

CONTENTS

Introduction	2
Criteria for membership of the Consultative Committees of the CIPM.....	3
Meetings in 2003	4
Consultative Committee for Electricity and Magnetism (CCEM)	5
Consultative Committee for Photometry and Radiometry (CCPR)	15
Consultative Committee for Thermometry (CCT).....	19
Consultative Committee for Length (CCL).....	31
Consultative Committee for Time and Frequency (CCTF).....	36
Consultative Committee for Ionizing Radiation (CCRI).....	45
Consultative Committee for Units (CCU).....	52
Consultative Committee for Mass and Related Quantities (CCM)	55
Consultative Committee for Amount of Substance: metrology in chemistry (CCQM)	67
Consultative Committee for Acoustics, Ultrasound and Vibration (CCAUV)	73
Acronyms and Addresses	77

Introduction

The International Committee for Weights and Measures (CIPM) has ten Consultative Committees.

- Consultative Committee for Electricity and Magnetism (CCEM)^{*}
- Consultative Committee for Photometry and Radiometry (CCPR)
- Consultative Committee for Thermometry (CCT)
- Consultative Committee for Length (CCL)
- Consultative Committee for Time and Frequency (CCTF)
- Consultative Committee for Ionizing Radiation (CCRI)
- Consultative Committee for Units (CCU)
- Consultative Committee for Mass and Related Quantities (CCM)
- Consultative Committee for Amount of Substance: metrology in chemistry (CCQM)
- Consultative Committee for Acoustics, Ultrasound and Vibration (CCAUV)

The broad remit of each Committee is to advise the CIPM on matters related to its particular field of metrology.

This Directory gives a brief description of the current activities of each of these Committees, lists the members and the names and addresses of the participants, details the membership and tasks of working groups. The structure of the working groups differs from committee to committee depending on the nature of the work to be done. For example, in some working groups the members are laboratories while in others members are named individuals; some working groups are long standing and relatively formal, such as the CCEM Working Group on Radiofrequency Quantities. Others are set up for a particular task, such as running an international comparison or preparing a monograph, and are dissolved as soon as the work is completed. This is normal and no attempt is made to impose rules on how working groups should be established other than to require that the work be done in the simplest and most efficient way. At the end of this Directory is a list of the acronyms and full names and addresses of institutes and organizations around the world that participate in the work of the Consultative Committees.

A task now common to all the Consultative Committees, except the CCU, is that of identifying and carrying out the key comparisons of national measurement standards called for in the Mutual Recognition Arrangement (MRA) signed by directors of national metrology institutes in October 1999. This is a task the Consultative Committees carry out in collaboration with the BIPM. The CCU is different in that its main tasks are the surveillance of the SI and periodic revision of the SI brochure. More information on these comparisons can be obtained from the Executive Secretary of each Consultative Committee at the BIPM and a full list is maintained in the BIPM key comparison database.

The purpose of this Directory is to make available a concise list of contact points for each Consultative Committee over the whole range of its activities and to identify the BIPM contact in each field. The printed version of this Directory is revised at the beginning of each year and an up to date version is maintained on the BIPM home page: <http://www.bipm.org> which also contains the text of the MRA and the BIPM key comparison database.

A.J. WALLARD
Director, BIPM

March 2003

* Here and elsewhere in this document the acronyms come from the French names of the Committees.

Criteria for membership of the Consultative Committees of the CIPM*

Membership of Consultative Committees is decided by the CIPM in consultation with the Presidents of the Consultative Committees and the Director of the BIPM.

Laboratories invited to be members of a Consultative Committee should be those already recognized internationally as most expert in the field. This normally requires that they:

- be national laboratories charged with establishing national standards in the field,
- be active in research and have a record of publications in research journals of international repute,
- have demonstrated competence by a record of participation on international comparisons organized either by the Consultative Committee, the BIPM or a regional metrology organization.

In addition to laboratory members, Consultative Committees may include as members:

- named individuals whose knowledge and competence in the field are such that they can provide valuable assistance to the Consultative Committee even though they do not come from a laboratory meeting the requirements for membership,
- international unions or other international organizations whose advice or expertise would be helpful to the Consultative Committee.

The Presidents of Consultative Committees may from time to time invite observers to meetings, including representatives of appropriate laboratories that are not yet members.

In general, the national metrology institute of each Member State of the Convention du Mètre wishing to participate might expect to be a member or an observer of at least one Consultative Committee.

*Adopted by the CIPM at its 85th meeting in September 1996 (*BIPM Proc. Verb. Com. Int. Poids et Mesures*, 1996, **64**, 123-124).

Meetings of the Consultative Committees in 2003
(at the BIPM unless otherwise stated)

CCQM-----	10 to 11 April 2003
CCU-----	17 to 18 April 2003
CCT-----	14 to 16 May 2003
CCRI Section I-----	21 to 23 May 2003
CCRI Section III-----	26 to 27 May 2003
CCRI Section II-----	28 to 30 May 2003
CCRI-----	30 May 2003
CCPR-----	17 to 19 June 2003
CCL-----	8 to 11 September 2003
CIPM -----	9 to 10 October 2003
CCEM Working Groups -----	3 to 7 November 2003

For the general diary of the BIPM, please see the BIPM web page at <http://www.bipm.org>.

Consultative Committee for Electricity and Magnetism (CCEM)

Created in 1927

Present activities concern practical realizations of the SI volt, ohm, ampere and watt, laboratory reference standards of the volt and the ohm based upon the Josephson and quantum-Hall effects, capacitance standards and ac/dc measurements, RF and microwave standards and advice to the CIPM on matters related to electrical standards.

President: **Dr Barry D. Inglis**
 Executive Director and Chief Metrologist
 National Measurement Institute of Australia
 Department of Industry, Tourism and Resources
 P.O. Box 264
 NSW 2070, West Lindfield
 Australia
 Tel: +61 2 8467 3650
 Fax: +61 2 8467 3655
 E-mail: barry.inglis@measurement.gov.au

Executive Secretary: **Dr Thomas J. Witt, BIPM**
 Tel: + 33 1 45 07 70 97
 Fax: + 33 1 45 34 20 21
 E-mail: tjwitt@bipm.org

Members:

CSIR - National Metrology Laboratory [CSIR-NML], Pretoria
 D.I. Mendeleev Institute for Metrology, Gosstandart of Russia [VNIIM], St Petersburg
 Danish Institute of Fundamental Metrology [DFM], Lyngby
 Istituto Elettrotecnico Nazionale "Galileo Ferraris" [IEN], Torino
 Justervesenet [JV], Kjeller
 Korea Research Institute of Standards and Science [KRISS], Daejeon
 Laboratoire André Marie Ampère [BNM-LNE/LAMA], Fontenay-aux-Roses
 Measurement Standards Laboratory of New Zealand [MSL], Lower Hutt
 National Institute of Metrology [NIM], Beijing
 National Institute of Standards and Technology [NIST], Gaithersburg
 National Measurement Institute of Australia [NMIA], Lindfield
 National Metrology Institute of Japan, AIST [NMIJ/AIST], Tsukuba
 National Physical Laboratory [NPL], Teddington
 National Physical Laboratory of India [NPLI], New Delhi
 National Research Council of Canada [NRC], Ottawa
 Nederlands Meetinstituut/Van Swinden Laboratorium [NMi VSL], Delft
 Physikalisch-Technische Bundesanstalt [PTB], Braunschweig
 Standards, Productivity and Innovation Board [SPRING Singapore], Singapore
 Swedish National Testing and Research Institute [SP], Borås
 Swiss Federal Office of Metrology and Accreditation [METAS], Bern-Wabern
 Prof. Heikki Seppä, VTT Information Technology, Espoo
 The Director of the International Bureau of Weights and Measures [BIPM], Sèvres

Observers:

Centre for Metrology and Accreditation [MIKES], Helsinki
 Centro Español de Metrología [CEM], Madrid
 Czech Metrology Institute [CMI], Praha
 Instituto Nacional de Tecnología Industrial [INTI], Buenos Aires
 National Metrology Institute of Turkey [UME], Gebze-Kocaeli

**Delegates and experts of member laboratories
at the last meeting (September 2002)**

President at the time: Prof. Dr Ernst Otto Göbel**Members:****Dr William E. Anderson, NIST**

Tel: + 1 301 975 2220
 Fax: + 1 301 975 4091
 E-mail: william.anderson@nist.gov

Dr Gérard Genevès, BNM-LNE/LAMA

Tel: + 33 1 40 95 60 42
 Fax: + 33 1 40 95 55 59
 E-mail: gerard.geneves.@lne.fr

Dr Hans Bachmair, PTB

Tel: + 49 531 592 2010
 Fax: + 49 531 592 2015
 E-mail: hans.bachmair@ptb.de

Dr Dave Inglis, NRC

Tel: + 1 613 991 5650
 Fax: + 1 613 952 1394
 E-mail: dave.inglis@nrc.ca

Dr Laurie Christian, MSL

Tel: + 64 4 569 0110
 Fax: + 64 4 569 0194
 E-mail: l.christian@irl.cri.nz

Dr Takeumi Inoue, NMII/AIST

Tel: + 81 298 61 5631
 Fax: + 81 298 61 4342
 E-mail: t.inoue@aist.go.jp

Dr Sze Wey Chua, SPRING Singapore

Tel: + 65 6773 9819
 Fax: + 65 6773 9804
 E-mail: weychua@spring.gov.sg

Dr Beat Jeckelmann, METAS

Tel: + 41 31 323 3297
 Fax: + 41 31 323 3210
 E-mail: beat.jeckelmann@metas.ch

Dr Jan P.M. de Vreede, NMi VSL

Tel: + 31 15 269 1621
 Fax: + 31 15 261 2971
 E-mail: jdevreede@nmi.nl

Dr Hans D. Jensen, DFM

Tel: + 45 4525 5874
 Fax: + 45 4593 1137
 E-mail: hdj@dfm.dtu.dk

Mr Erik Dressler, CSIR-NML

Tel: + 27 12 841 4342
 Fax: + 27 12 841 2131
 E-mail: redressl@csir.co.za

Dr Michael Kelley, NIST

Tel: + 1 301 975 3722
 Fax: + 1 301 975 2115
 E-mail: mkelley@nist.gov

Dr Luc Erard, BNM

Tel: + 33 1 56 56 88 60
 Fax: + 33 1 56 56 88 70
 E-mail: luc.erard@bnm.fr

Dr Jeong Hwan Kim, KRISS

Tel: + 82 42 868 5170
 Fax: + 82 42 868 5018
 E-mail: kimjh@kribs.re.kr

Dr Koji Komiyama, NMII/AIST
Tel: + 81 298 61 5637
Fax: + 81 298 61 3492
E-mail: koji.komiyama@aist.go.jp

Dr Zuliang Lu, NIM
Tel: + 86 10 6421 1631-2401
Fax: + 86 10 6421 8629
E-mail: luzl@nim.ac.cn

Dr Giancarlo Marullo Reedtz, IEN
Tel: + 39 011 391 9421
Fax: + 39 011 346 384
E-mail: marullo@me.ien.it

Dr Jürgen Melcher, PTB
Tel: + 49 531 592 2116
Fax: + 49 531 592 2105
E-mail: juergen.melcher@ptb.de

Mr M.K. Mittal, NPLI
Tel: + 91 11 572 6959 (office), 587 2228
(residence)
Fax: + 91 11 572 6938 or 6952
E-mail: mkmittal@mail.nplindia.ernet.in

Mr Håkan Nilsson, SP
Tel: + 46 33 16 50 00
Fax: + 46 33 16 56 20
E-mail: hakan.nilsson@sp.se

Dr James K. Olthoff, NIST
Tel: + 1 301 975 2431
Fax: + 1 301 926 3972
E-mail: james.olthoff@nist.gov

Mr François Piquemal, BNM-LNE/LAMA
Tel: + 33 1 40 95 60 37
Fax: + 33 1 40 95 55 59
E-mail: francois.piquemal@lne.fr

Dr James Randa, NIST
Tel: + 1 303 497 3150
Fax: + 1 303 497 3970
E-mail: randa@boulder.nist.gov

Dr Brian Ricketts, NMIA
Tel: + 61 2 9413 7730
Fax: + 61 2 9413 7202
E-mail: brian.ricketts@measurement.gov.au

Dr Ian A. Robinson, NPL
Tel: + 44 208 943 7139
Fax: + 44 208 943 6341
E-mail: ian.robinson@npl.co.uk

Mr Karl-Erik Rydler, SP
Tel: + 46 33 16 50 00
Fax: + 46 33 12 50 38
E-mail: karlerik.rydler@sp.se

Dr Yury P. Semenov, VNIIM
Tel: + 7 812 323 9621
Fax: + 7 812 113 0114
E-mail: t.n.korzhakova@vniim.ru

Prof. Heikki Seppä, VTT Information Technology
Tel: + 358 9 456 6419
Fax: + 358 9 456 7029
E-mail: heikki.seppa@vtt.fi

Dr Efim Z. Shapiro, VNIIM
Tel: + 7 812 251 7444
Fax: + 7 812 251 7444
E-mail: ezshapiro@vniim.ru or
ezshapiro@peterlink.ru (private)

Dr Eddy So, NRC
Tel: + 1 613 990 5806
Fax: + 1 613 952 9366
E-mail: eddy.so@nrc.ca

Dr Yang Sup Song, KRISS
Tel: + 82 42 868 5015
Fax: + 82 42 868 5018
E-mail: yssong@kribs.re.kr

Dr Haruo Yoshida, NMII/AIST
Tel: + 81 298 61 5247
Fax: + 81 298 61 5126
E-mail: yoshida-h@aist.go.jp

Observers:

Mr Yakup Gülmez, UME
Tel: + 90 262 679 5000
Fax: + 90 262 679 5001
E-mail: yakup.gulmez@ume.tubitak.gov.tr

Ing. Frantisek Jelinek, CMI
Tel: + 420 2 5732 3308
Fax: + 420 2 5732 4982
E-mail: fjelinek@cmi.cz

Mr Miguel Neira, CEM
Tel: + 34 91 807 4715
Fax: + 34 91 807 4807
E-mail: mneira@mfom.es

Dr Harald Slinde, JV
Tel: + 47 64 84 84 84
Fax: + 47 64 84 84 85
E-mail: harald.slinde@justervesenet.no

CCEM Working Group on Radiofrequency Quantities (GT-RF)

Chairman:

Dr James Randa, NIST
Tel: + 1 303 497 3150
Fax: + 1 303 497 3970
E-mail: randa@boulder.nist.gov

Members:

Institute for Physical-Technical and Radiotechnical Measurements, Gosstandart of Russia [VNIIFTRI],
Moscow
International Union of Radio Science, [URSI]
Istituto Elettrotecnico Nazionale "Galileo Ferraris" [IEN], Torino
Korea Research Institute of Standards and Science [KRISS], Daejeon
Laboratoire André Marie Ampère [BNM-LNE/LAMA], Fontenay-aux-Roses
National Institute of Metrology [NIM], Beijing
National Institute of Standards and Technology [NIST], Gaithersburg
National Measurement Institute of Australia [NMIA], Lindfield
National Metrology Institute of Japan, AIST [NMII/AIST], Tsukuba
National Physical Laboratory [NPL], Teddington
National Research Council of Canada [NRC], Ottawa
Nederlands Meetinstituut/Van Swinden Laboratorium [NMi VSL], Delft
Physikalisch-Technische Bundesanstalt [PTB], Braunschweig
Standards, Productivity and Innovation Board [SPRING Singapore], Singapore
Swiss Federal Office of Metrology and Accreditation [METAS], Bern-Wabern
Dr Luc Erard, BNM
The Director of the International Bureau of Weights and Measures [BIPM], Sèvres

Delegates of member laboratories at the last meeting (September 2002)

Chairman: At the time Dr Luc Erard, BNM

Mr Djamel Allal, BNM-LNE/LAMA
Tel: + 33 1 40 95 60 44
Fax: + 33 1 40 95 55 59
E-mail: djamel.allal@lne.fr

Dr Luciano Brunetti, IEN
Tel: + 39 011 391 9230
Fax: + 39 011 346 384
E-mail: brunetti@tf.ien.it

Dr Hans Bachmair, PTB
Tel: + 49 531 592 2010
Fax: + 49 531 592 2015
E-mail: hans.bachmair@ptb.de

Mr Hock Ann Chua, SPRING Singapore
Tel: + 65 772 9602
Fax: + 65 778 3798
E-mail: hachua@spring.gov.sg

Mr Robert Clarke, NPL
Tel: + 44 208 943 6156
Fax: + 44 208 943 7176
E-mail: robert.clarke@npl.co.uk

Dr Jan P.M. de Vreede, NMi VSL
Tel: + 31 15 269 1621
Fax: + 31 15 261 2971
E-mail: jdevreede@nmi.nl

Mr Qilai Gao, NIM
Tel: + 86 10 6421 1631-2520
Fax: + 86 10 6429 2353
E-mail: gaoql@nim.ac.cn

Mr Kurt Hilty, METAS
Tel: + 41 31 323 3490/323 3111
Fax: + 41 31 323 3210
E-mail: kurt.hilty@metas.ch

Dr Dave Inglis, NRC
Tel: + 1 613 991 5650
Fax: + 1 613 952 1394
E-mail: dave.inglis@nrc.ca

Dr Takeumi Inoue, NMII/AIST
Tel: + 81 298 61 5631
Fax: + 81 298 61 4342
E-mail: t.inoue@aist.go.jp

Dr Jeong Hwan Kim, KRISS
Tel: + 82 42 868 5170
Fax: + 82 42 868 5018
E-mail: kimjh@kriss.re.kr

Dr Koji Komiya, NMII/AIST
Tel: + 81 298 61 5637
Fax: + 81 298 61 3492
E-mail: koji.komiya@aist.go.jp

Dr James Randa, NIST
Tel: + 1 303 497 3150
Fax: + 1 303 497 3970
E-mail: randa@boulder.nist.gov

Dr Brian Ricketts, NMIA
Tel: + 61 2 9413 7730
Fax: + 61 2 9413 7202
E-mail: brian.ricketts@measurement.gov.au

Dr Yang Sup Song, KRISS
Tel: + 82 42 868 5015
Fax: + 82 42 868 5018
E-mail: yssong@kriss.re.kr

Dr Ulrich Stumper, PTB
Tel: + 49 531 592 2220
Fax: + 49 531 592 2228
E-mail: ulrich.stumper@ptb.de

Dr Dmitrij Vasiliev, VNIIFTRI
Tel: + 7 095 535 2401 or 535 9210
Fax: + 7 095 535 9334
E-mail: vasiliev@vniiftri.ru

Invited by the Chairman:

Dr Laurie Christian, MSL
Tel: + 64 4 569 0110
Fax: + 64 4 569 0194
E-mail: l.christian@irl.cri.nz

Mr Erik Dressler, CSIR-NML
Tel: + 27 12 841 4342
Fax: + 27 12 841 2131
E-mail: redressl@csir.co.za

Dr Giancarlo Marullo Reedtz, IEN
Tel: + 39 011 391 9421
Fax: + 39 011 346 384
E-mail: marullo@me.ien.it

Dr Harold Sánchez, Laboratorio Metrológico
Tel: + 506 283 4622
Fax: + 506 234 8514
E-mail: hsanchez@ice.co.cr

CCEM Working Group on low frequency quantities (WGLF)**Chairman:****Dr Hans Bachmair, PTB**

Tel: + 49 531 592 2010

Fax: + 49 531 592 2015

E-mail: hans.bachmair@ptb.de

Members:

BNM-LNE/LAMA

NPL

IEN

NRC

KRISS

PTB

NIST

SP

NMi VSL

VNIIM

NMIIJ/AIST

BIPM

NMIA

**Delegates of member laboratories
at the last meeting (September 2002)****Chairman: Dr Hans Bachmair****Dr William E. Anderson, NIST**

