>Philip Briggs</i>	
Maximum Permissible Speed Measurement Errors at the Portuguese Institute for Quality	55
<i>O. Pellegrino, C. Pires, A. Cruz</i>	
Comparison of the GUM and Monte Carlo Measurement Uncertainty Techniques with Application to Effective Area Determination in Pressure Standards	61
<i>Vishal Ramnath</i>	

S4 - QUALITY, RELIABILITY AND SAFETY

Chairmen: E.A. Elsayed, A. Kobi

Reliability of Components for Optical Fiber Systems under Irradiation	62
<i>D. Sporea, Adelina Sporea, C. Oproiu, I. Vata, B. Constantinescu, D. Negut</i>	
Reliability of Photovoltaic Modules Based on Climatic Measurement Data	70
<i>R. Laronde, A. Charki, D. Bigaud</i>	
Verification of Flash Memory Reliability Using an Accelerated Test	71
<i>Zdenek Vintr, David Valis</i>	
Road Safety and Metrology: What's the Binomial?	76
<i>Maria do Céu Ferreira, A. Cruz</i>	
Investigation of Effective Factors in Measurement Errors of Aeronautical Telemetry Systems	77
<i>S. Marzban, S. M. Hoseinie</i>	

S5 - MEASUREMENT IN FOOD, ENVIRONMENT AND HEALTH

Chairmen: E.A. Hassani, P. Ulbig, T. Tiplica, H. Eissa

Environment Analysis by Corrosion of the Silver Thin Film	80
<i>K. Ayadi</i>	
Method Development for the Analysis of Biodegradable Polymers	84
<i>Eino Vuorinen, Minna Hakkarainen</i>	
Inter Comparison on Particular Classification, Air Velocity Measurement and Differential Pressure Measurement Trials	86
<i>Bernard Thaveau, Robert Borel</i>	
From Opacimetry to Nanoparticle Characterization: Regulation, Research and New National Standards for Exhaust Gas Analyzers in Europe	92
<i>P. Ulbig</i>	
Determination of δD and $\delta^{18}O$ Values in Ground Water by the Combination of Thermal Conversion Elemental Analyzer (TC/EA) and Isotope Ratio Mass Spectrometry	93
<i>Mine Bilsel, Adnan Simsek</i>	
Intercollaborating Laboratories Tests Interest to Improve Knowledge of Analytical Performance	97
<i>C. Rosin, X. Dauchy, J.S. Py, E. Joulin, R. Mehut, J.F. Munoz</i>	
Identification of Apple Varieties Using Acoustic Measurements	103
<i>T. Tiplica, P. Vandewalle, S. Verron, C. Grémy-Gros, E. Mehinagic</i>	
Certification of Food Reference Materials by Collaborative Study	111
<i>Laura Regalado-Contreras, Claudia M. Salazar-Arzate, Yoshito Mitani</i>	
Proficiency Testing for Determination of Metals in Tomato Paste	116
<i>Fatma Akcadag, Nilgun Tokman, Emrah Uysal</i>	
Determination of Adulteration of Different Types of Commercial Honey Samples by the $^{13}C/^{12}C$ Isotopic Ratio	122
<i>Adnan Simsek, Mine Bilsel</i>	
Development Viscosity Transfer Standards from Chitosan/Gelatin Mixtures	126
<i>K. El-Nagar, M. Amer, M. Mekawy, Essam El Din Mahmoud</i>	
Determination of Intermediate γ-ray Dose in Tooth Enamel and Its Uncertainty Using ESR	135
<i>G.M. Hassan, E. Aboelezz, A. El-Khodary, H.M. Eissa</i>	
The Metrology in an Institution such as The Pasteur Institute of Dakar	143
<i>Guy Girault</i>	