Tel: + 1 301 975 2220

Fax: + 1 301 975 4091

E-mail: william.anderson@nist.gov

Dr Michael Kelley, NIST

Tel: + 1 301 975 3722

Fax: + 1 301 975 2115

E-mail: mkelley@nist.gov

Dr Jan P.M. de Vreede, NMi VSL

Tel: + 31 15 269 1621

Fax: + 31 15 261 2971

E-mail: jdevreede@nmi.nl

Dr Jeong Hwan Kim, KRISS

Tel: + 82 42 868 5170

Fax: + 82 42 868 5018

E-mail: kimjh@kriss.re.kr

Dr Luc Erard, BNM

Tel: + 33 1 56 56 88 60

Fax: + 33 1 56 56 88 70

E-mail: luc.erard@bnm.fr

Dr Koji Komiyama, NMIIJ/AIST

Tel: + 81 298 61 5637

Fax: + 81 298 61 3492

E-mail: koji.komiyama@aist.go.jp

Dr Gérard Genevès, BNM-LNE/LAMA

Tel: + 33 1 40 95 60 42

Fax: + 33 1 40 95 55 59

E-mail: gerard.geneves.@lne.fr

Dr Giancarlo Marullo Reedtz, IEN

Tel: + 39 011 391 9421

Fax: + 39 011 346 384

E-mail: marullo@me.ien.it

Dr Dave Inglis, NRC

Tel: + 1 613 991 5650

Fax: + 1 613 952 1394

E-mail: dave.inglis@nrc.ca

Dr Jürgen Melcher, PTB

Tel: + 49 531 592 2116

Fax: + 49 531 592 2105

E-mail: juergen.melcher@ptb.de

Dr Takeumi Inoue, NMIIJ/AIST

Tel: + 81 298 61 5631

Fax: + 81 298 61 4342

E-mail: t.inoue@aist.go.jp

Mr Håkan Nilsson, SP

Tel: + 46 33 16 50 00

Fax: + 46 33 16 56 20

E-mail: hakan.nilsson@sp.se

Dr James K. Olthoff, NIST
Tel: + 1 301 975 2431
Fax: + 1 301 926 3972
E-mail: james.olthoff@nist.gov

Dr James Randa, NIST
Tel: + 1 303 497 3150
Fax: + 1 303 497 3970
E-mail: randa@boulder.nist.gov

Dr Brian Ricketts, NMIA
Tel: + 61 2 9413 7730
Fax: + 61 2 9413 7202
E-mail: brian.ricketts@measurement.gov.au

Dr Ian A. Robinson, NPL
Tel: + 44 208 943 7139
Fax: + 44 208 943 6341
E-mail: ian.robinson@npl.co.uk

Mr Karl-Erik Rydler, SP
Tel: + 46 33 16 50 00
Fax: + 46 33 12 50 38
E-mail: karlerik.rydler@sp.se

Dr Efim Z. Shapiro, VNIIM
Tel: + 7 812 251 7444
Fax: + 7 812 251 7444
E-mail: ezshapiro@vniim.ru or
ezshapiro@peterlink.ru (private)

Dr Eddy So, NRC
Tel: + 1 613 990 5806
Fax: + 1 613 952 9366
E-mail: eddy.so@nrc.ca

Dr Yang Sup Song, KRISS
Tel: + 82 42 868 5015
Fax: + 82 42 868 5018
E-mail: yssong@kriss.re.kr

Dr Haruo Yoshida, NMIJ/AIST
Tel: + 81 298 61 5247
Fax: + 81 298 61 5126
E-mail: yoshida-h@aist.go.jp

Invited by the Chairman:

Dr Laurie Christian, MSL
Tel: + 64 4 569 0110
Fax: + 64 4 569 0194
E-mail: l.christian@irl.cri.nz

Dr Sze Wey Chua, SPRING Singapore
Tel: + 65 6773 9819
Fax: + 65 6773 9804
E-mail: weychua@spring.gov.sg

Mr Erik Dressler, CSIR-NML
Tel: + 27 12 841 4342
Fax: + 27 12 841 2131
E-mail: redressl@csir.co.za

Mr Yakup Gülmez, UME
Tel: + 90 262 679 5000
Fax: + 90 262 679 5001
E-mail: yakup.gulmez@ume.tubitak.gov.tr

Dr Beat Jeckelmann, METAS
Tel: + 41 31 323 3297
Fax: + 41 31 323 3210
E-mail: beat.jeckelmann@metas.ch

Ing. Frantisek Jelinek, CMI
Tel: + 420 2 5732 3308
Fax: + 420 2 5732 4982
E-mail: fjelinek@cmi.cz

Dr Hans D. Jensen, DFM
Tel: + 45 4525 5874
Fax: + 45 4593 1137
E-mail: hdj@dfm.dtu.dk

Dr Zuliang Lu, NIM
Tel: + 86 10 6421 1631-2401
Fax: + 86 10 6421 8629
E-mail: lulz@nim.ac.cn

Mr M.K. Mittal, NPLI
Tel: + 91 11 572 6959 (office), 587 2228
(residence)
Fax: + 91 11 572 6938 or 6952
E-mail: mkmittal@mail.nplindia.ernet.in

Mr Miguel Neira, CEM
Tel: + 34 91 807 4715
Fax: + 34 91 807 4807
E-mail: mneira@mfom.es

Dr Harold Sánchez, Laboratorio Metrológico
Tel: + 506 283 4622
Fax: + 506 234 8514
E-mail: hsanchez@ice.co.cr

Dr Harald Slinde, JV
Tel: + 47 64 84 84 84
Fax: + 47 64 84 84 85
E-mail: harald.slinde@justervesenet.no

Prof. Heikki Seppä, VTT Information Technology
Tel: + 358 9 456 6419
Fax: + 358 9 456 7029
E-mail: heikki.seppa@vtt.fi

CCEM Working Group on Electrical Methods to Monitor the Stability of the Kilogram

Chairman:

Dr Ian A. Robinson, NPL
Tel: + 44 208 943 7139
Fax: + 44 208 943 6341
E-mail: ian.robinson@npl.co.uk

Members:

BNM-LNE/LAMA
METAS
NIST
NMJJ/AIST
NPL
PTB
BIPM

Delegates:

Dr Peter Becker, PTB (Braunschweig) (peter.becker@ptb.de)
Dr Richard Davis BIPM (Paris) (richard.davis@bipm.org)
Dr Kenichi Fujii, NMJJ/AIST (Tsukuba) (fujii.kenichi@aist.go.jp)
Dr Gérard Genevès, BNM-LNE/LAMA (Fontenay aux Roses) (gerard.geneves@lne.fr)
Dr Michael Gläser, PTB (Braunschweig) (michael.glaeser@ptb.de)
Mr David B. Newell, NIST (Gaithersburg) (david.newell@nist.gov)
Dr Alain Picard BIPM (Paris) (apicard@bipm.org)
Dr Terry Quinn BIPM (Paris) (terry.quinn@bipm.org)
Dr Philippe Richard, METAS (Bern-Wabern) (philippe.richard@metas.ch)
Dr Ian A. Robinson, NPL (Teddington) (ian.robinson@npl.co.uk)
Dr Richard L. Steiner, NIST (Gaithersburg) (richard.steiner@nist.gov)
Dr Mitsuru Tanaka, NMJJ/AIST (Tsukuba) (nmijtanaka@m.aist.go.jp)
Dr Edwin R. Williams, NIST (Gaithersburg) (edwin.williams@nist.gov)

Parties involved

CCM Working Group on Mass Standards

Dr George Chapman, NRC (Ottawa) (george.chapman@nrc.ca)
Mr André Gosset, BNM-LNE (Paris) (andre.gosset@lne.fr)
Dr Zeina J. Jabbour, NIST (Gaithersburg) (zeina.jabbour@nist.gov)
Dr Claude Jacques, NRC (Ottawa) (claude.Jacques@nrc-cnrc.gc.ca)

Mr Michel Lecollinet, BNM-INM (Paris) (michel.lecollinet@cnam.fr)
Dr Woo Gab Lee, KRISS (Daejeon) (woogab@kriis.re.kr)

CCM Working Group on the Avogadro Constant

Prof. Dr Paul De Bièvre, (Kasterlee) (paul.de.bievre@skynet.be)
Dr Michael Kenny, CSIRO NML (Sydney) (michaelk@bigpond.net.au)
Dr Giovanni Mana, IMGC-CNR (Torino) (g.man@imgc.cnr.it)
Dr Richard J. Matyi, NIST (Gaithersburg) (richard.matyi@nist.gov)
Dr Barry N. Taylor, NIST (Gaithersburg) (barry.taylor@nist.gov)

BIPM :

Dr Fang Hao BIPM (Paris) (fang@bipm.org)
Dr Harold Parks BIPM (Paris) (hparks@bipm.org)
Dr Stephane Solve BIPM (Paris) (stephane.solve@bipm.org)
Dr Michael Stock BIPM (Paris) (mstock@bipm.org)
Dr Leonid Vitushkin BIPM (Paris) (lvitushkin@bipm.org)
Dr Thomas Witt, BIPM (Paris) (tjwitt@bipm.org)

Guests :

Dr Edmund T. Frantsuz, VNIIM (St Petersburg) (e.t.frantsuz@vniim.ru)
Dr Carmen Matilla, CEM (Madrid) (cmatilla@cem.es)
Dr Peter Mohr, NIST (Gaithersburg) (mohr@nist.gov)

**CCEM Working Group on the Measurements of the Quantized Hall Resistance
with Alternating Current**

Chairman:

Dr Jürgen Melcher, PTB
Tel: + 49 531 592 2116
Fax: + 49 531 592 2105
E-mail: juergen.melcher@ptb.de

Members:

BNM-LNE/LAMA	NRC
NMIA	PTB
IEN	VNIIM
METAS	VTT
NIST	BIPM
NPL	

**Delegates of member laboratories
at the last meeting (September 2002)**

Chairman: at the time Dr Eric Braun, PTB

Dr Shakil Awan, NPL
Tel: + 44 208 943 6890
Fax: + 44 208 943 7138
E-mail: shakil.awan@npl.co.uk

Dr Franco Cabiati, IEN
Tel: + 39 011 3919 435/429
Fax: + 39 011 346 384
E-mail: cabiati@me.ien.it

Dr Dave Inglis, NRC
Tel: + 1 613 991 5650
Fax: + 1 613 952 1394
E-mail: dave.inglis@nrc.ca

Dr Beat Jeckelmann, METAS
Tel: + 41 31 323 3297
Fax: + 41 31 323 3210
E-mail: beat.jeckelmann@metas.ch

Dr Michael Kelley, NIST
Tel: + 1 301 975 3722
Fax: + 1 301 975 2115
E-mail: mkelley@nist.gov

Dr Jürgen Melcher, PTB
Tel: + 49 531 592 2116
Fax: + 49 531 592 2105
E-mail: juergen.melcher@ptb.de

Dr James K. Olthoff, NIST
Tel: + 1 301 975 2431
Fax: + 1 301 926 3972
E-mail: james.olthoff@nist.gov

Dr Wilfrid Poirier, BNM-LNE/LAMA
Tel: + 33 1 40 95 60 63
Fax: + 33 1 40 95 55 59
E-mail: wilfrid.poirier@lne.fr

Dr Brian Ricketts, NMIA
Tel: + 61 2 9413 7730
Fax: + 61 2 9413 7202
E-mail: brian.ricketts@measurement.gov.au

Dr Yury P. Semenov, VNIIM
Tel: + 7 812 323 9621
Fax: + 7 812 113 0114
E-mail: t.n.korzhakova@vniim.ru

Consultative Committee for Photometry and Radiometry (CCPR)**Created in 1933**

*Present activities concern measurement standards for photometric and radiometric quantities,
development of absolute radiometry
and advice to the CIPM on matters concerned with radiometry and photometry*

President: **Dr Franz Hengstberger**

Manager for the Regional and International Metrology
CSIR - National Metrology Laboratory
P.O. Box 395
0001 Pretoria
South Africa
Tel: + 27 12 841 4352
Fax: + 27 12 841 2131
E-mail: fhengstb@csir.co.za

Executive Secretary: **Dr Michael Stock, BIPM**

Tel: + 33 1 45 07 70 24
Fax: +33 1 45 07 62 62
E-mail: mstock@bipm.org

Members:

CSIR - National Metrology Laboratory [CSIR-NML], Pretoria
Helsinki University of Technology [HUT], Espoo
Institut National de Métrologie [BNM-INM], Paris
Institute for Optico-Physical Measurements, Gosstandart of Russia [VNIIIFI], Moscow
Instituto de Física Aplicada [IFA-CSIC], Madrid
Istituto Elettrotecnico Nazionale "Galileo Ferraris" [IEN], Torino
Korea Research Institute of Standards and Science [KRISS], Daejeon
Measurement Standards Laboratory of New Zealand [MSL], Lower Hutt
National Institute of Metrology [NIM], Beijing
National Institute of Standards and Technology [NIST], Gaithersburg
National Measurement Institute of Australia [NMIA], Lindfield
National Metrology Institute of Japan, AIST [NMIJ/AIST], Tsukuba
National Office of Measures/Országos Mérésügyi Hivatal [OMH], Budapest
National Physical Laboratory [NPL], Teddington
National Research Council of Canada [NRC], Ottawa
Nederlands Meetinstituut/Van Swinden Laboratorium [NMi VSL], Delft
Physikalisch-Technische Bundesanstalt [PTB], Braunschweig
Slovak Institute of Metrology/Slovenský Metrologický Ústav [SMU], Bratislava
Swiss Federal Office of Metrology and Accreditation [METAS], Bern-Wabern
The Director of the International Bureau of Weights and Measures [BIPM], Sèvres

Observers:

Centro Nacional de Metroología [CENAM], Querétaro
National Metrology Institute of Turkey [UME], Gebze-Kocaeli
Standards, Productivity and Innovation Board [SPRING Singapore], Singapore

**Delegates and experts of member laboratories
at the last meeting (June 2003)**

President: Dr Franz Hengstberger

Members:

Mr György Andor, OMH

Tel: + 36 1 4585 984
Fax: + 36 1 4585 927
E-mail: g.andor@omh.hu

Dr Nigel Fox, NPL

Tel: + 44 208 943 6825
Fax: + 44 208 943 6935
E-mail: nigel.fox@npl.co.uk

Dr Mark Ballico, NMIA

Tel: + 61 2 9413 7767
Fax: + 61 2 9413 7202
E-mail: mark.ballico@measurement.gov.au

Prof. Erkki Ikonen, HUT

Tel: + 358 9 451 2283
Fax: + 358 9 451 2222
E-mail: erkki.ikonen@hut.fi

Dr Jean Bastie, BNM-INM

Tel: + 33 1 40 27 20 25
Fax: + 33 1 42 71 37 36
E-mail: bastie@cnam.fr

Dr In Won Lee, KRISS

Tel: + 82 42 868 5003
Fax: + 82 42 868 5444
E-mail: optin@kriss.re.kr

Dr Peter Blattner, METAS

Tel: + 41 31 32 33 340
Fax: + 41 31 32 33 210
E-mail: peter.blattner@metas.ch

Prof. Dr Jürgen Metzdorf, PTB

Tel: + 49 531 592 4100
Fax: + 49 531 592 4105
E-mail: juergen.metzdorf@ptb.de

Dr Louis-Philippe Boivin, NRC

Tel: + 1 613 993 9354
Fax: + 1 613 952 1394
E-mail: phil.boivin@nrc.ca

Dr Peter Nemecek, SMU

Tel: + 421 2 6029 4278
Fax: + 421 2 6542 9592
E-mail: nemecek@smu.gov.sk

Dr Giorgio Brida, IEN

Tel: + 39 011 3919 222
Fax: + 39 011 346 384
E-mail: brida@ien.it

Mr David Nettleton, NPL

Tel: + 44 208 943 6804
Fax: + 44 208 943 6755
E-mail: david.nettleton@npl.co.uk

Dr Joaquin Campos Acosta, IFA-CSIC

Tel: + 34 91 561 8806
Fax: + 34 91 411 7651
E-mail: jcamps@ifacete.csic.es

Dr Yoshihiro Ohno, NIST

Tel: + 1 301 975 2321
E-mail: ohno@nist.gov

Dr John Clare, MSL

Tel: + 64 4 569 0290
Fax: + 64 4 569 0003
E-mail: j.clare@irl.cri.nz

Dr Kent Rochford, NIST

Tel: + 1 303 497 5285
Fax: + 1 303 497 7671
E-mail: rochford@boulder.nist.gov

Dr Jimmy Dubard, BNM-LNE

Tel: + 33 1 30 69 12 37
Fax: + 33 1 30 69 10 82
E-mail: jimmy.dubard@lne.fr

Dr Terubumi Saito, NMII/AIST

Tel: + 81 29 861 5654
Fax: + 81 29 861 4860
E-mail: t.saito@aist.go.jp

Prof. Victor I. Sapritsky, VNIIIFI

Tel: + 7 095 437 2992
Fax: + 7 095 437 3100

E-mail: vsapritsky@aol.com

Prof. Dr Werner Schmutz, METAS
Tel: + 41 81 417 51 45
Fax: + 41 81 417 51 00
E-mail: w.schmutz@pmodwrc.ch

Dr Gerhard Ulm, PTB
Tel: + 49 30 3481 312
Fax: + 49 30 3481 550
E-mail: gerhard.ulm@ptb.de

Observers:

Mr Carlos Matamoros, CENAM
Tel: + 52 442 211 0552
Fax: + 52 442 211 0553
E-mail: cmatamor@cenam.mx

Dr Farhad Samedov, UME
Tel: + 90 262 679 5000
Fax: + 90 262 679 5001
E-mail: farhad.samedov@ume.tubitak.gov.tr

Dr Eric van der Ham, NMi VSL
Tel: + 31 15 269 1586
Fax: + 31 15 261 2971
E-mail: evdham@nmi.nl

Mrs Natasha van Tonder, CSIR-NML
Tel: + 27 12 841 3618
Fax: + 27 12 841 2131
E-mail: nvtonder@csir.co.za

Dr Gan Xu, SPRING Singapore
Tel: + 65 6773 9789
Fax: + 65 6773 9804
E-mail: xugan@spring.gov.sg

Working Group on UV Radiometry

Chairman:

Prof. Erkki Ikonen, HUT
Tel: + 358 9 451 2283
Fax: + 358 9 451 2222
E-mail: erkki.ikonen@hut.fi

Secretary:

Dr Hans Rabus, PTB
Tel: + 49 30 3481 406
Fax: + 49 30 3481 490
E-mail: hans.rabus@ptb.de

Members

NIST
NMIIJ/AIST
NPL
PTB
VNIOFI

Working Group on Key Comparisons

Chairman:

Dr Al Parr, NIST

Tel: + 1 301 975 2316

Fax: + 1 301 869 5700

E-mail: albert.parr@nist.gov

Secretary:

Dr Michael Stock, BIPM

Tel: + 33 1 45 07 70 24

Fax: +33 1 45 07 62 62

E-mail: mstock@bipm.org

Members:

KRISS

NIM

NIST

NMIJ/AIST

NMIA

NPL

PTB

Working Group on Calibration and Measurement Capabilities

Chairman:

Dr Franz Hengstberger, CSIR-NML

Tel: + 27 12 841 4352

Fax: + 27 12 841 2131

E-mail: fhengstb@csir.co.za

Members:

Chairs of the Technical Committees of Regional Metrology Organizations (RMOs) dealing with Photometry and Radiometry.

Consultative Committee for Thermometry (CCT)

Created in 1937

Present activities concern matters related to the establishment and realization of the International Temperature Scale of 1990 (ITS-90) and thermodynamic temperature, extension and improvement of the ITS-90, secondary reference points, international reference tables for thermocouples and resistance thermometers.

President: **Prof. Hüseyin Ugur**
 Director
 National Metrology Institute of Turkey
 P.O. Box 21
 41470 Gebze-Kocaeli
 Turkey
 Tel: + 90 262 679 5000
 Fax: +90 262 646 9062
 E-mail: huseyin.ugur@ume.tubitak.gov.tr

Executive Secretary: **Dr Michael Stock, BIPM**
 Tel: + 33 1 45 07 70 24
 Fax: +33 1 45 07 62 62
 E-mail: mstock@bipm.org

Members:

CSIR - National Metrology Laboratory [CSIR-NML], Pretoria
 D.I. Mendeleev Institute for Metrology, Gosstandart of Russia [VNIIM], St Petersburg
 Institut National de Métrologie [BNM-INM], Paris
 Institute for Physical-Technical and Radiotechnical Measurements, Gosstandart of Russia [VNIIFTRI], Moscow
 Istituto di Metrologia "Gustavo Colonna" del Consiglio Nazionale delle Ricerche [IMGC-CNR], Torino
 Korea Research Institute of Standards and Science [KRISS], Daejeon
 Measurement Standards Laboratory of New Zealand [MSL], Lower Hutt
 National Institute of Metrology [NIM], Beijing
 National Institute of Standards and Technology [NIST], Gaithersburg
 National Measurement Institute of Australia [NMIA], Lindfield
 National Metrology Institute of Japan, AIST [NMIJ/AIST], Tsukuba
 National Metrology Institute of Turkey [UME], Gebze-Kocaeli
 National Physical Laboratory [NPL], Teddington
 National Research Council of Canada [NRC], Ottawa
 Nederlands Meetinstituut/Van Swinden Laboratorium [NMi VSL], Delft
 Physikalisch-Technische Bundesanstalt [PTB], Braunschweig
 Slovak Institute of Metrology/Slovenský Metrologický Ústav [SMU], Bratislava
 Standards, Productivity and Innovation Board [SPRING Singapore], Singapore
 The Director of the International Bureau of Weights and Measures [BIPM], Sèvres

Observers:

Centro Español de Metroología [CEM], Madrid
 Centro Nacional de Metroología [CENAM], Querétaro
 Instituto Nacional de Tecnología Industrial [INTI], Buenos Aires
 Instituto Português da Qualidade [IPQ], Caparica

**Delegates and experts of member laboratories
at the last meeting (May 2003)**

President: Prof. Hüseyin Ugur

Members:

Mr Masaru Arai, NMIJ/AIST

Tel: + 81 29 861 4295

Fax: + 81 29 861 4216

E-mail: masaru-arai@aist.go.jp

Prof. Dmitri Astrov, VNIIFTRI

Tel: + 7 095 535 0864 or 9348

Fax: + 7 095 535 9348

E-mail: cryom@vniiftri.ru

Dr Mark Ballico, NMIA

Tel: + 61 2 9413 7767

Fax: + 61 2 9413 7202

E-mail: mark.ballico@measurement.gov.au

Dr Mauro Battuello, IMGC-CNR

Tel: + 39 011 3977 338

Fax: + 39 011 3977 347

E-mail: m.battuello@imgc.cnr.it

Dr Stephanie Bell, NPL

Tel: + 44 208 943 6402

Fax: + 44 208 943 6306

E-mail: stephanie.bell@npl.co.uk

Mr Georges Bonnier, BNM-INM

Tel: +33 1 40 27 21 58

Fax: +33 1 40 27 26 32

E-mail: bonnier@cnam.fr

Mr Martin J. de Groot, NMi VSL

Tel: + 31 15 269 1661

Fax: + 31 15 261 2971

E-mail: mdegroot@nmi.nl

Dr Stanislav Duris, SMU

Tel: + 421 2 6029 4277

Fax: + 421 2 6542 9592

E-mail: duris@smu.gov.sk

Dr Bernd Fellmuth, PTB

Tel: + 49 30 3481 224

Fax: + 49 30 3481 490

E-mail: bernd.fellmuth@ptb.de

Dr Joachim Fischer, PTB

Tel: + 49 30 34 81 473

Fax: + 49 30 34 81 508

E-mail: joachim.fischer@ptb.de

Dr Yves Hermier, BNM-INM

Tel: + 33 1 40 27 21 87

Fax: + 33 1 40 27 26 32

E-mail: hermier@cnam.fr

Mr Ken D. Hill, NRC

Tel: + 1 613 998 6077

Fax: + 1 613 952 1394

E-mail: ken.hill@nrc.ca

Dr Carol Johnson, NIST

Tel: + 1 301 975 2322

Fax: + 1 301 869 5700

E-mail: cjohnson@nist.gov

Dr Kee Hoon Kang, KRISS

Tel: + 82 42 868 5190

Fax: + 82 42 868 5022

E-mail: khkang@kriss.re.kr

Mr Hans Liedberg, CSIR-NML

Tel: + 27 12 841 2753

Fax: + 27 12 841 2131/4458

E-mail: hliedber@csir.co.za

Dr Graham Machin, NPL

Tel: + 44 208 943 6742

Fax: + 44 208 943 6755

E-mail: graham.machin@npl.co.uk

Dr Piero Marcarino, IMGC-CNR

Tel: + 39 011 3977 339

Fax: + 39 011 3977 347

E-mail: p.marcarino@imgc.cnr.it

Dr Mikhail Matveyev, VNIIM

Tel: + 7 812 323 9637

Fax: + 7 812 113 01 14

E-mail: m.s.matveyev@vniim.ru

Prof. Anatoly Pokhodun, VNIIM
 Tel: + 7 812 315 52 07
 Fax: + 7 812 113 01 14
 E-mail: a.i.pokhodun@vniim.ru

Mr John Redgrove, NPL
 Tel: + 44 208 943 6513
 Fax: + 44 208 943 6662
 E-mail: john.redgrove@npl.co.uk

Dr Dean C. Ripple, NIST
 Tel: + 1 301 975 4801
 Fax: + 1 301 548 0206
 E-mail: dean.ripple@nist.gov

Dr Richard Rusby, NPL
 Tel: + 44 208 943 7036
 Fax: + 44 208 943 6364
 E-mail: richard.rusby@npl.co.uk

Dr Alan Steele, NRC
 Tel: + 1 613 993 9384
 Fax: + 1 613 952 1394
 E-mail: alan.steele@nrc.ca

Mr Osamu Tamura, NMIJ/AIST
 Tel: + 81 29 861 4297
 Fax: + 81 29 861 4038
 E-mail: o.tamura@aist.go.jp

Dr Erich Tegeler, PTB
 Tel: + 49 30 3481 525
 Fax: + 49 30 3481 504
 E-mail: erich.tegeler@ptb.de

Dr Sevilay Ugur, UME
 Tel: + 90 262 679 5000 Ext. 3453
 Fax: + 90 262 679 5001
 E-mail: sevilay.ugur@ume.tubitak.gov.tr

Mr Rod White, MSL
 Tel: + 64 4 5690 491
 Fax: + 64 4 5690 003
 E-mail: r.white@irl.cri.nz

Mr Yoshiro Yamada, NMIJ/AIST
 Tel: + 81 29 861 4003
 Fax: + 81 29 861 4010
 E-mail: y.yamada@aist.go.jp

Observers:

Mr Vicente Chimenti Ruíz, CEM
 Tel: + 34 91 807 4714
 Fax: + 34 91 807 4807
 E-mail: vchimenti@mfom.es

Dr Edgar Méndez-Lango, CENAM
 Tel: + 52 442 211 0545
 Fax: + 52 442 211 0548
 E-mail: emendez@cenam.mx

Dr Maria Eduarda Filipe, IPQ
 Tel: + 351 21 294 8184
 Fax: + 351 21 294 8188
 E-mail: efilipe@mail.ipq.pt

Invited by the President:

Dr Peter Bloembergen
 Tel: + 31 71 514 2409
 Fax: + 31 71 514 8329
 E-mail: pbloembergen@phys.leidenuniv.nl

Dr Marten Durieux, KOL
 Tel: + 31 71 527 5619 or 527 5480
 Fax: + 31 71 527 5404
 E-mail: durieux@phys.leidenuniv.nl

CCT Working Group 1*Defining fixed points and interpolating instruments***Chairman:****Dr Dean C. Ripple, NIST**

Tel: + 1 301 975 4801
Fax: + 1 301 548 0206
E-mail: dean.ripple@nist.gov

Members:**Dr Martin de Groot, NMi VSL**

Tel: + 31 15 269 1660
Fax: + 31 15 261 2971
E-mail: mdegroot@nmi.nl

Dr Bernd Fellmuth, PTB

Tel: + 49 30 3481 224
Fax: + 49 30 3481 490
E-mail: bernd.fellmuth@ptb.de

Dr Maria Eduarda Filipe, IPQ

Tel: + 351 21 294 8184
Fax: + 351 21 294 8188
E-mail: efilipe@mail.ipq.pt

Dr Yves Hermier, BNM-INM

Tel: + 33 1 40 27 21 87
Fax: + 33 1 42 71 37 36
E-mail: hermier@cnam.fr

Mr Ken D. Hill, NRC

Tel: + 613 998 6077
Fax: + 613 952 1394
E-mail: ken.hill@nrc.ca

Dr Kee Hoon Kang, KRISS

Tel: + 82 42 868 5190
Fax: + 82 42 868 5022
E-mail: khkang@kriss.re.kr

Dr Piero Marcarino, IMGC-CNR

Tel: + 39 0 11 3977 339
Fax: + 39 0 11 3977 347
E-mail: marcarino@imgc.cnr.it

Dr Anatoly Pokhodun, VNIIM

Tel: + 7 812 315 52 07
Fax: + 7 812 113 01 14
E-mail: a.i.pokhodun@vniim.ru

Assisted by:**Dr Peter Bloembergen**

Tel: + 31 71 514 2409
Fax: + 31 71 514 8329
E-mail: pbloembergen@phys.leidenuniv.nl

Dr Mikhail Matveyev, VNIIM

Tel: + 7 812 259 1064
Fax: + 7 812 113 0114
E-mail: m.s.matveyev@vniim.ru

CCT Working Group 2

Secondary fixed points and techniques of approximation to the ITS-90

Chairman:**Mr Ken D. Hill, NRC**

Tel: + 1 613 998 6077

Fax: + 1 613 952 1394

E-mail: ken.hill@nrc.ca

Members:**Dr Yuning Duan, NIM**

Tel: + 86 10 6421 8637

Fax: + 86 10 6429 1990/6421 8703

E-mail: duanyn@nim.ac.cn

Dr Frank Edler, PTB, Berlin

Tel: + 49 30 3481 538

Fax: + 49 30 3941 490

E-mail: frank.edler@ptb.de

Mr Murat Kalemci, UME

Tel: + 90 262 679 5000 Ext. 3451

Fax: + 90 262 679 5001

E-mail: murat.kalemci@ume.tubitak.gov.tr

M. Hans Liedberg, CSIR-NML

Tel: + 27 12 841 2753

Fax: + 27 12 841 2131/4458

E-mail: hliedber@csir.co.za

Dr Piero Marcarino, IMGC-CNR

Tel: + 39 011 3977 339

Fax: + 39 011 3977 347

E-mail: p.marcarino@imgc.cnr.it

Mr Rod White, MSL

Tel: +64 4 5690 491

Fax: +64 4 5690 003

E-mail: r.white@irl.cri.nz

Mr Yoshiro Yamada, NMJ/AIST

Tel: + 81 298 61 4031

Fax: + 81 298 61 4010

E-mail: y.yamada@aist.go.jp

Dr Yong-Gyoo Kim, KRISS

Tel: + 82 42 868 5634

Fax: + 82 42 868 5022

E-mail: dragon@kribs.re.kr

Assisted by:

Dr Peter Bloembergen

Tel: + 31 71 514 2409

Fax: + 31 71 514 8329

E-mail: pbloembergen@phys.leidenuniv.nl

Dr Bernd Fellmuth, PTB

Tel: + 49 30 3481 224

Fax: + 49 30 3481 490

E-mail: bernd.fellmuth@ptb.de

Masahiko Gotoh , Tamagawa Univ. Japan

Tel: + 81 42 739 8405

Fax: + 81 42 739 8858

E-mail: mgotoh@eng.tamagawa.ac.jp

CCT Working Group 3*Uncertainties***Chairman:****Mr Rod White, MSL**

Tel: +64 4 5690 491

Fax: +64 4 5690 003

E-mail: r.white@irl.cri.nz

Members:**Dr Masaru Arai, NMJJ/AIST**

Tel: + 81 298 61 4295

Fax: + 81 298 61 4216

E-mail: masaru-arai@aist.go.jp

Dr Mark Ballico, NMIA

Tel: + 61 2 9413 7767

Fax: + 61 2 9413 7202

E-mail: mark.ballico@measurement.gov.au

Mr Vicente Chimenti Ruiz, CEM

Tel: + 34 91 807 4714

Fax: + 34 91 807 4807

E-mail: vchimenti@mfom.es

Mrs Aliye Kartal Dogan, UME

Tel: + 90 262 679 5000 Ext. 3452

Fax: + 90 262 679 5001

E-mail: aliye.kartal@ume.tubitak.gov.tr

Dr Stanislav Duris, SMU

Tel: + 421 2 6029 4277

Fax: + 421 2 6542 9592

E-mail: duris@smu.gov.sk

Mrs Maria Eduarda Filipe, IPQ

Tel: + 351 21 294 8184

Fax: + 351 21 284 8188

E-mail: efilipe@mail.ipq.pt

Mrs Alina Ivanova, VNIIM

Tel: + 7 812 113 0114

Fax: + 7 812 259 1087

E-mail: a.g.ivanova@vniim.ru

Dr Edgar Méndez-Lango, CENAM

Tel: + 52 442 211 0545

Fax: + 52 442 211 0548

E-mail: emendez@cenam.mx

Dr Christopher Meyer, NIST

Tel: + 1 301 975 4825

E-mail: christopher.meyer@nist.gov

Dr Franco Pavese, IMGC-CNR

Tel: + 39 011 3977 341

Fax: + 39 011 3977 347

E-mail: f.pavese@imgc.cnr.it

Dr Andrea Peruzzi, NMi VSL

Tel: + 31 15 269 1519

Fax: + 31 15 261 2971

E-mail: aperuzzi@nmi.nl

Mrs Eliane Renaot, BNM-INM

Tel.: +33 1 40 27 20 21

Fax: +33 1 42 71 37 36

E-mail: renaot@cnam.fr

Dr Steffen Rudtsch, PTB

Tel.: +49 30 3481 650

Fax: +49 30 3481 504

E-mail: steffen.rudtsch@ptb.de

Dr Michael Stock, BIPM

Tel: + 33 1 45 07 70 24

Fax: +33 1 45 07 62 62

E-mail: mstock@bipm.org

CCT Working Group 4

Thermodynamic temperature determinations and extension of the ITS-90 to lower temperatures

Chairman:**Dr R.L. Rusby, NPL**

Tel: + 44 208 943 7036

Fax: + 44 208 943 6755

E-mail: rlr@newton.npl.co.uk

Members:**Dr Joachim Fischer, PTB Berlin**

Tel: + 49 30 34 81 369

Fax: + 49 30 34 81 490

E-mail: joachim.fischer@ptb.de

Dr Michael R. Moldover, NIST

Tel: + 1 301 975 2459

E-mail: michael.moldover@nist.gov

Dr Lex Reesink, NRC

Tel: + 1 613 993 9384

Fax: + 1 613 952 1394

E-mail: lex.reesink@nrc.ca

Mr Peter Steur, IMGC

Tel: + +39 011 3977 342

Fax: +39 011 3977 347

E-mail:p.steur@imgc.cnr.it

Mr Rod White, MSL

Tel: +64 4 5690 491

Fax: + 64 4 5690 003

E-mail: r.white@irl.cri.nz

Assisted by:

Dr Marten Durieux, KOL

Tel: + 31 71 527 5619 or 527 5480

Fax: + 31 71 527 5404

E-mail: durieux@phys.leidenuniv.nl

Dr Ralph P. Hudson, Ultimet International

Tel: + 1 301 657 9704

Fax: + 1 301 975 5378 (at NIST)

E-mail: rhudson@worldnet.att.net

CCT Working Group 5

Radiation thermometry

Chairman:**Dr Joachim Fischer, PTB Berlin**

Tel: + 49 30 34 81 369

Fax: + 49 30 34 81 490

E-mail: joachim.fischer@ptb.de

Members:**Dr Mark Ballico, NMIA**

Tel: + 61 2 9413 7767

Fax: + 61 2 9413 7202

E-mail: mark.ballico@measurement.gov.au

Dr Howard W. Yoon, NIST

Tel: + 1 301 975 2482

E-mail: howard.yoon@nist.gov

Dr Mauro Battuello, IMGC-CNR

Tel: + 39 011 3977 338

Fax: + 39 011 3977 347

E-mail: m.battuello@imgc.cnr.it

Dr Graham Machin, NPL

Tel: + 44 208 943 6742

Fax: + 44 208 614 0491

E-mail: graham.machin@npl.co.uk

Dr Mikhail Matveyev, VNIIM
Tel: + 7 812 259 1064
Fax: + 7 812 113 0114
E-mail: m.s.matveyev@vniim.ru

Dr Seung Nam Park, KRISS
Tel: +82 42 868 5222
Fax: +82 42 868 5188
E-mail: snpark@kriss.re.kr

Mr Mohamed Sadli, BNM-INM
Tel: + 33 1 40 27 21 55
Fax: 01 42 71 37 36
E-mail: sadli@cnam.fr

Dr Fumihiro Sakuma, NMIJ/AIST
Tel: + 81 298 61 4031
Fax: + 81 298 61 4010
E-mail: fsakuma@aist.go.jp

Dr Peter Saunders, MSL
Tel: +64 4 569 0000
Fax: + 64 4 569 0003
E-mail: p.saunders@irl.cri.nz

Dr Sevilay Ugur, UME
Tel: + 90 262 679 5000 Ext. 3453
Fax: + 90 262 679 5001
E-mail: sevilay.ugur@ume.tubitak.gov.tr

Dr Eric van der Ham, NMi VSL
Tel: + 31 15 2691 586
Fax: + 31 15 2612 971
E-mail: evdham@nmi.nl

Dr Li Wang, SPRING Singapore
Tel: + 65 772 9776
Fax: + 65 778 3798
E-mail: wangli@spring.gov.sg

Dr Yuan Zundong, NIM
Tel: + 86 10 6421 8637
Fax: + 86 10 6429 1990
E-mail: yuanzd@nim.ac.cn

Assisted by:

Dr Peter Bloembergen
Tel: + 31 71 514 2409
Fax: + 31 71 514 8329
E-mail: pbloembergen@phys.leidenuniv.nl

Mr Yoshiro Yamada, NMIJ/AIST
Tel: + 81 29 861 4003
Fax: + 81 29 861 4010
E-mail: y.yamada@aist.go.jp

Liaison with CCPR:

Dr Nigel Fox, NPL
Tel: + 44 208 943 6825
Fax: + 44 208 943 6935
E-mail: nigel.fox@npl.co.uk

CCT Working Group 6*Humidity measurements***Chairman:****Dr Peter H. Huang, NIST**

Tel: + 1 301 975 2621

Fax: + 1 301 548 0206

E-mail: phuang@nist.gov

Members:**Dr Stephanie Bell, NPL**

Tel: + 44 208 943 6402

Fax: + 44 208 943 6306

E-mail: sab@newton.npl.co.uk

Mr Bernard Cretinon, BNM

Tel: +33 1 56 56 88 88

Fax: +33 1 56 56 88 70

Dr Vito Fornicola, IMGC-CNR

Tel: +39 011 3977 337

Fax: + 39 011 3977 347

E-mail: v.fornicola@imgc.cnr.it

Mr Y. Hong, NRCCRM**Dr Hiroshi Kitano, NMIJ/AIST**

Tel: + 81 298 61 4222

Fax: + 81 298 61 4135

E-mail: h.kitano@aist.go.jp

Mr Jeremy Lovell-Smith, MSL

Tel: +64 4 569 0000

Fax: +64 4 569 0003

E-Mail: j.lovell-smith@irl.cri.nz

Dr George Mamontov, VNIIM

Tel: + 7 812 176 9483

Fax: + 7 812 176 9483

Dr Enrique Martínez-López, CENAM

Tel: + 52 442 211 0500 Ext. 3420

Fax: + 52 442 211 0548

E-mail: emartine@cenam.mx

Mr Hyun-Soo Nham, KRISS

Tel: + 82 42 868 5195

Fax: + 82 42 868 5290

E-mail: nhs@kriess.re.kr

Mr Jan Nielsen, NMi VSL

Tel: + 31 15 269 1622

Fax: + 31 15 261 2971

E-mail: jnielsen@nmi.nl

Dr Günter Scholz, PTB

Tel: + 49 531 592 3230

Fax: + 49 531 592 3369

E-mail: guenter.scholz@ptb.de

Dr Sevilay Ugur, UME

Tel: + 90 262 679 5000 Ext. 3453

Fax: + 90 262 679 5001

E-mail: sevilay.ugur@ume.tubitak.gov.tr

Dr Li Wang, SPRING Singapore

Tel: + 65 7729 776

Fax: + 65 3410 846

E-mail: wangli@spring.gov.sg

CCT Working Group 7*Key comparisons***Chairman:****Dr Alan Steele, NRC**

Tel: + 1 613 993 9384

Fax: + 1 613 952 1394

E-mail: alan.steele@nrc.ca

Members:**Dr Mark Ballico, NMIA**

Tel: + 61 2 9413 7767

Fax: + 61 2 9413 7202

E-mail: mark.ballico@measurement.gov.au

Dr Stephanie Bell, NPL

Tel: + 44 208 943 6402

Fax: + 44 208 943 6306

E-mail: sab@newton.npl.co.uk

Mr Georges Bonnier, BNM-INM

Tel: + 33 1 40 27 21 58

Fax: + 33 1 40 27 26 32

E-mail: bonnier@cnam.fr

Dr Martin J. de Groot, NMi VSL

Tel: + 31 15 269 1661

Fax: + 31 15 261 2971

E-mail: mdegroot@nmi.nl

Dr Kee Hoon Kang, KRISS

Tel: + 82 42 868 5190

Fax: + 82 42 868 5022

E-mail: khkang@kriss.re.kr

Dr Franco Pavese, IMGC-CNR

Tel: + 39 011 3977 341

Fax: + 39 011 3977 347

E-mail: f.pavese@imgc.cnr.it

Dr Richard Rusby, NPL

Tel: + 44 208 943 7036

Fax: + 44 208 943 6755

E-mail: richard.rusby@npl.co.uk

Dr Michael Stock, BIPM

Tel: + 33 1 45 07 70 24

Fax: +33 1 45 07 62 62

E-mail: mstock@bipm.org

Mr Gregory F. Strouse, NIST

Tel: + 1 301 975-4803

Fax: + 1 301 548 0206

E-mail: gstrouse@nist.gov

Dr Erich Tegeler, PTB

Tel: + 49 30 3481 525

Fax: + 49 30 3481 504

E-mail: erich.tegeler@ptb.de

CCT Working Group 8*Calibration and measurement capabilities***Chairman:****Mr Gregory F. Strouse, NIST**