S6 - STATISTICAL PROCESS CONTROL

Chairmen: E.A. Elsayed, A. Kobi

The Management of Measurement Processes – Key to Robust and Cost Optimal Production of High Quality Products	149
<i>R. Schmitt, J. Lose, M. Harding</i>	
Remote Access and On-Line Monitoring of Production Parameters and Quality Variables Using SPC Software	150
<i>Mohamed K. Hassan</i>	
Monograph about Data Mining	155
<i>Adriana Horníková, M. Numan Durakbasa</i>	
Statistical Modeling for Voice Distortion Characterization of Arabic Dysphonic Speakers	163
<i>Assia Ghelis, Mhania Guerti</i>	
Application the Method of Multicriteria Decision « PROMETHEE » for HACCP System	167
<i>Dorra Ayadi, Lotfi Azzabi, Abdessamad Kobi, Christian Robledo, Habib Chabchoub, Younes Boujelbenne</i>	
Tools for Multicriteria Decision Support for Diagnosis Industrial Process	175
<i>Lotfi Azzabi, Dorra Ayadi, Abdessamad Kobi, Christian Robledo, Younes Boujelbenne, Habib Chabchoub</i>	
Integrated Training Module Realised by Mechanical Engineers Students for Quality, Metrology and Safety Tools	183
<i>Liviu Masalar, Julien Lemaire, Antonio Martinez</i>	

S7 - DIMENSIONAL AND OPTICAL MEASUREMENT

Chairmen: Y. Alayli, H. Nassibov, A. Michel

Displacement System from Nanometer to Millimeter	186
<i>Ahmad Sinno, Luc Chassigne, Pascal Ruaux, Suat Topçu, Gilles Léronde, Sylvain Blaize, Aurelien Bruyant, Pascal Royer, Yasser Alayli</i>	

Metrological Applications of Ellipsometry Applications	190
<i>P.R. Dahoo</i>	
Development of a Metrological AFM with Minimized Abbe Errors	195
<i>Benoit Poyet, Sébastien Ducourtieux</i>	
Automation of Length Measurements by Analysis of Interference Images	200
<i>André Michel</i>	
Stabilization of A Laser Source He-with 543 Nm For Its Use In Interferometry	207
<i>André Michel</i>	
Metrological Characterization of Synthesized CNTs	214
<i>Salah H.R. Ali, M.K. Bedewy, M.A. Etman, B.S. Azzam</i>	
Morphology and Properties of Polymer Matrix Nanocomposites	220
<i>Salah H.R. Ali, M.K. Bedewy, M.A. Etman, H.A. Khalil, B.S. Azzam</i>	
Primary Laboratory of Photometry of the Portuguese Institute for Quality	221
<i>O. Pellegrino, C. Pires, E. Filipe</i>	
Spatial Power Response for Optical Detectors Using Multiple Laser Wavelengths	223
<i>Sameh M. Reda, Hatem Hussein</i>	
Adapted Technique for Length Scale Measurement	228
<i>M. Bahrawi, Niveen Farid</i>	
Small Angle Generators for Angle Measurement	233
<i>Tanfer Yandayan, Nuray Karaböce, Bülent Özgür, Orhan Yaman</i>	
Dynamic Characteristics of Probing System in Coordinate Metrology	240
<i>Salah H.R. Ali</i>	

S8 - PRESSURE MEASUREMENT

Chairmen: A. El Tawil, I. Kocas

The Infrastructure and Activities of Tubitak UME Pressure Group Laboratories	249
<i>Ilknur Kocas , Yasin Durgut</i>	
Effects of Supply Voltage on Calibration Results for Pressure Transducers	253
<i>Yasin Durgut, Ilknur Kocas</i>	
Proficiency Test in the Gauge Pressure Range for Croatian Accredited Laboratories	257
<i>Davor Zvizdic, Lovorka Grgec Bermanec</i>	
Membrane-Capacity Vacuum Meter for State Primary Standard of Unit of Low Absolute Pressures in the Range 10^{-3}- 10^3 Pa	261
<i>V.N. Gorobey, E.K. Izrailov</i>	
The National Standard in the Field of Molecular Gas Flows in Vacuum	265
<i>V.N. Gorobei, A.A. Chernyshenko</i>	
Elastic Constants of Pressure Balances' Piston-Cylinder Assemblies Measured with the Resonant Ultrasound Spectroscopy	269
<i>W. Sabuga, P. Ulbig, A.D. Salama</i>	