Tel: + 1 301 975 4803
 Fax: + 1 301 548 0206
 E-mail: gstrouse@nist.gov

Members:**Dr Mark Ballico, NMIA**

Tel: + 61 2 9413 7767
 Fax: + 61 2 9413 7202
 E-mail: mark.ballico@measurement.gov.au

Mr Hans Liedberg, CSIR-NML

Tel: + 27 12 841 2753
 Fax: + 27 12 841 2131/4458
 E-mail: hliedber@csir.co.za

Dr Jovan Bojkovski

Tel: + 386 1 4768 798
 Fax: + 386 1 4264 633
 E-mail: jovan.bojkovski@fe.uni-lj.si

Prof. Anatoly Pokhodun, VNIIM

Tel: + 7 812 315 52 07
 Fax: + 7 812 113 01 14
 E-mail: a.i.pokhodun@vniim.ru

CCT Working Group 9*Thermophysical properties***Chairman:****Mr John Redgrove, NPL**

Tel: + 44 208 943 6513
 Fax: + 44 208 943 6458
 E-mail: john.redgrove@npl.co.uk

Members:**Dr Giancarlo Bussolino, IMGC**

Tel: + 39 011 3977 342
 Fax: +39 011 3977 347
 E-mail: g.bussolino@imgc.cnr.it

Dr Jean-Rémy Filtz, BNM-LNE

Tel: + 33 1 3069 1215
 Fax: + 33 1 3069 1234
 E-mail: jean-remy.filtz@lne.fr

Prof. Carlos Nieto de Castro, IPQ

Tel: + 351 212 948 105
 Fax: + 351 212 948 110
 E-mail: ncastro@mail.ipq.pt

Dr Leonard Hanssen, NIST

Tel: + 1 301 975 2344
 E-mail: leonard.hanssen@nist.gov

Dr Juntaro Ishii, NMIJ

Tel: + 81 298 61 4031
 Fax: + 81 298 61 4010
 E-mail: j-ishii@aist.go.jp

Dr Sang Hyun Lee, KRISS
Tel: + 82 42 868 5199
Fax: + 82 42 868 5022
E-mail: leesh@kriss.re.kr

Mrs Ping Qiu, NIM
Tel: + 86 10 6421 8637
Fax: + 86 10 6429 1990
E-mail: qiup@nim.ac.cn

Dr Stefan Sarge, PTB
Tel: + 49 531 592 3140
E-mail: stefan.sarge@ptb.de

VNIIM (nominee not yet known)

Consultative Committee for Length (CCL)

Created in 1952

Present activities concern matters related to the definition and realization of the metre, practical length and angle measurement and advice to the CIPM in the field of length metrology.

President: **Dr Myung Sai Chung**

President
University of Science and Technology (UST)
52 Eoeun-dong
Yuseong-gu
305-333 Daejeon
Korea, Republic of
Tel: + 82 42 864 5550
Fax: + 82 42 865 3974
E-mail: mschung@kriss.re.kr or mschung@ust.ac.kr

Executive Secretary: **Mr Raymond Felder**, BIPM

Tel: + 33 1 45 07 70 52
Fax: + 33 1 45 34 20 21
E-mail: rfelder@bipm.org

Members:

Centre for Metrology and Accreditation/Mittateknikaan Keskus [MIKES], Helsinki
Centro Nacional de Metrología [CENAM], Querétaro
Czech Metrology Institute [CMI], Praha
D.I. Mendeleyev Institute for Metrology, Gosstandart of Russia [VNIIM], St Petersburg
Institut National de Métrologie [BNM-INM], Paris
Istituto di Metrologia «Gustavo Colonnetti» del Consiglio Nazionale delle Ricerche[IMGC-CNR], Torino
Korea Research Institute of Standards and Science [KRISS], Daejeon
National Institute of Metrology [NIM], Beijing
National Institute of Standards and Technology [NIST], Gaithersburg/Joint Institute for Laboratory Astrophysics [JILA], Boulder
National Measurement Institute of Australia [NMIA], Lindfield
National Metrology Institute of Japan, AIST [NMIJ/AIST], Tsukuba
National Metrology Institute of Turkey [UME], Gebze-Kocaeli
National Physical Laboratory [NPL], Teddington
National Research Council of Canada [NRC], Ottawa
Nederlands Meetinstituut/Van Swinden Laboratorium [NMi VSL], Delft
Physikalisch-Technische Bundesanstalt [PTB], Braunschweig
Slovak Institute of Metrology/Slovenský Metrologický Ústav [SMU], Bratislava
Swiss Federal Office of Metrology and Accreditation [METAS], Bern-Wabern
The Director of the International Bureau of Weights and Measures [BIPM], Sèvres

Observers:

Centro Español de Metrología [CEM], Madrid
CSIR - National Metrology Laboratory [CSIR-NML], Pretoria
Standards, Productivity and Innovation Board [SPRING Singapore], Singapore

**Delegates and experts of member laboratories
at the last meeting (September 2003)**

President: Dr Chung Myung Sai

Members:

Dr Petr Balling, CMI

Tel: + 420 257 288 326
Fax: + 420 257 328 077
E-mail: pballing@cmi.cz

Dr Jürgen Helmcke, PTB

Tel: + 49 531 592 4300
Fax: + 49 531 592 4305
E-mail: juergen.helmcke@ptb.de

Dr Rob H. Bergmans, NMi VSL

Tel: + 31 15 269 1641
Fax: + 31 15 261 2971
E-mail: rbergmans@nmi.nl

Dr Leo W. Hollberg, NIST

Tel: + 1 303 497 5770
Fax: + 1 303 497 7845
E-mail: hollberg@boulder.nist.gov

Dr Fabrizio Bertinetto, IMGC-CNR

Tel: + 39 011 3977 454/455
Fax: + 39 011 3977 459
E-mail: f.bertinetto@imgc.cnr.it

Dr Patrick Juncar, BNM-INM

Tel: + 33 1 40 27 27 05
Fax: + 33 1 42 71 37 36
E-mail: juncar@cnam.fr

Dr Nick Brown, NMIA

Tel: + 61 2 9413 7157
Fax: + 61 2 9413 7202
E-mail: nick.brown@measurement.gov.au

Dr Alexander N. Korolev, VNIIM

Tel: + 7 812 251 8638
Fax: + 7 812 113 0114
E-mail: a.korolev@vniim.ru or al_korolev@mail.ru

Dr Cheon Il Eom, KRISS

Tel: + 82 42 868 5106
Fax: + 82 42 868 5608
E-mail: cieom@kriss.re.kr

Dr Antti Lassila, MIKES

Tel: + 358 9 6167 521
Fax: +358 9 6167 467
E-mail: antti.lassila@mikes.fi

Dr Roman Fíra, SMU

Tel: + 421 2 602 94 232
Fax: + 421 2 654 29 592
E-mail: fira@smu.gov.sk

Dr Andrew Lewis, NPL

Tel: + 44 208 943 6124
Fax: + 44 208 614 0533
E-mail: andrew.lewis@npl.co.uk

Prof. Sitian Gao, NIM

Tel: + 86 10 8425 6784
Fax: + 86 10 8425 1574
E-mail: gaost@nim.ac.cn

Dr Alan Madej, NRC

Tel: + 1 613 993 9385
Fax: + 1 613 952 1394
E-mail: alan.madej@nrc.ca

Dr Patrick Gill, NPL

Tel: + 44 208 943 6986
Fax: + 44 208 943 7153
E-mail: patrick.gill@npl.co.uk

Dr Hirokazu Matsumoto, NMIJ/AIST

Tel: + 81 29 861 4034
Fax: + 81 29 861 4006
E-mail: hi.matsumoto@aist.go.jp

Dr Mikhail Gubin, VNIIM

E-mail: mgubin@okb.lpi.troitsk.ru or
mgubin@x4lebedev.ru

Dr Atsushi Onae, NMIJ/AIST

Tel: + 81 29 861 4274
Fax: + 81 29 861 4045
E-mail: a-onae@aist.go.jp

Dr Jim Pekelsky, NRC
Tel: + 1 613 993 7578
Fax: + 1 613 952 1394
E-mail: jim.pekelsky@nrc.ca

Dr Daniele Rovera, BNM-SYRTE
Tel: + 33 1 40 51 22 12
Fax: + 33 1 43 25 55 42
E-mail: daniele.rovera@obspm.fr

Dr Attilio Sacconi, IMGC-CNR
Tel: + 39 011 3977 466/306
Fax: + 39 011 346 761
E-mail: a.sacconi@imgc.cnr.it

Dr Harald Schnatz, PTB
Tel: + 49 531 592 4311
Fax: + 49 531 592 4305
E-mail: harald.schnatz@ptb.de

Dr Jack Stone, NIST
Tel: + 1 301 975 5638
Fax: + 1 301 869 0822
E-mail: jack.stone@nist.gov

Dr Rudolf Thalmann, METAS
Tel: + 41 31 32 33 385
Fax: + 41 31 32 33 210
E-mail: rudolf.thalmann@metas.ch

Mr Georges-Pierre Vailleau, BNM-LNE
Tel: + 33 1 40 43 38 24
Fax: + 33 1 40 43 37 37
E-mail: georges.vailleau@lne.fr

Dr Miguel Viliesid, CENAM
Tel: + 52 442 211 0574
Fax: + 52 442 215 3903
E-mail: mviliesi@cenam.mx

Dr Tanfer Yandayan, UME
Tel: + 90 262 679 5000
Fax: + 90 262 679 5001
E-mail: tanfer.yandayan@ume.tubitak.gov.tr

Dr Tai Hyun Yoon, KRISS
Tel: + 82-42-868-5280
Fax: + 82 42 868 5282
E-mail: thyoon@kriss.re.kr

Observers:

Mr Oelof Kruger, CSIR-NML
Tel: + 27 12 841 4340
Fax: + 27 12 841 4458
E-mail: oakruger@csir.co.za

Mr Emilio Prieto, CEM
Tel: + 34 91 8074 716
Fax: + 34 91 8074 807
E-mail: eprieto@mfom.es

Dr Siew Leng Tan, SPRING Singapore
Tel: + 65 7729 598
Fax: + 65 7795 235
E-mail: siewleng@spring.gov.sg

CCL Working Group on Dimensional Metrology (WGDM)

List of the participants at the meeting of 17-18 September 2002

Chairman: **Nick Brown**, NMIA

nick.brown@measurement.gov.au

Chung Myung Sai, President CCL, KRISS

mschung@kriss.re.kr or mschung@ust.ac.kr

Jim Pekelsky, Outgoing Chairman, NRC

pekelsky@nrc.ca

Terry J. Quinn, Former Director of the BIPM

tquinn@bipm.org

Andrew Wallard, Deputy Director, BIPM

awallard@bipm.org

Andrew Lewis, Rapporteur, NPL

andrew.lewis@npl.co.uk

Regional member organizations:APMP: **Cheon Il Eom**, KRISS

cieom@kistep.re.kr

SADCMET: **Oelof Kruger**, CSIR NML

oakruger@csir.co.za

SIM: **Miguel Viliesid**, CENAM

mviliesi@cenam.mx

Discussion group moderators:**Ruedi Thalmann**, METAS

rudolf.thalmann@metas.admin.ch

John Stoup, NIST

wgdm5.moderator@nist.gov

Leonid Vitushkin, BIPM

wgdm7@bipm.org

Hirokazu Matsumoto, NMIJ

hi.matsumoto@aist.go.jp

Other participants:**Alesandro Balsamo**, IMGC

a.balsamo@imgc.to.cnr.it

Rob Bergmans, NMi VSL

rbergmans@nmi.nl

Jennifer Decker, NRC

jennifer.decker@nrc.ca

Klaus Hasche, PTB

klaus.hasche@ptb.de

Antti Lassila, MIKES

antti.lassila@mikes.fi

Emilio Prieto, CEM

eprieto@mfom.es

Jack Stone, NIST

jack.stone@nist.gov

Toshiyuki Takatsuji, NMIJ

toshiyuki.takatsuji@aist.go.jp

Siew Leng Tan, SPRING

siewleng@spring.gov.sg

Claudine Thomas, BIPM

cthomas@bipm.org

Georges Vailleau, BNM-LNE

georges.vailleau@lne.fr

Gan Xu, SPRING

xugan@spring.gov.sg

Tanfer Yandayan, UME

tanfer.yandayan@ume.tubitak.gov.tr

CCL Working Group for the "*Mise en pratique*"

Chairman: Dr Patrick Gill, NPL
Tel: + 44 208 943 6986
Fax: + 44 208 943 2945
E-mail: patrick.gill@npl.co.uk

Members:

BNM-INM
BNM-SYRTE
CENAM
CMI
IMGC
KRISS
MIKES
NIST
NMIJ/AIST
NMi VSL
NMIA
NPL
NRC
PTB
UME
BIPM

Consultative Committee for Time and Frequency (CCTF)**Created in 1956**

Present activities concern matters related to the definition and realization of the second, establishment and diffusion of International Atomic Time (TAI) and Coordinated Universal Time (UTC) and advice to the CIPM on matters related to time and time scales.

President: **Prof. Sigfrido Leschiutta**

President
Politecnico Torino
c/o Istituto Elettrotecnico Nazionale "Galileo Ferraris"
Strada delle Cacce, 91
I-10135 Torino
Italy
Tel: + 39 011 39 19 543
Fax: + 39 011 346 384
E-mail : siglesc@ien.it

Executive Secretary: **Dr Elisa Felicitas Arias, BIPM**

Tel: + 33 1 45 07 70 76
Fax: + 33 1 45 07 70 59
E-mail: farias@bipm.org

Members :

Institute for Physical-Technical and Radiotechnical Measurements, Gosstandart of Russia [VNIIFTRI],
Moscow

International Telecommunication Union [ITU], Radiocommunication Bureau

International Union of Geodesy and Geophysics [IUGG]

International Union of Radio Science [URSI]

International Astronomical Union [IAU]

Istituto Elettrotecnico Nazionale "Galileo Ferraris" [IEN], Torino

Korea Research Institute of Standards and Science [KRISS], Daejeon

National Institute of Information and Communications Technology [NICT], Tokyo

National Institute of Metrology [NIM], Beijing

National Institute of Standards and Technology [NIST], Boulder

National Measurement Institute of Australia [NMIA], Lindfield

National Metrology Institute of Japan, AIST [NMIJ/AIST], Tsukuba

National Physical Laboratory [NPL], Teddington

National Physical Laboratory of India [NPLI], New Delhi

National Physical Laboratory of Israel [INPL], Jerusalem

National Research Council of Canada [NRC], Ottawa

Nederlands Meetinstituut/Van Swinden Laboratorium [NMi VSL], Delft

Observatoire Cantonal [ON], Neuchâtel

Observatoire Royal de Belgique [ORB], Bruxelles

Physikalisch-Technische Bundesanstalt [PTB], Braunschweig

Real Instituto y Observatorio de la Armada [ROA], Cadiz

Swiss Federal Office of Metrology and Accreditation [METAS], Bern-Wabern

Systèmes de Référence Temps Espace [BNM-SYRTE], Paris

Technical University [TUG], Graz

U.S. Naval Observatory [USNO], Washington

The Director of the International Bureau of Weights and Measures [BIPM], Sèvres

Observers:

CSIR - National Metrology Laboratory [CSIR-NML], Pretoria
 National Metrology Institute of Turkey [UME], Gebze-Kocaeli
 Space Research Center of the Polish Academy of Sciences [SRC], Warsaw
 Standards, Productivity and Innovation Board [SPRING Singapore], Singapore

**Delegates and experts of member laboratories
 at the last meeting (April 2004)**

President : Prof. Sigfrido Leschiutta**Members:****Dr Thomas R Bartholomew, ITU-R**

Dr Andreas Bauch, PTB
 Tel: + 49 531 592 4320
 Fax: + 49 531 592 4479
 E-mail: andreas.bauch@ptb.de

Dr Ronald Beard, ITU-R
 Tel: + 1 202 404 7054
 Fax: + 1 202 767 2845
 E-mail: ronald.beard@nrl.navy.mil or
 ronald.beard@ties.itu.int

Dr Claude Boucher, IUGG
 Tel: + 33 1 55 55 98 96
 Fax: + 33 1 55 55 98 46
 E-mail: cbpro@club-internet.fr or
 boucher@ensg.ign.fr

Dr Jean-Simon Boulanger, NRC
 Tel: + 1 613 993 5698
 Fax: + 1 613 952 1394
 E-mail: jean-simon.boulanger@nrc.ca

Dr André Clairon, BNM-SYRTE
 Tel: + 33 1 40 51 23 33
 Fax: + 33 1 43 25 55 42
 E-mail: andre.clairon@obspm.fr

Dr Gerrit de Jong, NMi VSL
 Tel: + 31 15 2691 623
 Fax: + 31 15 2612 971
 E-mail: gdejong@nmi.nl

Dr Pascale Defraigne, ORB
 Tel: + 32 2 373 0260
 Fax: + 32 2 374 9822
 E-mail: pascale.defraigne@oma.be

Dr Noël Dimarcq, BNM-SYRTE
 Tel: + 33 1 40 51 22 53
 Fax: + 33 1 43 25 55 42
 E-mail: noel.dimarcq@obspm.fr

Dr Yury S. Domnin, VNIIFTRI
 Tel: + 7 095 535 9151
 Fax: + 7 095 534 0609
 E-mail: ydomnin@imvp.aspnet.ru

Dr Gregor Dudle, METAS
 Tel: + 41 31 32 33 298
 Fax: + 41 31 32 33 210
 E-mail: gregor.dudle@metas.ch

Dr Peter Fisk, NMIA
 Tel: + 61 2 9413 7221
 Fax: + 61 2 9413 7383
 E-mail: peter.fisk@measurement.gov.au

Prof. Dr Toshio Fukushima , IAU
 Tel: + 81 422 34 3613
 Fax: + 81 422 34 3810
 E-mail: toshio.fukushima@nao.ac.jp

Dr Francisco Javier Galindo, ROA
 Tel: + 34 956 599 286
 Fax: + 34 956 599 366
 E-mail: jgalindo@roa.es

Prof. Xiaoxun Gao, NIM
 Tel: + 86 10 6421 6289
 Fax: + 86 10 6421 6289
 E-mail: gaoxx@nim.ac.cn

Dr Aldo Godone, IEN
Tel: + 39 011 391 9232
Fax: + 39 011 391 9259
E-mail: godone@ien.it

Dr Dale Henderson, NPL
Tel: + 44 208 943 6747
Fax: + 44 208 943 7138
E-mail: dale.henderson@npl.co.uk

Dr Mizuhiko Hosokawa, NICT
Tel: + 81 42 327 7557
Fax: + 81 42 327 6694
E-mail: hosokawa@nict.go.jp

Dr Takeshi Ikegami, NMIJ/AIST
Tel: + 81 29 861 4253
Fax: + 81 29 861 4245
E-mail: t.ikegami@aist.go.jp

Dr Kenneth J. Johnston, USNO
Tel: + 1 202 762 1513
Fax: + 1 202 762 1461
E-mail: johnston.kenneth@usno.navy.mil

Dr Nicholas Koshelyaevsky, VNIIFTRI
Tel: + 7 095 534 8222
Fax: + 7 095 534 0609
E-mail: nkoshelyaevsky@imvp.aspnet.ru

Dr Ho Seong Lee, KRISS
Tel: + 82 42 868 5020
Fax: + 82 42 868 5022
E-mail: hslee@kriss.re.kr

Dr Judah Levine, NIST
Tel: + 1 303 497 3903
Fax: + 1 303 497 6461
E-mail: jlevine@boulder.nist.gov

Dr Alan Madej, NRC
Tel: + 1 613 993 9385
Fax: + 1 613 952 1394
E-mail: alan.madej@nrc.ca

Dr Demetrios N. Matsakis, USNO
Tel: + 1 202 762 1587
Fax: + 1 202 762 1511
E-mail: dnm@usno.navy.mil

Mr James Mc A. Steele, URSI
Tel: + 44 1276 22231
Fax: + 44 208 943 2155
E-mail: james.steele@tesco.net

Dr Dennis McCarthy, USNO
Tel: + 1 202 762 1837
Fax: + 1 202 762 1563
E-mail: dmc@maia.usno.navy.mil

Mr Takao Morikawa, NICT
Tel: + 81 42 327 7554
Fax: + 81 42 327 6687
E-mail: tak@nict.go.jp

Dr Thomas R. O'Brian, NIST
Tel: + 1 303 497 4570
E-mail: obrian@boulder.nist.gov

Dr Shin-ichi Ohshima, NMIJ/AIST
Tel: + 81 29 861 4252
Fax: + 81 29 861 4210
E-mail: s.ohshima@aist.go.jp

Dr Juan Palacio, ROA
Tel: + 34 956 599 286
Fax: + 34 956 599 366
E-mail: jpalacio@roa.es

Dr Thomas E. Parker, NIST
Tel: + 1 303 497 7881
Fax: + 1 303 497 6461
E-mail: tparker@boulder.nist.gov

Dr Fritz Riehle, PTB
Tel: + 49 531 592 4010
Fax: + 49 531 592 4015
E-mail: fritz.riehle@ptb.de

Dr Patrizia Tavella, IEN
Tel: + 39 011 391 9235
Fax: + 39 011 391 9259
E-mail: tavella@ien.it

Dr Pierre Thomann, ON
Tel: + 41 32 889 6870 or 889 8836 (direct)
Fax: + 41 32 722 0420
E-mail: pierre.thomann@ne.ch

Dr Pierre Uhrich, BNM-SYRTE
Tel: + 33 1 40 51 22 17
Fax: + 33 1 43 25 55 42
E-mail: pierre.uhrich@obspm.fr

Dr Dai Hyuk Yu, KRISS
Tel: + 82 42 868 5145
Fax: + 82 42 868 5287
E-mail: dhyu@kriss.re.kr

Observers:

Mr Hock Ann Chua, SPRING Singapore
Tel: + 65 6773 9850
Fax: + 65 6773 9804
E-mail: hachua@spring.gov.sg

Dr Ramiz Hamid, UME
Tel: + 90 262 679 5000
Fax: + 90 262 679 5001
E-mail: ramiz.hamid@ume.tubitak.gov.tr

Mr Louis Marais, CSIR-NML
Tel: + 27 12 841 3013
Fax: + 27 12 841 2131
E-mail: elmarais@csir.co.za

Dr Jerzy Nawrocki, SRC
Tel: + 48 22 851 1810 or 840 3570
Fax: + 48 22 840 3131
E-mail: nawrocki@cbk.poznan.pl

Invited by the President:

Dr William J. Klepczynski,
Tel: + 1 410 798 8457
Fax: + 1 410 798 8567
E-mail: wklepczy@comcast.net or
klepczynskiwj@state.gov

Dr Chia-Shu Liao, TL
Tel: + 886 3 424 4441
Fax: + 886 3 424 5474
E-mail: csliao@ms.chttl.com.tw

Dr Mohd Nasir Zainal Abidin, NML-SIRIM
Tel: + 60 3 5544 6831
Fax: + 60 3 5544 6841
E-mail: mohd.nasir_z.abidin@sirim.my

Dr Robert A. Nelson, SERC
Tel: + 1 301 657 9641
Fax: + 1 301 657 9642
E-mail: robtnelson@aol.com

Dr Ken Senior, NRL
Tel: + 1 202 767 2043
Fax: + 1 202 767 2845
E-mail: ken.senior@nrl.navy.mil

CCTF Working Group on the Consequences of the CIPM MRA

Chairman:

Dr Gerrit de Jong, NMi VSL
Tel: + 31 15 2691 623
Fax: + 31 15 2612 971
E-mail: gdejong@nmi.nl

CCTF Working Group on TAI

The CCTF working group on TAI was set up by the CCDS in 1985 to make proposals for improvements in TAI and UTC based upon the needs of users. It organizes meetings of representatives of contributing laboratories to TAI, on the days preceding meetings of CCTF.

Chairwoman: Dr Patrizia Tavella, IEN

Tel : + 39 011 391 9235
Fax : + 39 011 391 9259
E-mail: tavella@tf.ien.it

Members:

Representative of the IAU
Representative of the IUGG
Representative of the URSI
Representative of the ITU

Representative of the CIPM

Prof. Jean Kovalevsky

Tel: + 33 4 93 40 53 87
Fax: + 33 4 93 40 53 33
E-mail: kovalevsky@obs-azur.fr

Prof. Andrew Wallard

Tel: + 33 1 45 07 70 00
Fax: + 33 1 45 34 86 70
E-mail: awallard@bipm.org

BIPM Time section

Dr Gérard Petit

Tel: + 33 1 45 07 70 67
Fax: + 33 1 45 07 70 59
E-mail: gpetit@bipm.org

CCTF Group on GNSS* Time Transfer Standards (CGGTTS)

*GNSS = Global navigation satellite systems

Chairman:

Dr Judah Levine, NIST

Tel: + 1 303 497 3903

Fax.: + 1 303 497 6461

E-mail: jlevine@boulder.nist.gov

Members:

No official membership has been drawn up for the sub-group which organizes open forums whose attendees are representatives of national timing centres and manufacturers of GPS and GLONASS time receivers. However, a core of members can be listed as follows.

Dr D.W. Allan (Chairman till December 1996)

Tel: + 1 801 445 3216

Fax: + 1 801 445 3215

E-mail: 103077.1377@compuserve.com

Mr Jacques Azoubib, BIPM

Tel: + 33 1 45 07 70 62

Fax: + 33 1 45 07 70 59

E-mail:jazoubib@bipm.org

Dr Franco Cordara, IEN

Tel: + 39 0 11 39 19 239

Fax: + 39 0 11 34 87 046

E-mail: cordara@tf.ien.it

Mr J. Danaher

3S Navigation

Tel: + 1 714 830 3777

Fax: + 1 714 830 8411

E-mail: glonassman@aol.com

Mr Michito Imae, NICT

Tel: + 81 423 27 7566

Fax: + 81 423 27 6686

E-mail: imae@nict.go.jp

Dr Gerrit de Jong, NMi VSL

Tel: + 31 15269 16 23

Fax: + 31 15261 29 71

E-mail: gdejong@nmi.nl

Prof. Dr Dieter Kirchner, TUG

Tel: + 43 316 873 7441

Fax: + 43 316 873 46 36 97

E-mail: kirchner@inw.tu-graz.ac.at

Dr William J. Klepczynski

Innovative Solutions International

Tel: + 1 703 841 2669

Fax: + 1 703 465 9158

E-mail: wklepczy@aol.com

Dr N. Kosheyalevsky, NPO-VNIIFTRI

Tel: + 7 095 534 8222

Fax: + 7 095 534 0609

E-mail: atime@adonis.iasnet.com

Dr Włodzimierz Lewandowski, BIPM

(Secretary of the Working Group)

Tel: + 33 1 45 07 70 63

Fax: + 33 1 45 07 70 59

E-mail: wlewandowski@bipm.org

Dr Gérard Petit, BIPM

Tel: + 33 1 45 07 70 67

Fax: + 33 1 45 07 70 59

E-mail: gpetit@bipm.org

Dr Pierre Uhrich, BNM-SYRTE

Tel: + 33 1 40 51 22 16

Fax: + 33 1 43 25 55 42

E-mail: pierre.uhrich@obspm.fr

Dr M.A. Weiss, NIST

Tel: + 1 303 497 3261

Fax: + 1 303 497 6461

E-mail: mweiss@boulder.nist.gov

Sub-Group of the CCTF Working Group on TAI on Algorithms

Chairwoman:

Dr Patrizia Tavella, IEN

Tel: + 39 011 391 9235

Fax: + 39 011 391 9259

E-mail: tavella@tf.ien.it

No official membership is established.

CCTF Working Group on Two-way Satellite Time and Frequency Transfer

Chairman:

Dr William J. Klepczynski

Tel: + 1 703 841 2669

Fax: + 1 703 465 9158

E-mail: wklepczy@aol.com

Members:

No official membership has been drawn up for this working group which organizes meetings whose attendees are representatives of national timing centres interested in two-way time and frequency transfer and manufacturers of two-way equipment. However, a core of members can be listed as follows:

Mr Jacques Azoubib, BIPM

Tel: + 33 1 45 07 70 62

Fax: + 33 1 45 07 70 59

E-mail:jazoubib@bipm.org

Dr J.A. De Young

U.S. Naval Observatory

Tel: + 1 202 762 15 00

Fax: + 1 202 762 15 11

E-mail: dey@herschel.usno.navy.mil

Dr Françoise Baumont, OCA/CERGA

Tel: + 33 4 93 40 53 38

Fax: + 33 4 93 40 53 33

E-mail: baumont@obs-azur.fr

Dr Peter Fisk, NMIA

Tel: + 61 2 9413 7221

Fax: + 61 2 9413 7200

E-mail: peterf@measurement.gov.au

Dr Franco Cordara, IEN

Tel: + 39 0 11 39 19 239

Fax: + 39 0 11 34 87 046

E-mail: cordara@tf.ien.it

Dr P. Hetzel, PTB

Tel: + 49 531 592 44 30

Fax: + 49 531 592 44 79

E-mail: peter.hetzel@ptb.de

Dr J. Davis, NPL

Tel: + 44 208 943 71 37

Fax: + 44 208 943 71 39

E-mail: jad@newton.npl.co.uk

Mr Michito Imae, NICT

Tel: + 81 423 27 7566

Fax: + 81 423 27 6686

E-mail: imae@nict.go.jp

Dr G. de Jong, NMi VSL

Tel: + 31 15269 16 23

Fax: + 31 15261 29 71

E-mail: gdejong@nmi.nl

Prof. Dr Dieter Kirchner, TUG

Tel: + 43 316 873 7441

Fax: + 43 316 873 46 36 97

E-mail: kirchner@inw.tu-graz.ac.at

Dr Włodzimierz Lewandowski, BIPM
(Secretary of the Working Group)
Tel: + 33 1 45 07 70 73
Fax: + 33 1 45 07 70 59
E-mail: wlewandowski@bipm.org

Dr Demetrios N. Matsakis, USNO
Tel: + 1 202 762 1587
Fax: + 1 202 762 1511
E-mail: dnm@usno.navy.mil

Dr Juan Palacio, ROA
Tel: + 34 956 599 286
Fax: + 34 956 599 366
E-mail: jpalacio@roa.es

Dr T. Parker, NIST
Tel: + 1 303 497 7881
Fax: + 1 303 497 6461
E-mail: tparker@boulder.nist.gov

Dr Setnam Shemar, NPL
Tel: + 44 208 943 7118
Fax: +44 208 943 7138
E-mail: setnam.shemar@npl.co.uk

Dr Li Zhigang, CSAO
Tel: + 86 29 389 0320
Fax: + 86 29 389 0196
E-mail: kyc@ms.sxso.ac.cn

CCTF Working Group on the Expression of Uncertainties in Primary Frequency Standards

Chairman:

Dr Rob J. Douglas, NRC
Tel: + 1 613 993 5186
Fax: + 1 613 952 1394
E-mail: rob.douglas@nrc.ca

Members:

Dr D.W. Allan
Tel: + 1 801 445 3216
Fax: + 1 801 445 3215
E-mail: 103077.1377@compuserve.com

Dr Andreas Bauch, PTB
Tel: + 49 531 592 44 10
Fax: + 49 531 592 44 79
E-mail: time@ptb.de

Dr Jean Simon Boulanger, NRC
Tel: + 1 613 993-5698
Fax: + 1 613 952 5113
E-mail: jean-simon.boulanger@nrc.ca

Prof. Andrea De Marchi
Politecnico di Torino
Tel: + 39 0 11 564 4049
Fax: + 39 0 11 564 4099
E-mail: demarchi@polito.it

Dr R. Drullinger, NIST
Tel: + 1 303 497 7845
Fax: + 1 303 497 3183
E-mail: rdrullinger @boulder.nist.gov

Dr Peter Fisk, NMIA
Tel: + 61 2 9413 7221
Fax: + 61 2 9413 7200
E-mail: peterf@measurement.gov.au

Dr Alexander Lepek, INPL
Tel: + 972 2 661 856
Fax: + 972 2 652 0797
E-mail: clock@vms.huji.ac.il

Mr Jacques Azoubib, BIPM
(Secretary of the Working Group)
Tel: + 33 1 45 07 70 62
Fax: + 33 1 45 07 70 59
E-mail: jazoubib@bipm.org

Dr François Vernotte
Observatoire de Besançon
Tel: + 33 3 81 66 69 22

Fax: + 33 3 81 66 69 44
E-mail: françois@obs-besancon.fr

**IGS/BIPM pilot project to study accurate time and frequency comparisons
using GPS phase and code measurements**

Co-chairman for IGS:

Dr Jim Ray, National Geodetic Survey
Tel: + 1 301 713 2850 ext.112
Fax: + 1 301 713 4475
E-mail: jimr@ngs.noaa.gov

Co-chairperson for BIPM:

Dr Elisa Felicitas Arias
Tel: + 33 1 45 07 70 76
Fax: + 33 1 45 07 70 59
E-mail: farias@bipm.org

No official membership is established. A list of participating laboratories and persons may be found on the web site <http://maia.usno.navy.mil/gpst.html>.

CCTF Working Group on Key Comparisons in Time and Frequency

Chairman:

Dr Gerrit de Jong, NMi VSL
Tel: + 31 15 2691 623
Fax: + 31 15 2612 971
E-mail: gdejong@nmi.nl

Members:

Dr Rob Douglas, NRC
Tel: + 613 993-5186
Fax: + 613 952 1394
e-mail: rob.douglas@nrc.ca

Dr Alexander Lepek, INPL
Tel: + 972 2 566 1856, 5635698, 6585724
Fax: + 972 2 652 0797
e-mail: clock@vms.huji.ac.il

Dr Shin-ichi Ohshima, NMIJ/AIST
Tel: + 81 298 61 4312
Fax: + 81 298 61 4313
e-mail: s.ohshima@aist.go.jp

Dr Juan Palacio, ROA
Tel: + 34 956 599 286
Fax: + 34 956 599 366
e-mail: jpalacio@roa.es

Dr Donald B. Sullivan, NIST
Tel: + 1 303 497 3772
Fax: + 1 303 497 6461
e-mail: donald.sullivan@boulder.nist.gov

Consultative Committee for Ionizing Radiation (CCRI)

Created in 1958

Present activities concern matters related to the definitions of quantities and units, standards and comparisons for x-ray, γ -ray and neutron dosimetry, radioactivity measurement and the International Reference System for radionuclides (SIR), and advice to the CIPM on matters related to ionizing radiation standards.

President: **Prof. Giorgio Moscati**
 INMETRO Adviser
 INMETRO and Instituto de Fisica
 Universidade de São Paulo
 Caixa Postal 66318
 05315-970 São Paulo-SP
 Brazil
 Tel: + 55 21 2293 9002
 Fax: + 55 21 2502 1438
 E-mail: moscati@inmetro.gov.br

Executive Secretary: **Dr Penelope Allisy-Roberts, BIPM**
 Tel: + 33 1 45 07 70 90
 Fax: + 33 1 45 34 20 21
 E-mail: allisy-roberts@bipm.org

Members :

The Chairman of Section I (**Dr Peter Sharpe, NPL**)
 The Chairman of Section II (**Dr Bruce Simpson, CSIR-NML**)
 The Chairman of Section III (**Dr Horst Klein, PTB**)
 The Director of the BIPM (**Prof. Andrew J. Wallard**)

Section I (X and γ rays, electrons)

Chairman: **Dr Peter Sharpe, NPL**
 Tel: + 44 208 943 6647
 Fax: + 44 208 943 6680
 E-mail: peter.sharpe@npl.co.uk

Members:

Australian Radiation Protection And Nuclear Safety Agency [ARPANSA], Yallambie
 Bundesamt für Eich- und Vermessungswesen [BEV], Vienna
 Central Office of Measures/Główny Urzad Miar [GUM], Warsaw
 D.I. Mendeleev Institute for Metrology, Gosstandart of Russia [VNIIM], St Petersburg
 Ente per le Nuove Tecnologie, l'Energia e l'Ambiente -Istituto Nazionale di Metrologia delle Radiazioni Ionizzanti [ENEA-INMRI], Roma
 International Commission on Radiation Units and Measurements [ICRU]
 Laboratoire National Henri Becquerel [BNM-LNHB], Gif sur Yvette
 National Institute of Metrology [NIM], Beijing
 National Institute of Standards and Technology [NIST], Gaithersburg
 National Metrology Institute of Japan, AIST [NMJJ/AIST], Tsukuba

National Office of Measures/Országos Mérésügyi Hivatal [OMH], Budapest
 National Physical Laboratory [NPL], Teddington
 National Research Council of Canada [NRC], Ottawa
 Nederlands Meetinstituut/Van Swinden Laboratorium [NMi VSL], Delft
 Physikalisch-Technische Bundesanstalt [PTB], Braunschweig
 Swiss Federal Office of Metrology and Accreditation [METAS], Bern-Wabern
 Dr Antonio Brosed [CIEMAT], Madrid
 The Director of the International Bureau of Weights and Measures [BIPM], Sèvres

Observers:

CSIR - National Metrology Laboratory [CSIR-NML], Pretoria
 Czech Metrology Institute [CMI], Brno
 International Atomic Energy Agency [IAEA]
 International Organization for Medical Physics [IOMP]
 International Radiation Protection Association [IRPA]
 National Laboratory for Metrology of Ionising Radiation/Institute of Radiation Protection and Dosimetry
 CNEN [LNMRI/IRD], Rio de Janeiro
 Swedish Radiation Protection Institute/Statens Stralskyddsinsitut [SRPI], Stockholm

**Delegates and experts of member laboratories
 at the last meeting of Section I (May 2003)**

Chairman: Dr Peter Sharpe, NPL

Members:

Dr A.H.L. Aalbers, NMi VSL
 Tel: + 31 15 269 1500
 Fax: + 31 15 261 2971
 E-mail: aaalbers@nmi.nl

Dr István Csete, OMH
 Tel: + 36 1 458 5945
 Fax: + 36 1 458 5937
 E-mail: icsete@omh.hu

Mr Franck Delaunay, BNM-LNHB
 Tel: + 33 1 69 08 84 05
 Fax: + 33 1 69 08 47 73
 E-mail: franck.delaunay@cea.fr

Dr Simon Duane, NPL
 Tel: + 44 208 943 6568
 Fax: + 44 208 943 6797
 E-mail: simon.duane@npl.co.uk

Dr Hans-Michael Kramer, PTB
 Tel: + 49 531 592 6200
 Fax: + 49 531 592 6405
 E-mail: hans-michael.kramer@ptb.de