S9 - ELECTRICAL AND ELECTROMAGNETICAL MEASUREMENT

Chairmen: M. Borsic, N.N. Tadros

Determination of Temperature Coefficient of Standard Inductors and Capacitors	278
<i>M.A. Ansari, Mohd Saleem, Jyotsana Saxena, A.K. Saxena</i>	
Computer Aided Techniques for Estimation and Reduction of Uncertainties of Electromagnetic Measuring Devices	281
<i>Marija Cundeva-Blajer, Ljupco Arsov</i>	
Compensated Current Transformers for Closed-Link Electricity Meter Testing	282
<i>Tansu Kefeli, Hüseyin Cayci</i>	
A Calibration System for Electronic Current Transformers with Analogue Outputs	286
<i>Hüseyin Cayci, Tansu Kefeli</i>	
New Concept in Measuring and Calibrating the Solar Cell Short Circuit Current	290
<i>H.A. Mageed, A.F. Zobaa, Ahmed Ghitas, M. Helmy, A. Raouf, Aba H. Abd El- Rahman, M.M. Abdel Aziz</i>	

S10 - TEMPERATURE AND OTHER THERMAL QUANTITIES MEASUREMENT

Chairmen: E. Renaot, M.G. Ahmed, G. Bonnier, M.M. Ammar

Realization of the ITS-90 over the Temperature Range 83 K to 3200 °C at the National Institute for Standards NIS-Egypt	297
<i>M.G. Ahmed, K. Ali</i>	
National Interlaboratory Comparison of Thermocouples in the Temperature Range From 500 °C To 1040 °C	304
<i>Aliye Kartal Dogan, Narcisa Arifovic, Ali Uytun</i>	
Calibration of Intelligent Resistant Temperature Devices	308
<i>Aliye Kartal Dogan, Murat Kalemci, Alev Derelioglu, Kemal Ozcan</i>	
Improvements in Calibration at Silver or Copper Point	311
<i>John P. Tavener</i>	
From the User Needs to the New Definition of the Temperature Unit at LNE	312
<i>Y. Hermier</i>	
New Temperature and Pressure Sensors Using Spin Crossover Compounds	317
<i>Jorge Linares, Epiphane Codjovi, Yann Garcia</i>	
New SMU Gallium Point Cells	322
<i>Juraj Ranostaj, Stanislav Duriš, Mariana Kaskötö, Renáta Knorová, Irena Vyskocilová</i>	
Calibration of Infrared Ear Thermometers	326
<i>Kemal Ozcan, Narcisa Arifovic, Alev Derelioglu</i>	
Verification of Blackbodies Emissivity	329
<i>Peter Nemecek, Ivan Christov</i>	
Fiabilité à Long Terme des Cellules Thermométriques Matérialisant les Points de Définition de l'EIT-90 Entre 29,76 °C et 660,323 °C	330
<i>E. Renaot</i>	

S11 - MECHANICAL QUANTITIES

Chairmen: M.G. El Sherbiny, R. Borel

Comparison of Micropipettes Calibration by Accredited Laboratories	337
<i>Tanguy Madec, Soraya Amarouche</i>	
Estimating Uncertainties of Measurements of Grammage Test (ISO 536)	344
<i>Mohamed Zaki Adouani</i>	
Developing NIS 5 KN Deadweight Machine	353
<i>Seif. M. Osman, Ebtisam H. Hasan, H.M. El-Hakeem, F. Kouta</i>	
Experimental Study of Digital Micro-Particle-Imagevelocimetry (µPIV) System with LED Illumination	361
<i>Humbat Nasibov, Alisher Kholmatov, Basak Akselli, Adalat Nasibov</i>	
Recent Advances in Digital Particle Image Velocimetry Methods for Flow Motion Analysis	368
<i>Humbat Nasibov, Sakir Baytaroglu</i>	
Investigation of Laminar Flow in Microchannels Through µPIV Measurements at UME	369
<i>Basak Akselli, Vahit Ciftci, Alisher Kholmatov, Humbat Nasibov</i>	
Evaluation of Sine Approximation Realised by FFT in Accordance with ISO 16063-11 Primary Vibration Calibration by Laser Interferometry⁽⁰⁾	374
<i>Torben R. Licht, Sven Erik Salbol, Philippe Callec</i>	
Author Index	