Dr Raffaele Fedele Laitano, ENEA-INMRI
 Tel: + 39 06 3048 3559
 Fax: + 39 06 3048 3558
 E-mail: laitano@casaccia.enea.it

Dr David Rogers, NRC
 Tel: + 1 613 993 2715
 Fax: + 1 613 952 9865
 E-mail: dave@irs.phy.nrc.ca

**Mr Stephen M. Seltzer, NIST, acting also as
 ICRU representative**
 Tel: + 1 301 975 5552
 Fax: + 1 301 869 7682
 E-mail: s.seltzer@nist.gov

Dr Nobuhisa Takata, NMJJ/AIST
 Tel: + 81 29 861 5662
 Fax: + 81 29 861 5673
 E-mail: n.takata@aist.go.jp

Dr Gerhard Ulm, PTB
 Tel: + 49 30 3481 312
 Fax: + 49 30 3481 550
 E-mail: gerhard.ulm@ptb.de

Dr David Webb, ARPANSA
Tel: + 61 3 9433 2227
Fax: + 61 3 9432 1835
E-mail: david.webb@health.gov.au

Dr Josef Witzani, BEV
Tel: + 43 1 49 110 ext. 530
Fax: + 43 1 49 20 875
E-mail: j.witzani@metrologie.at

Personal Member:

Dr Antonio Brosed, CIEMAT
Tel: + 34 91 3466 097
Fax: + 34 91 3466 442
E-mail: antonio.brosed@ciemat.es

Observers:

Dr Jaco Mostert, CSIR-NML
Tel: + 27 12 841 2297
Fax: + 27 12 841 3121
E-mail: jmostert@csir.co.za

Dr Ken R. Shortt, IAEA
Tel: + 43 1 2600 21664
Fax: + 43 1 26007 21662
E-mail: k.shortt@iaea.org

Dr José Guilherme Peixoto, LNMRI/IRD
Tel: + 55 21 3411 8158
Fax: + 55 21 3411 8163
E-mail: guilherm@ird.gov.br

Invited by the Chairman:

Dr Muhammed Deniz, UME
Tel: + 90 262 679 5000
Fax: + 90 262 679 5001
E-mail: muhammed.deniz@ume.tubitak.gov.tr

Dr Vladimir Sochor, CMI
Tel: + 420 266 020 497
Fax: + 420 266 020 466
E-mail: vsochor@cmi.cz

Dr Antti Kosunen, STUK
Tel: + 358 9 7598 8446
Fax: + 358 9 7598 8450
E-mail: antti.kosunen@stuk.fi

Dr Gerhard Stucki, METAS
Tel: + 41 31 323 3331
Fax: + 41 31 323 3210
E-mail: gerhard.stucki@metas.ch

Section II (Measurement of radionuclides)

Chairman: Dr Bruce Simpson, CSIR-NML
Tel: + 27 21 686 2759 or 685 4325
Fax: + 27 21 686 2759 or 686 6116
E-mail: bsimpson@csir.co.za

Members:

Australian Nuclear Science & Technology Organisation [ANSTO], Menai
Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas [CIEMAT], Madrid
CSIR - National Metrology Laboratory [CSIR-NML], Cape Town
Czech Metrology Institute [CMI], Brno
D.I. Mendeleyev Institute for Metrology, Gosstandart of Russia [VNIIM], St Petersburg

Ente per le Nuove Tecnologie, l'Energia e l'Ambiente -Istituto Nazionale di Metrologia delle Radiazioni Ionizzanti [ENEA-INMRI], Roma
 Institute for Reference Materials and Measurements [IRMM], Geel
 Institut de Radiophysique Appliquée [IRA-METAS], Lausanne
 Korea Research Institute of Standards and Science [KRISS], Daejeon
 Laboratoire National Henri Becquerel [BNM-LNHB], Gif sur Yvette
 National Institute of Metrology [NIM], Beijing
 National Institute of Standards and Technology [NIST], Gaithersburg
 National Metrology Institute of Japan, AIST [NMIJ/AIST], Tsukuba
 National Office of Measures/Országos Mérésügyi Hivatal [OMH], Budapest
 National Physical Laboratory [NPL], Teddington
 National Research Council of Canada [NRC], Ottawa
 Physikalisch-Technische Bundesanstalt [PTB], Braunschweig
 Radioisotope Centre POLATOM [RC], Swierk
 Prof. Dr Gerhard Winkler [IIK], Vienna
 The Director of the International Bureau of Weights and Measures [BIPM], Sèvres

Observers:

Czech Metrology Institute [CMI], Praha
 International Commission on Radiation Units and Measurements [ICRU]
 International Organization for Medical Physics [IOMP]
 International Radiation Protection Association [IRPA]
 National Laboratory for Metrology of Ionising Radiation/Institute of Radiation Protection and Dosimetry
 CNEN [LNMRI/IRD], Rio de Janeiro
 Nederlands Meetinstituut/Van Swinden Laboratorium [NMi VSL], Delft

**Delegates and experts of member laboratories
 at the last meeting of Section II (May 2003)**

Chairman: Dr Bruce Simpson, CSIR-NML

Members:

Dr Dimitri Alexiev, ANSTO
 Tel: + 61 2 9717 3182
 Fax: + 61 2 9717 9265
 E-mail: dax@ansto.gov.au

Dr Herbert Janßen, PTB
 Tel: + 49 531 592 6100
 Fax: + 49 531 592 6305
 E-mail: herbert.janszen@ptb.de

Dr Ryszard Broda, RC
 Tel: + 48 22 718 07 21
 Fax: + 48 22 718 03 50
 E-mail: rbroda@polatom.pl

Dr Steven Judge, NPL
 Tel: + 44 208 943 8582
 Fax: + 44 208 943 7037
 E-mail: steven.judge@npl.co.uk

Dr Nelly Coursol, BNM-LNHB
 Tel: + 33 1 69 08 27 78 or 69 08 85 67
 Fax: + 33 1 69 08 26 19
 E-mail: nelly.coursol@cea.fr

Dr José María Los Arcos, CIEMAT
 Tel: + 34 91 346 6288
 Fax: + 34 91 346 6442
 E-mail: jm.losarcos@ciemat.es

Dr Yoshio Hino, NMIJ/AIST
 Tel: + 81 29 861 5667
 Fax: + 81 29 861 5673
 E-mail: y.hino@aist.go.jp

Ms Freda Morris, CSIR-NML
 Tel: + 27 21 685 7776
 Fax: + 27 21 686 2759
 E-mail: fmorris@csir.co.za

Dr Tae Soon Park, KRISS
 Tel: + 82 42 868 5372
 Fax: + 82 42 868 5671
 E-mail: tspark@kriss.re.kr

Mr Dietmar F.G. Reher, IRMM
 Tel: + 32 14 57 12 63
 Fax: + 32 14 58 42 73
 E-mail: dietmar.reher@irmm.jrc.be

Dr Carl Ross, NRC
 Tel: + 1 613 993 9352
 Fax: + 1 613 952 9865
 E-mail: carl.ross@nrc.ca

Dr Sergey Sepman, VNIIM
 Tel: + 7 812 323 9612
 Fax: + 7 812 323 9617
 E-mail: s.v.sepman@vniim.ru

Mr László Szűcs, OMH
 Tel: + 36 1 458 5911
 Fax: + 36 1 458 5937
 E-mail: lszucs@omh.hu

Dr Michael P. Unterweger, NIST
 Tel: + 1 301 975 5536
 Fax: + 1 301 926 7416
 E-mail: michael.unterweger@nist.gov

Dr Uwe Wätjen, IRMM
 Tel: + 32 14 57 12 63
 Fax: + 32 14 58 42 73
 E-mail: uwe.waetjen@irmm.jrc.be

Mr Michael John Woods, NPL
 Tel: + 44 208 943 6425
 Fax: + 44 208 943 7037
 E-mail: michael.woods@npl.co.uk

Personal Member:

Prof. Dr Gerhard Winkler, IIK
 Tel: + 43 1 4277 51754
 Fax: + 43 1 4277 51752
 E-mail: winkler@ap.univie.ac.at

Observers:

Dr Wim de Vries, NMi VSL
 Tel: + 31 30 253 9098
 Fax: + 31 30 253 9095
 E-mail: wdevries@nmi.nl

Dr Pavel Dryák, CMI
 Tel: + 02 660 204 97
 Fax: + 02 660 204 66
 E-mail: pdryak@cmi.cz

Prof. Barry D. Michael, ICRU
 Tel: + 44 192 382 8611
 Fax: + 44 192 383 5210
 E-mail: michael@gci.ac.uk

Dr Walsan Wagner Pereira, LNMRI/IRD
 Tel: + 55 21 3411 8170 or 8171
 Fax: + 55 21 4411 8163
 E-mail: walsan@ird.gov.br

Invited by the Chairman:

Dr Horst Klein, PTB
 Tel: + 49 531 592 6400
 Fax: + 49 531 592 7205
 E-mail: horst.klein@ptb.de

Dr Peter Sharpe, NPL
 Tel: + 44 208 943 6647
 Fax: + 44 208 943 6797
 E-mail: peter.sharpe@npl.co.uk

Dr Brian Zimmerman, IAEA
 Tel: + 43 1 2600 21659 or 21634
 Fax: + 43 1 26007 21662
 E-mail: b.zimmerman@iaea.org or
 dosimetry@iaea.org

Section III (Neutron measurements)

Chairman: **Dr Horst Klein, PTB**
 Tel: + 49 531 592 6400
 Fax: + 49 531 592 7205
 E-mail: horst.klein@ptb.de

Members:

Czech Metrology Institute [CMI], Brno
 D.I. Mendeleyev Institute for Metrology, Gosstandart of Russia [VNIIM], St Petersburg
 Institute for Reference Materials and Measurements [IRMM], Geel
 Laboratoire National Henri Becquerel [BNM-LNHB], Gif sur Yvette
 National Institute of Metrology [NIM], Beijing
 National Institute of Standards and Technology [NIST], Gaithersburg
 National Laboratory for Metrology of Ionising Radiation/Institute of Radiation Protection and Dosimetry
 CNEN [LNMR/IRD], Rio de Janeiro
 National Metrology Institute of Japan, AIST [NMIJ/AIST], Tsukuba
 National Physical Laboratory [NPL], Teddington
 Physikalisch-Technische Bundesanstalt [PTB], Braunschweig
 Prof. Dr. J.J. Broerse [IRI], Delft
 The Director of the International Bureau of Weights and Measures [BIPM]

Observers:

Chinese Institute of Atomic Energy [CIAE], Beijing
 International Atomic Energy Agency [IAEA]
 International Commission on Radiation Units and Measurements [ICRU]

**Delegates and experts of member laboratories
 at the last meeting of Section III (May 2003)**

Chairman: Dr Horst Klein, PTB

Members:

Dr Teresa Bolognese, BNM
 Tel: + 33 1 58 35 80 79
 Fax: + 33 1 58 35 97 77
 E-mail: teresa.bolognese@irsn.fr

Dr David M. Gilliam, NIST
 Tel: + 1 301 975 6206
 Fax: + 1 301 869 7682
 E-mail: david.gilliam@nist.gov

Mr Nikolay N. Moisseev, VNIIM
 Tel: + 7 812 323 9614
 Fax: + 7 812 323 9617

E-mail: n.n.moiseev@vniim.ru

Dr Walsan Wagner Pereira, LNMR/IRD
 Tel: + 55 21 3411 8170 or 8171
 Fax: + 55 21 4411 8163
 E-mail: walsan@ird.gov.br

Dr Arjan Plompen, IRMM
 Tel: + 32 14 571 381
 Fax: + 32 14 571 376
 E-mail: plompen@irmm.jrc.be

Dr David Thomas, NPL
Tel: + 44 208 943 6853
Fax: + 44 208 943 7037
E-mail: david.thomas@npl.co.uk

Dr Akira Uritani, NMII/AIST
Tel: + 81 29 861 2253
Fax: + 81 29 861 5673
E-mail: a-uritani@aist.go.jp

Observer:

Prof. André Wambersie, ICRU
Tel: + 32 2 764 5468
Fax: + 32 2 764 9425
E-mail: wambersie@rbnt.ucl.ac.be

Invited by the Chairman:

Dr Miloslav Kralik, CMI
Tel: + 420 266 020 299
Fax: + 420 266 020 466
E-mail: mkralik@cmi.cz

Dr Bruce Simpson, CSIR-NML
Tel: + 27 21 686 2759 or 685 4325
Fax: + 27 21 686 2759 or 686 6116
E-mail: bsimpson@csir.co.za

Consultative Committee for Units (CCU)

Created in 1964

*Present activities concern matters related to the development of the International System of Units (SI),
preparation of successive editions of the SI brochure
and advice to the CIPM on matters concerning units of measurement.*

President:

Prof. Ian M. Mills

University of Reading - Department of Chemistry
Whiteknights
Reading, RG6 6AD
United Kingdom
Tel: + 44 118 378 8456
Fax: + 44 118 378 6331
E-mail : i.m.mills@reading.ac.uk or millsat57@onetel.net.uk

Executive Secretary: **Dr Claudine Thomas, BIPM**

Tel: + 33 1 45 07 70 73
Fax: + 33 1 45 34 20 21
E-mail: cthomas@bipm.org

Members:

Centro Español de Metrología [CEM], Madrid
Commission internationale de l'éclairage [CIE]
International Astronomical Union [IAU]
International Commission on Radiation Units and Measurements [ICRU]
International Electrotechnical Commission [IEC]: Technical Committee 25
International Federation of Clinical Chemistry and Laboratory Medicine [IFCC]
International Organization for Standardization [ISO]: Technical Committee 12
International Organization of Legal Metrology [OIML]
International Union of Pure and Applied Chemistry [IUPAC]: Commission STU
International Union of Pure and Applied Physics [IUPAP]: Commission SUN-AMCO
National Institute of Metrology [NIM], Beijing
National Institute of Standards and Technology [NIST], Gaithersburg
National Metrology Institute of Japan, AIST [NMIJ/AIST], Tsukuba
National Physical Laboratory [NPL], Teddington
Physikalisch-Technische Bundesanstalt [PTB], Braunschweig
State Committee of the Russian Federation for Standardization and Metrology [Gosstandart], Moscow
Dr Terry Quinn CBE FRS, Sèvres
Prof. Marc Himbert [BNM-INM], Paris
The Director of the International Bureau of Weights and Measures [BIPM], Sèvres

**Delegates and experts of member laboratories
at the last meeting (May 2004)**

President: Prof. Ian M. Mills

Members:

Dr Jean Bastie, CIE

Tel: + 33 1 40 27 20 25
Fax: + 33 1 42 71 37 36
E-mail: bastie@cnam.fr

Prof. Carlo Angelo Borghi, IEC/TC 25

Tel: + 39 051 209 3566
Fax: + 39 051 209 3588
E-mail: ca.borghi@mail.ing.unibo.it

Dr Nicole Capitaine , IAU

Tel: + 33 1 40 51 22 31
Fax: + 33 1 40 51 22 91
E-mail: nicole.capitaine@obspm.fr

Dr René Dybkaer, IFCC

Tel: + 45 38 16 38 70 or 71
Fax: + 45 38 16 38 79

Dr Jeff Flowers, NPL and IUPAP/SUN-AMCO

Tel: + 44 208 943 6671
Fax: + 44 208 614 0417
E-mail: jeff.flowers@npl.co.uk

Dr Kenichi Fujii, NMJJ/AIST

Tel: + 81 29 861 4316
Fax: + 81 29 850 1464
E-mail: fujii.kenichi@aist.go.jp

Dr Teresa López, CEM

Tel: + 34 91 807 4751
Fax: + 34 91 807 4807
E-mail: mtlopez@cem.es

Dr Arnold Leitner, OIML

Tel: +43 1 49 110 322
Fax: +43 1 49 110 334
E-mail: a.leitner@metrologie.at

Personal Members

Dr Terry Quinn CBE FRS

E-mail: terry.quinn@physics.org

Dr Zuliang Lu, NIM

Tel: + 86 10 8425 1573
Fax: + 86 10 6421 8703
E-mail: luzl@nim.ac.cn

Prof. Ian M Mills FRS, IUPAC

Tel: + 44 118 378 8456
Fax: + 44 118 378 6331
E-mail: i.m.mills@reading.ac.uk or
millsat57@onetel.net.uk

Dr Bernd R.L. Siebert, PTB

Tel: + 49 531 592 7510
Fax: + 49 531 592 8106
E-mail: bernd.siebert@ptb.de

Dr Barry N. Taylor, NIST

Tel: + 1 301 975 4220
Fax: + 1 301 975 2183
E-mail: barry.taylor@nist.gov

Prof. Anders J Thor, ISO/TC 12

Tel: + 46 8 555 521 59
Fax: + 46 8 555 520 01
E-mail: anders.j.thor@sis.se

Prof. André Wambersie, ICRU

Tel: + 32 2 764 5468
Fax: + 32 2 764 9425
E-mail: wambersie@rbnt.ucl.ac.be

Dr Robert L. Watters, NIST

Tel: + 1 301 975 4122
Fax: + 1 301 926 0416
E-mail: robert.watters@nist.gov

Prof. Marc Himbert, BNM-INM

Tel: + 33 1 40 27 24 19
Fax: + 33 1 42 71 37 36
E-mail: himbert@cnam.fr

Invited by the President:

Ms Zhao Yan, AQSIQ
Tel: + 86 10 8226 1847
Fax: + 86 10 8226 0131
E-mail: zhaoy@aqsiq.gov.cn

Consultative Committee for Mass and Related Quantities (CCM)**Created in 1980**

Present activities concern matters related to the comparisons of mass standards with the international prototype of the kilogram, considerations affecting the definition of the unit of mass, also density, pressure and force standards and advice to the CIPM on these matters.

President: **Dr Mitsuru Tanaka**

Deputy Director
 National Metrology Institute of Japan, AIST
 Tsukuba Central 3
 Tsukuba 305-8563
 Japan
 Tel: + 81 298 61 4059
 Fax: + 81 298 61 4009
 E-mail: mitsuru.tanaka@aist.go.jp

Executive Secretary: **Dr Richard S. Davis, BIPM**

Tel: + 33 1 45 07 70 11
 Fax: + 33 1 45 34 20 21
 E-mail: rdavis@bipm.org

Members:

Central Office of Measures/Główny Urzad Miar [GUM], Warsaw
 CSIR - National Metrology Laboratory [CSIR-NML], Pretoria
 D.I. Mendeleyev Institute for Metrology, Gosstandart of Russia [VNIIM], St Petersburg
 Institut National de Métrologie [BNM-INM], Paris
 Istituto di Metrologia "Gustavo Colonna" del Consiglio Nazionale delle Ricerche [IMGC-CNR], Torino
 Korea Research Institute of Standards and Science [KRISS], Daejeon
 National Institute of Metrology [NIM], Beijing
 National Institute of Standards and Technology [NIST], Gaithersburg
 National Measurement Institute of Australia [NMIA], Lindfield
 National Metrology Institute of Japan, AIST [NMIJ/AIST], Tsukuba
 National Physical Laboratory [NPL], Teddington
 National Research Council of Canada [NRC], Ottawa
 Nederlands Meetinstituut/Van Swinden Laboratorium [NMi VSL], Delft
 Physikalisch-Technische Bundesanstalt [PTB], Braunschweig
 Slovak Institute of Metrology/Slovenský Metrologický Ústav [SMU], Bratislava
 Swedish National Testing and Research Institute [SP], Borås
 Swiss Federal Office of Metrology and Accreditation [METAS], Bern-Wabern
 The Director of the International Bureau of Weights and Measures [BIPM], Sèvres

Observers:

Centro Español de Metrología [CEM], Madrid
 Centro Nacional de Metrología [CENAM], Querétaro
 National Metrology Institute of Turkey [UME], Gebze-Kocaeli
 National Physical Laboratory of India [NPLI], New Delhi

**Delegates and experts of member laboratories
at the last meeting (May 2002)**

The President: Dr Mitsuru Tanaka

Members:

Dr Anil K. Agarwal, NRC

Tel: + 613 991 0615
Fax: + 613 952 1394
E-mail: anil.agarwal@nrc.ca

Dr Noel Bignell, NMIA

Tel: + 61 2 9413 7484
Fax: + 61 2 9413 7161
E-mail: noel.bignell@measurement.gov.au

Dr George Chapman, NRC

Tel: + 1 613 993 2351
Fax: + 1 613 952 1394
E-mail: george.chapman@nrc.ca

Dr Natalia G. Domostroeva, VNIIM

Tel: + 7 812 323 9670
Fax: + 7 812 323 9671
E-mail: n.g.domostroeva@vniim.ru or
hal@onti.vniim.spb.su

Mrs Hanna Durlik, GUM

Tel: + 48 22 652 2831
Fax: + 48 22 620 8378
E-mail: mass.force@gum.gov.pl

Dr Kenichi Fujii, NMIJ/AIST

Tel: + 81 298 61 4316
Fax: + 81 298 50 1464
E-mail: fujii.kenichi@aist.go.jp

Dr Alessandro Germak, IMGC-CNR

Tel: + 39 011 3977 367
Fax: + 39 011 3977 426
E-mail: a.germak@imgc.cnr.it

Dr Michael Gläser, PTB

Tel: + 49 531 592 1110
Fax: + 49 531 592 1155
E-mail: michael.glaeser@ptb.de

Mr André Gosset, BNM-LNE

Tel: + 33 1 40 43 37 28
Fax: + 33 1 40 43 37 37
E-mail: andre.gosset@lne.fr

Mr Jan Hjelmgren, SP

Tel: + 46 33 16 51 08
Fax: + 46 33 16 56 20
E-mail: jan.hjelmgren@sp.se

Dr Zeina J. Jabbour, NIST

Tel: + 1 301 975 4468
Fax: + 1 301 417 0514
E-mail: zeina.jabbour@nist.gov

Dr Claude Jacques, NRC

Tel: + 1 613 993 9330
Fax: + 1 613 998 5396
E-mail: claude.jacques@nrc.ca

Mr Michel Lecollinet, BNM-INM

Tel: + 33 1 40 27 26 94
Fax: + 33 1 42 71 37 36
E-mail: michel.lecollinet@cnam.fr

Dr Albert Lee, NIST

Tel: + 1 301 975 2857
Fax: + 1 301 208 6962
E-mail: albert.lee@nist.gov

Dr Woo Gab Lee, KRISS

Tel: + 82 42 868 5112
Fax: + 82 42 868 5012
E-mail: woogab@kriss.re.kr

Mrs Pauline Leggat, NPL

Tel: + 44 208 943 6321
Fax: + 44 208 943 6132
E-mail: pauline.leggat@npl.co.uk

Mr Jean-Claude Legras, BNM-LNE

Tel: + 33 1 40 43 38 08
Fax: + 33 1 40 43 37 37
E-mail: jean-claude.legras@lne.fr

Dr George Mattingly, NIST

Tel: + 1 301 975 5939
Fax: + 1 301 975 8288
E-mail: george.mattingly@nist.gov

Dr Archie P. Miiller, NIST
Tel: + 1 301 975 5932
Fax: + 1 301 208 6962
E-mail: archie.miiller@nist.gov

Dr Akira Ooiwa, NMJJ/AIST
Tel: + 81 298 61 4024
Fax: + 81 298 61 4020
E-mail: akira-ooiwa@aist.go.jp

Dr Leslie R. Pendrill, SP
Tel: + 46 33 16 54 44
Fax: + 46 33 16 56 20
E-mail: leslie.pendrill@sp.se

Prof. Dr Manfred Peters, PTB
Tel: + 49 531 592 1010 or 1011
Fax: + 49 531 592 1015
E-mail: manfred.peters@ptb.de

Dr Philippe Richard, METAS
Tel: + 41 31 323 3415
Fax: + 41 31 323 3210
E-mail: philippe.richard@metas.ch

Dr Ian Severn, NPL
Tel: + 44 208 943 6862
Fax: + 44 208 614 0435
E-mail: ian.severn@npl.co.uk

Dr Robert Spurný, SMU
Tel: + 421 2 6029 4350
Fax: + 421 2 6542 9592
E-mail: spurny@smu.gov.sk

Mrs Inge van Andel, NMi VSL
Tel: + 31 15 269 1754
Fax: + 31 15 2612 971
E-mail: ivandel@nmi.nl

Mrs Chi Wang, NIM
Tel: + 86 10 6421 8637
Fax: + 86 10 6429 1990
E-mail: wangch@nim.ac.cn

Mr Yue Zhang, NIM
Tel: + 86 10 6421 8628
Fax: + 86 10 6421 8703
E-mail: zhangy@nim.ac.cn

Observers:

Dr A.K. Bandyopadhyay, NPLI
Tel: + 91 11 585 1338
Fax: + 91 11 585 2678
E-mail: akband@mail.nplindia.ernet.in

M. in. Sc Luis Omar Becerra, CENAM
Tel: + 52 442 211 0500 to 04
Fax: + 52 442 215 3904
E-mail: lbecerra@cenam.mx

Mrs Ireen Field, CSIR-NML
Tel: + 27 12 841 3623
Fax: + 27 12 841 3121
E-mail: ibfield@csir.co.za

Dr Ignacio Hernandez, CENAM
Tel: + 52 442 211 0570
Fax: + 52 442 211 0568
E-mail: ihernan@cenam.mx

Dr Cihan Kuzu, UME
Tel: + 90 262 679 5000
Fax: + 90 262 679 5001
E-mail: cihan.kuzu@ume.tubitak.gov.tr

Mrs Maria del Carmen Matilla Vicente, CEM
Tel: + 34 91 807 4717
Fax: + 34 91 807 4808
E-mail: cmatilla@mfom.es

Dr Mihail Patrascoiu, CSIR-NML
Tel: + 27 12 841 3698
Fax: + 27 12 841 3121
E-mail: mpatras@csir.co.za

Invited by the President:

Mr Luis Brito, IPQ
Tel: + 351 21 294 8100
Fax: + 351 21 294 8188
E-mail: lbrito@mail.ipq.pt

Mr Victor Loayza, INMETRO
Tel: + 55 21 2679 9023
Fax: + 55 21 2679 1505
E-mail: vmloayza@inmetro.gov.br

Dr Vaidotas Gegevicius, COOMET
Tel: + 370 5 213 5882
Fax: + 370 5 213 3727
E-mail: vmc@taide.lt

Dr Lars Nielsen, EUROMET
Tel: + 45 4593 1144
Fax: + 45 4593 1137
E-mail: ln@dfm.dtu.dk

Dr Kozo Iizuka, NMIJ/AIST
Tel: + 81 3 3245 3053
Fax: +81 3 3245 3056
E-mail: k-iizuka@tk.kubota.co.jp

Dr Chris M. Sutton, APMP
Tel: + 64 4 569 0499
Fax: + 64 4 569 0117
E-mail: c.sutton@irl.cri.nz

Mr Shih Mean Lee, SPRING Singapore
Tel: + 65 772 9750
Fax: + 65 777 8996
E-mail: smlee@spring.gov.sg

Dr Masaki Takamoto, NMIJ/AIST
Tel: + 81 298 61 4228
Fax: + 81 298 61 4242
E-mail: m-takamoto@aist.go.jp

CCM Working Group on Density

Chairman:

Dr Kenichi Fujii, NMIJ/AIST
Tel: + 81 298 61 4316
Fax: + 81 298 50 1464
E-mail: fujii.kenichi@aist.go.jp

Members:

IMGC-CNR (**Dr A. Peuto**)
KRISS
NIM
NIST (**Dr Z. Jabbour**)
NMIJ/AIST
NMIA
NPL (**Mr S. Downes**)
NRC (**Dr C. Jacques**)
METAS (**Dr P. Richard**)
PTB (**Dr M. Spieweck**)
SMU (**Dr R. Spurný**)
SP (**Dr L. Pendrill**)
BIPM (**Dr Richard S. Davis**)

CCM Working Group on Mass Standards**Chairman:****Dr Michael Gläser, PTB**

Tel: +49 531 592 1110

Fax: + 49 531 592 1155

E-mail: michael.glaeser@ptb.de

Members:**BNM-INM (Dr P. Pinot)**

CEM

CENAM

CSIR-NML

GUM

IMGC-CNR (Dr W. Bich)

KRISS

METAS (Dr P. Richard)

NIM

NIST (Dr Z. Jabbour)

NMi VSL

NMIJ/AIST (Mr Y. Nezu)

NMIA

NPL (Dr I. Severn)

NPLI

NRC (Dr G. Chapman)**SMU (Dr R. Spurný)****VNIIM (Dr A.P. Shyolkin)****BIPM (Dr Richard S. Davis)****CCM Working Group on High Pressures****Chairman:****Dr Jean-Claude Legras, BNM-LNE**

Tel: + 33 1 40 43 38 08

Fax: + 33 1 40 43 37 37

E-mail: jean-claude.legras@lne.fr

Members:

CENAM	(J.C. Torres Guzman)
IMGC-CNR	(Mercede Bergoglio)
INMETRO	(P.R. Guimaraes Couto)
KRISS	(Sam-Yong Woo)
MSL	(M. Fitzgerald, C. Sutton)
NIM	(Z. Pengcheng)
NIST	(D.A Olson, A. Lee)
NMi VSL	(J. Veerbeck)
NMIJ	(A.Ooiwa, T. Kobata)
NMIA	(N. Bignell)
NPL	(I. Severn)
NPLI	(A.K. Bandyopadhyay)
NRC	(A. Agarwal)
PTB	(W. Sabuga)
SMU	(P. Farar)
UME	(I. Kocas)
VNIIFTRI	(V. Borovkov)

CCM Working Group on Low Pressures

Chairman:

Dr Archie P. Miiller, NIST

Tel: + 1 301 975 5932

Fax: + 1 301 208 6962

E-mail: archie.miiller@nist.gov

Members:

BNM-LNE (**J. Legras**)

IMGC-CNR (**A. Calcatelli**)

KRISS

NMIJ/AIST (**Akira Ooiwa**)

NPL (**F.J. Redgrave**)

NPLI

NRC

PTB (**K. Jouston**)

SMU (**J. Krc-Turba**)

CCM Working Group on Medium Pressures

Interim Chair:

Dr Ian Severn, NPL

Tel: + 44 208 943 6862

Fax: + 44 208 614 0435

E-mail: ian.severn@npl.co.uk

Members:

BNM-INM

CSIR-NML

IMGC-CNR (**Dr Anita Calcatelli**)

NIM (**Mrs Han Huiwen**)

NIST (**Dr Charles R. Tilford**)

NMIJ/AIST (**Dr Akira Ooiwa**)

NMIA

NPLI

NRC

SMU (**Dr T. Skrovanek**)

BIPM (**Dr Richard Davis**)

CCM Working Group on Force**Chairman:**

Prof. Dr Manfred Peters, PTB
Tel: + 49 531 592 1010
Fax: + 49 531 592 1015
E-mail: manfred.peters@ptb.de

Members:

Mr Sinan Fank, UME
Tel: + 90 262 679 5000
Fax: +90 262 646 5914

Dr Carlo Ferrero, IMGC-CNR
Tel: + 39 011 397 7426
Fax: + 39 011 346 761

Mr A. Gosset, BNM-LNE
Tel: + 33 1 40 43 37 28
Fax: + 33 1 40 43 37 37
E-mail: andre.gosset@lne.fr

Mr D. Groeneveld, NMIA
Tel: + 61 2 467 6211
Fax: + 61 2 416 7902

Dr Dae-Im Kang, KRISS
Tel: + 82 42 868 5246
Fax: + 82 42 861 1494

Mr A. Knott, NPL
Tel: + 44 208 943 6180
Fax: + 44 208 943 6184

Mr A. Larsson, SP
Tel: + 46 33 16 50 00
Fax: + 46 33 10 20 15

Mr C. MacKenzie, NRC
Tel: + 1 613 993 5647
Fax: + 1 613 952 7136

Dr R. Muilwijk, NMi VSL
Tel: + 31 15 26 91 640
Fax: + 31 15 26 12 971

Mr A. Pusa, Raute Precision Oy
Tel: + 358 13 829 4275
Fax: + 358 13 829 4101

Dr Qingzhong Li, NIM
Tel: + 86 10 6420 478
Fax: + 86 10 6420 4788
E-mail: liqznim@hotmail.com

Dr A. Robles, CEM
Tel: + 34 91 807 4700
Fax: + 34 91 407 4807

Dr J. C. Torres Guzmán, CENAM
Tel: + 52 442 2 11 05 72
Fax: + 52 442 2 11 05 78
E-mail: jtorres@cenam.mx

Mr Andre van Tonder, CSIR-NML
Tel: +27 12 841 2127
Fax: +27 12 841 4458
E-mail: anvtonde@csir.co.za

Dr Kazunaga Ueda, NMII/AIST
Tel: + 81 298 61 4097
Fax: + 81 298 61 4096
E-mail: kazunaga-ueda@aist.go.jp

Mr W. Vincke, IGM
Tel: + 32 2 247 96 27
Fax: + 32 2 245 76 73

Dr Simone L. Yaniv, NIST
Tel: + 1 301 975 4917
Fax: + 1 301 869 3536
E-mail: simone.yaniv@nist.gov

CCM Working Group on the Avogadro Constant

Chairman:

Dr Peter Becker, PTB
 Tel: + 49 531 592 6130
 Fax: + 49 531 592 6015
 E-mail: peter.becker@ptb.de

Members:

Mr A. Bergamin, IMGC-CNR
 Fax: + 39 0 11 346 761
 E-mail: bergamin@imgc.cnr.it

Dr Richard S. Davis, BIPM
 Fax: + 33 1 45 34 20 21
 E-mail: rdavis@bipm.org

Prof. Paul De Bièvre, IRMM
 Fax: + 32 14 584 273
 E-mail: paul.de.bievre@skynet.be

Dr R.D. Deslattes, NIST
 Fax: + 1 301 975 3038
 E-mail: rdeslattes@nist.gov

Mr W. Giardini, NMIA
 Fax: + 61 3 544 1128
 E-mail: giardini@rivett.mst.measurement.gov.au

Dr D.N. Gulidov, VNIIM
 Fax: + 7 812 113 0114

Dr M. Kenny, NMIA
 Fax: + 61 2 431 7238
 E-mail: michaelk@swifty.dap.measurement.gov.au

Mr A. Leistner, NMIA
 Fax: + 61 2 413 7200
 E-mail: achim@swifty.dap.measurement.gov.au

Dr Giovanni Mana, IMGC-CNR
 Fax: + 39 011 346 761
 E-mail: g.man@imgc.cnr.it

Dr K. Nakayama, NMIIJ/AIST
 Fax: + 81 298 61 4135
 E-mail: nakayama@aist.go.jp

Prof. B. Pajot, Université Paris VII
 Paris (France)
 Fax: + 33 1 44 27 79 47
 E-mail: pajot@gps.jussieu.fr

Dr H.S. Peiser, Washington (U.S.A.)
 Fax: + 1 301 762 1173
 E-mail: hspeiser@aol.com

Dr Anna Peuto, IMGC-CNR
 Fax: + 39 011 346 761
 E-mail: a.peuto@imgc.cnr.it

Dr S.V. Potapov, VNIIM
 E-mail: potapov@onti.vniim.spb.su

Dr Terry J. Quinn FRS, BIPM
 Fax: + 33 1 45 34 86 70
 E-mail: tquinn@bipm.org

Dr Mitsuru Tanaka, NMIIJ/AIST
 Tel: + 81 298 61 4059
 Fax: + 81 298 61 4009
 E-mail: mitsuru.tanaka@aist.go.jp

Dr Barry N. Taylor, NIST
 Fax: + 1 301 869 7682
 E-mail: barry.taylor@nist.gov

Dr K. Nakayama, NMIIJ/AIST
 Fax: + 81 298 61 4135
 E-mail: nakayama@aist.go.jp

Prof. G. Zosi, Istituto di Fisica
 Generale “A. Avogadro”
 Turin (Italy)
 Fax: + 39 0 11 658 444
 E-mail: zosi@tox37.to.infn.it

CCM Working Group on Hardness

Chairman:

Dr Alessandro Germak, IMGC-CNR

Tel: + 39 011 3977 367

Fax: + 39 011 3977 426

E-mail: a.germak@imgc.cnr.it

Members:

G.W. Bahng, KRISS

T. Bell, NMIA

G. Chapman, NRC

N. Domostroyeva, VNIIM

D. Elkington, NPL

K. Herrmann, PTB/Secretary of IMEKO TC 5

H. Ishida, NMIJ/AIST

A.O. Karczmarek, GUM

G. Kotte, NMi VSL

H. Li, NIM

S.R. Low, NIST/Secretary of CCM WG Hardness

F. Meli, METAS

L. Pendrill, SP

P. Pinot, BNM INM

R. Spurny, SMU

S.W. Stiefel, NIST/Secretariat of OIML/TC 10/SC 5

CCM Working Group on Fluid Flow

Interim Chair:

Dr Masaki Takamoto, NMIJ/AIST

Tel: + 81 29 861 4228

Fax: + 81 29 861 4242

E-mail: m-takamoto@aist.go.jp

CCM Working Group on Gravimetry**Chairman:****Dr Leonid Vitushkin, BIPM**

Tel: + 33 1 45 07 70 81

Fax: + 33 1 45 34 20 21

E-mail: lvitushk@bipm.org

Members:**Dr Jean-Pierre Barriot, BGI/OMP**

Fax: +33 (0) 5 61 25 30 98

Tel: +33 (0) 5 61 33 28 94

E-mail: jean-pierre.barriot@cnes.fr

Dr André Clairon, BNM/SYRTE

Fax: +33 (0) 1 43 25 55 42

Tel: +33 (0) 1 40 51 23 33

E-mail: andre.clairon@obspm.fr

Dr James E. Faller, NIST

Fax: +1 303 735 2498

Tel: +1 303 492 8509

E-mail: faller@jila.colorado.edu

Prof., Dr Olivier Francis, ECGS

Fax: + 352 33 14 87 88

Tel: + 352 33 14 87 35

E-mail: olivier@ecgs.lu

Dr Alessandro Germak, IMGC

Fax: +39 011 39 77 426

Tel: +39 011 39 77 358

E-mail: a.germak@imgc.cnr.it

Dr Evgeny P. Krivtsov, VNIIM

Fax: +7 812 113 01 14/+7 812 422 48 91

Tel: +7 812 422 15 60/7 812 251 61 71

E-mail: krivtsov@hotbox.ru

Prof. Jan Krynski, IGC

Fax: +48 22 827 03 28

Tel: +48 22 828 02 69/113

E-mail: krynski@igik.edu.pl

Mr Jacques Liard, NRC

Fax: +1 613 992 66 28

Tel: +1 613 992 48 89

E-mail: jliard@nrcan.gc.ca

Dr Jaakko Mäkinen, FGI

FIN-02430 Masala

Fax: +358 9 29 55 52 00

Tel: +358 9 29 55 50

E-mail: jaakko.makinen@fgi.fi

Mr Shigeki Mizushima, NMIJ/AIST

Fax: +81 298 61 43 99

Tel: +81 298 61 43 52

E-mail: s.mizushima@aist.go.jp

Prof., Dr Giorgio Moscati, INMETRO/IoP-USP

Fax: +55 11 3812 0135

Tel: +55 11 3032 6457/ 30 31 31 21

E-mail: moscati@ifp.usp.br

Dr Philippe Richard, METAS

Fax: +41 31 32 33 210

Tel: +41 31 32 33 415

E-mail: philippe.richard@metas.ch

Dr Ian Robinson, NPL

Fax: +44 20 8943 6939

Tel: +44 20 8943 7139

E-mail: ian.robinson@npl.co.uk

Prof. Dr Arkady E. Sinelnikov, VNIIM

Fax: +7 812 113 01 14/+7 812 422 48 91

Tel: +7 812 422 15 60/7 812 251 61 71

E-mail: sinelnikov@mail.convey.ru

Dr Michel Van Camp, ORB

Fax: +32 2 373 0339

Tel: +32 2 373 0265

E-mail: mvc@oma.be

Working Group on Viscosity Measurement

List of the attendees at the meeting of 15 November 2002

Interim Chair:

Dr Robert Kaarls

Tel: + 31 71 580 22 31
 Fax: + 31 71 580 47 77
 E-mail: rkaarls@euronet.nl

Participants:

Mr Roberto Arias, CENAM

Tel: + 52 442 211 0500 ext. 3765
 Fax: + 52 442 211 0500 ext. 3776
 E-mail: rarias@cenam.mx

Dr Harro Bauer, PTB

Tel: + 49 531 592 3100
 Fax: + 49 531 592 3205
 E-mail: harro.bauer@ptb.de

Mr Mathieu Brizard, BNM-LNE

Tel: 01 40 43 37 55
 Fax: 01 40 43 37 37
 E-mail: mathieu.brizard@lne.fr

Prof. Carlos Nieto de Castro, IPQ

Tel: + 351 212 948 105
 Fax: + 351 212 948 110
 E-mail: ccastro@mail.ipq.pt

Dr Natalia G. Domostroeva, VNIIM

Tel: + 7 812 323 9670
 Fax: + 7 812 323 9671
 E-mail: n.g.domostroeva@vniim.ru or
 hal@onti.vniim.spb.su

Mrs Maria Ferreira, IPQ

Tel: + 351 212 948 164
 Fax: + 351 212 948 188
 E-mail: mcferreira@mail.ipq.pt

Dr Kenichi Fujii, NMIJ/AIST

Tel: + 81 298 61 4316
 Fax: + 81 298 50 1464
 E-mail: fujii.kenichi@aist.go.jp

Dr M. Richard Hoover, Cannon Instrument Company

Tel: + 1 814 353 8000 ext.228
 Fax: + 1 814 353 3320
 E-mail: mrhoover@cannon-ins.com

Dr Günther Klingenberg, PTB

Tel: + 49 531 592 3120
 Fax: + 49 531 592 3205
 E-mail: guenther.klingenberg@ptb.de

Mr Yasumitsu Kurano, NMIJ/AIST

Tel: + 81 298 61 4017
 Fax: + 81 298 50 1464
 E-mail: y.kurano@aist.go.jp

Mr Tripurari Lal, NPLI

Tel: + 91 11 574 2610/2611/2612 ext.2348
 Fax: + 91 11 572 6938 or 6952
 E-mail: tlal@mail.nplindia.ernet.in

Dr Salvatore Lorefice, IMGC-CNR

Tel: + 39 011 3977 1
 Fax: + 39 011 3977 437
 E-mail: s.lorefice@imgc.cnr.it

Mr Emmanuel Mahé, BNM-LNE

Tel: + 33 1 40 43 3858
 Fax: + 33 1 40 43 37 37
 E-mail: emmanuel.mahe@lne.fr

Mr Mohammed Megharfi, BNM-LNE

Tel: + 33 1 40 43 39 54
 Fax: + 33 1 40 43 37 37
 E-mail: mohamed.megharfi@lne.fr

Dr Mostafa Mekawy, NIS

Tel: + 20 2 386 7451
 Fax: + 20 2 386 7451
 E-mail: m_mekawy@yahoo.com

Mrs Jadwiga Nawra, GUM

Tel: + 48 22 620 0241 ext.208, 529
 Fax: + 48 22 620 6646
 E-mail: physchem@gum.gov.pl

Mr Dusan Trochta, SMU
Tel: + 421 2 602 942 14
Fax: + 421 2 654 295 92
E-mail: trochta@smu.gov.sk

Dr James Whetstone, NIST
Tel: + 1 301 975 2609
Fax: + 1 301 975 8288
E-mail: james.whetstone@nist.gov

Mrs Inge van Andel, NMi VSL
Tel: + 31 15 269 1754
Fax: + 31 15 2612 971
E-mail: ivandel@nmi.nl

Consultative Committee for Amount of Substance: metrology in chemistry (CCQM)**Created in 1993**

Present activities concern primary methods for measuring amount of substance and international comparisons, establishment of international equivalence between national laboratories and advice to the CIPM on matters concerned with metrology in chemistry.

President: **Dr Robert Kaarls**

Klaverwydenstraat 13
2381 VX Zoeterwoude
The Netherlands
Tel: + 31 71 580 22 31
Fax: + 31 71 580 47 77
E-mail : rkaarls@euronet.nl

Executive Secretary: **Dr Robert Wielgosz, BIPM**

Tel: + 33 1 45 07 62 51
Fax: + 33 1 45 34 20 21
E-mail: rwielgosz@bipm.org

Members:

Centro Nacional de Metrología [CENAM], Querétaro
D.I. Mendeleev Institute for Metrology, Gosstandart of Russia [VNIIM], St Petersburg
Danish Institute of Fundamental Metrology [DFM], Lyngby
Institute for Reference Materials and Measurements [IRMM], Geel
International Atomic Energy Agency [IAEA]
International Federation of Clinical Chemistry and Laboratory Medicine [IFCC]
International Organization for Standardization, Committee on Reference Materials [ISO REMCO]
International Union of Pure and Applied Chemistry [IUPAC]
Korea Research Institute of Standards and Science [KRISS], Daejeon
Laboratoire National d'Essais [BNM-LNE], Paris
National Institute of Metrology [NIM]/National Research Center for Certified Reference Material
[NRCCRM], Beijing
National Institute of Standards and Technology [NIST], Gaithersburg
National Measurement Institute of Australia [NMIA], Lindfield
National Metrology Institute of Japan, AIST [NMIJ/AIST], Tsukuba
National Physical Laboratory [NPL]/Laboratory of the Government Chemist [LGC], Teddington
National Research Council of Canada [NRC], Ottawa
Nederlands Meetinstituut/Van Swinden Laboratorium [NMi VSL], Delft
Physikalisch-Technische Bundesanstalt [PTB]/Federal Institute for Materials Research and Testing /
Bundesanstalt für Materialforschung und -prüfung [BAM], Berlin
Slovak Institute of Metrology/Slovenský Metrologickej Ústav [SMU], Bratislava
State Laboratory [SL], Dublin
Swedish National Testing and Research Institute [SP], Borås
Swiss Federal Office of Metrology and Accreditation [METAS], Bern-Wabern/Swiss Federal Laboratories
for Materials, Testing and Research [EMPA], St Gall
The Director of the International Bureau of Weights and Measures [BIPM], Sèvres

Observers:

Central Office of Measures/Główny Urzad Miar [GUM], Warsaw
 Centro Español de Metrología [CEM], Madrid
 CSIR - National Metrology Laboratory [CSIR-NML], Pretoria
 Istituto di Metrologia "Gustavo Colonna" del Consiglio Nazionale delle Ricerche [IMGC-CNR], Torino
 National Metrology Institute of Turkey [UME], Gebze-Kocaeli
 National Office of Measures/Országos Mérésügyi Hivatal [OMH], Budapest
 National Physical Laboratory of India [NPLI], New Delhi
 Standards, Productivity and Innovation Board [SPRING Singapore], Singapore

**Delegates and experts of member laboratories
at the last meeting (April 2004)**

President: Dr Robert Kaars**Members:****Dr Laurie Besley, NMIA**

Tel: + 61 2 9413 7770

Fax: + 61 2 9413 7383

E-mail: <laurie.besley@measurement.gov.au> and
<laurie.besley@agal.gov.au>**Dr Philippe Charlet, BNM-LNE**

Tel: + 33 1 40 43 39 80

Fax: + 33 1 40 43 37 37

E-mail: philippe.charlet@lne.fr

Dr Koichi Chiba, NMIJ/AIST

Tel: + 81 29 861 4100

Fax: + 81 29 861 4100

E-mail: kk-chiba@aist.go.jp

Prof. Dr Paul De Bièvre, ISO REMCO

Tel: + 32 14 851 338

Fax: + 32 14 853 908

E-mail: paul.de.bievre@skynet.be

Dr Ed W.B. de Leer, NMi VSL

Tel: + 31 15 269 1712

Fax: + 31 15 269 1515

E-mail: edeleer@nmi.nl

Ms Maria del Rocio Arvizu-Torres, CENAM

Tel: + 52 442 211 0500 ext. 3902

Fax: + 52 442 211 0569

E-mail: marvizu@cenam.mx

Dr David L. Duewer, NIST

Tel: + 1 301 975 3935

Fax: + 1 301 926 8671

E-mail: david.duewer@nist.gov

Dr René Dybkaer, IFCC

Tel: + 45 38 16 38 70 or 71

Fax: + 45 38 16 38 79

Prof. Dr Hendrik Emons, IRMM

Tel: + 32 14 571 722

Fax: + 32 14 590 406

E-mail: hendrik.emons@cec.eu.int

Dr Hugo Ent, NMi VSL

Tel: + 31 15 2 691500/675/680

Fax: + 31 15 2 612971

E-mail: hent@nmi.nl

Dr Ales Fajgelj, IAEA and IUPAC

Tel: + 43 1 2600 28233

Fax: + 43 1 2600 28222

E-mail: a.fajgelj@iaea.org

Dr Bernd Gütter, PTB

Tel: + 49 531 592 3100

Fax: + 49 531 592 3015

E-mail: bernd.guettler@ptb.de

Dr Hans-Peter Haerri, METAS

Tel: + 41 31 3233 534

Fax: + 41 31 3233 210

E-mail: hans-peter.haerri@metas.ch

Dr Werner Hässelbarth, BAM

Tel: + 49 30 81 04 11 01
 Fax: + 49 30 81 04 55 77
 E-mail: werner.haesselbarth@bam.de

Dr Euijin Hwang, KRISS

Tel: + 82 42 868 5343
 Fax: + 82 42 868 5042
 E-mail: ehwang@kriss.re.kr

Dr Toshihide Ihara, NMIJ/AIST

Tel: + 81 29 861 4120
 Fax: + 81 29 861 4099
 E-mail: t.ihara@aist.go.jp

Dr Hans D. Jensen, DFM

Tel: + 45 4525 5874
 Fax: + 45 4593 1137
 E-mail: hdj@dfm.dtu.dk

Dr Yury Kustikov, VNIIM

Tel: + 7 812 325 54 53
 Fax: + 7 812 327 97 76
 E-mail: lkonop@mail.rcom.ru or
 lkonop@b10.vniim.ru

Ms Judith Velina Lara-Manzano, CENAM

Tel: + 52 442 211 0564
 Fax: + 52 442 211 0569
 E-mail: vlara@cenam.mx

Ms Hongmei Li, NRCCRM

Tel: + 86 10 6427 1639
 Fax: + 86 10 6427 1639
 E-mail: lihm@nrccrm.org.cn

Dr Bertil Magnusson, SP

Tel: + 46 33 16 52 75
 Fax: + 46 33 12 37 49
 E-mail: bertil.magnusson@sp.se

Dr Michal Máriássy, SMU

Tel: + 421 2 6029 4522
 Fax: + 421 2 6542 9592
 E-mail: michal.mariassy@smu.gov.sk

Dr Alain Marschal, BNM-LNE

Tel: + 33 1 40 43 37 50
 Fax: + 33 1 40 43 37 37
 E-mail: alain.marschal@lne.fr

Dr Ralf Matschat, BAM

Tel: + 49 30 8104 5841 or 1110
 Fax: + 49 30 8104 1117
 E-mail: ralf.matschat@bam.de

Dr Willie E. May, NIST

Tel: + 1 301 975 3108
 Fax: + 1 301 926 8671
 E-mail: willie.may@nist.gov

Dr James W. McLaren, NRC

Tel: + 1 613 993 7319
 Fax: + 1 613 990 6439
 E-mail: jim.mclaren@nrc.ca

Dr Martin J.T. Milton, NPL

Tel: + 44 208 943 6826
 Fax: + 44 208 943 6755
 E-mail: martin.milton@npl.co.uk

Dr Yoshito Mitani, CENAM

Tel: + 52 442 211 0560
 Fax: + 52 442 211 0569
 E-mail: ymitani@cenam.mx

Dr Dae Won Moon, KRISS

Tel: + 82 42 868 5390
 Fax: + 82 42 868 5032
 E-mail: dwmoon@kriss.re.kr

Dr Irene Nehls, BAM

Tel: + 49 30 81 04 11 20
 Fax: + 49 30 81 04 11 27
 E-mail: irene.nehls@bam.de

Prof. Dr Kensaku Okamoto, NMIJ/AIST

Tel: + 81 29 861 4420
 Fax: + 81 29 861 4420
 E-mail: kensaku-okamoto@aist.go.jp

Ms Helen Parkes, LGC

Tel: + 44 208 943 7676
 Fax: + 44 208 943 2767
 E-mail: helen.parkes@lgc.co.uk

Dr Mike Sargent, LGC

Tel: + 44 208 943 7360
 Fax: + 44 208 943 2767
 E-mail: ms@lgc.co.uk

Dr Martin Seah, NPL

Tel: + 44 208 943 6634
 Fax: + 44 208 943 6453
 E-mail: martin.seah@npl.co.uk

Prof. Dr Hun-Young So, KRISS

Tel: + 82 42 868 5040
 Fax: + 82 42 868 5042
 E-mail: hys@kriss.re.kr

Dr Ralph Sturgeon, NRC
Tel: + 1 613 993 6395
Fax: + 1 613 993 2451
E-mail: ralph.sturgeon@nrc.ca

Dr Philip Taylor, IRMM
Tel: + 32 14 571 605
Fax: + 32 14 571 863
E-mail: philip.taylor@cec.eu.int

Prof. Dr Joseph Thijssen, IFCC
Tel: + 31 30 250 4264
Fax: + 31 30 250 5378
E-mail: j.thijssen@azu.nl

Dr Máire C. Walsh, SL
Tel: + 353 1 802 5800
Fax: + 353 1 821 7320
E-mail: maire.walsh@statelab.ie

Dr Michael Weber, EMPA
Tel: + 41 71 274 7794
Fax: + 41 71 274 7788
E-mail: michael.weber@empa.ch

Dr Steve Wood, LGC
Tel: + 44 208 943 7670
Fax: + 44 208 943 2767
E-mail: steve.wood@lgc.co.uk

Dr Fangdi Wu, NRCCRM
Tel: + 86 10 8425 7794
Fax: + 86 10 6422 8404
E-mail: wufd@nrccrm.com.cn

Prof. Yadong Yu, NRCCRM
Tel: + 86 10 6422 8403
Fax: + 86 10 6422 8404
E-mail: yuyd@nrccrm.org.cn or
yydh@public.bta.net.cn

Observers:

Mr Ibrahim Akdag, UME
Tel: + 90 262 679 5000
Fax: + 90 262 679 5001
E-mail: ibrahim.akdag@ume.tubitak.gov.tr

Dr Angelique Botha, CSIR-NML
Tel: + 27 12 841 3800
Fax: + 27 12 841 2131
E-mail: abotha@csir.co.za

Dr Éva Deák, OMH
Tel: + 36 1 458 5836
Fax: + 36 1 458 5807
E-mail: e.deak@omh.hu

Dr Mario Gallorini, IMGC-CNR
Tel: + 39 0382 526 252
Fax: + 39 0382 423 578
E-mail: m.gallorini@imgc.cnr.it

Dr Teresa López, CEM
Tel: + 34 91 807 4751
Fax: + 34 91 807 4807
E-mail: mtlopez@cem.es

Dr Wynand Louw, CSIR-NML
Tel: + 27 12 841 4227
Fax: + 27 12 841 3382
E-mail: wlouw@csir.co.za

Invited by the President:

Dr Leonard A. Barrie, WMO
Tel: + 41 22 730 82 40
Fax: + 41 22 730 80 49
E-mail: lbarrie@wmo.int

Dr Vanderléa de Souza, INMETRO
Tel: + 55 21 2679 9069
Fax: + 55 21 2679 9069
E-mail: vsouza@inmetro.gov.br

Dr Monique Getrouw, INMETRO
Tel: + 55 21 2679 9069
Fax: + 55 21 2293 0954
E-mail: magetrouw@inmetro.gov.br

Dr Dimka Ivanova, NCM
Tel: + 359 2 72 36 33
Fax: + 359 2 71 70 50
E-mail: ncm@sasm.orbitel.bg

Dr Gabriela Massiff, Fundacion Chile
Tel: + 56 2 242 8180
Fax: + 56 2 242 8182
E-mail: gmassiff@fundacionchile.cl

Dr Ana Padilla, WHO
Tel: + 41 22 791 3892
Fax: + 41 22 791 4836
E-mail: padillaa@who.int

Dr Vera M. L. Ponçano A. Silva, IPT
Tel: + 55 11 3767 4540/11 819 2877
Fax: + 55 11 3767 4009
E-mail: vponcano@ipt.br

Dr Wolfgang Richter
Tel: + 49 531 32 94 77
E-mail: wolfgang.k.richter@t-online.de

Prof. Dr Lothar Siekmann, Institut für Klinische Biochemie
Tel: + 49 228 287 5911
Fax: + 49 228 287 5033
E-mail: lothar.siekmann@ukb.uni-bonn.de

Mr Alan Squirrell, ILAC
Tel: + 61 2 9736 8374
Fax: + 61 2 9736 8373
E-mail: alan.squirrell@nata.asn.au

Mr Alex Williams
Tel: + 44 1252 542 854
Fax: + 44 8700 548 926
E-mail: alex_williams@camberley.demon.co.uk

CCQM Working Group on Key Comparisons and CMC Quality

Chairman:

Dr James W. McLaren, NRC
Tel: + 1 613 993 7319
Fax: + 1 613 990 6439
E-mail: jim.mclaren@nrc.ca

CCQM Working Group on Gas Analysis

Chairman:

Dr Ed W.B. de Leer, NMi VSL
Tel: + 31 15 269 1712
Fax: + 31 15 269 1515
E-mail: edeleer@nmi.nl

CCQM Working Group on Electrochemical Analysis

Chairman:

Dr Michal Máriássy, SMU
Tel: + 421 2 6029 4522
Fax: + 421 2 6542 9592
E-mail: mariassy@smu.gov.sk or michal.mariassy@smu.gov.sk

CCQM Working Group on Inorganic Analysis

Chairman:

Dr Mike Sargent, LGC
Tel: + 44 208 943 7360
Fax: + 44 208 943 2767
E-mail: ms@lgc.co.uk

CCQM Working Group on Organic Analysis

Chairman:

Dr Willie May, NIST
Tel: + 1 301 975 3108
Fax: + 1 301 926 8671
E-mail: willie.may@nist.gov

CCQM Working Group on Bioanalysis

Chair:

Dr Helen Parkes, LGC
Tel: + 44 208 943 7676
Fax: + 44 208 943 2767
E-mail: helen.parkes@lgc.co.uk

Vice-chair:

Dr Vincent Vilker, NIST
Tel: + 1 301 975 5066
Fax: + 1 301 330 3447
E-mail: vincent.vilker@nist.gov

CCQM Working Group on Surface Analysis

Chairman:

Dr Martin Seah, NPL
Tel: + 44 208 943 6634
Fax: + 44 208 943 6453
E-mail: martin.seah@npl.co.uk

Consultative Committee for Acoustics, Ultrasound and Vibration (CCAUW)

Created in 1998

In addition to its formal work in the organisation of key comparisons in acoustics (airborne and underwater), in ultrasound and in vibration measurement, the CCAUV acts as the focus for this diverse community, seeking to develop common aims and increased collaboration between national metrology institutes and appropriate designated organisations in Member Countries of the Metre Convention.

President: **Dr Joaquín Valdés**
 Quality and Metrology Manager
 Instituto Nacional de Tecnología Industrial
 Parque Tecnológico Miguelete
 Av. Gral. Paz e/Albarellos y Constituyentes (B1650KNA)
 C.C. 157 - (B1650WAB) San Martín - Prov. de Buenos Aires
 Argentina
 Tel: + 54 11 4724 6200/300/400 int.6412
 Fax: + 54 11 4724 6244
 E-mail: jovaldes@inti.gov.ar

Executive Secretary: **Dr Penelope Allisy-Roberts, BIPM**
 Tel: + 33 1 45 07 70 90
 Fax: + 33 1 45 34 20 21
 E-mail: allisy-roberts@bipm.org

Members:

Centro Nacional de Metrología [CENAM], Querétaro
 CSIR - National Metrology Laboratory [CSIR-NML], Pretoria
 D.I. Mendeleev Institute for Metrology, Gosstandart of Russia [VNIIM], St Petersburg
 Danish Institute of Fundamental Metrology [DFM]/Danish Primary Laboratory for Acoustics [DPLA],
 Naerum
 Institut National de Métrologie [BNM-INM], Paris
 Istituto di Metrologia "Gustavo Colonna" del Consiglio Nazionale delle Ricerche [IMGC-CNR], Torino
 Istituto Elettrotecnico Nazionale "Galileo Ferraris" [IEN], Torino
 Korea Research Institute of Standards and Science [KRISS], Daejeon
 National Institute of Metrology [NIM], Beijing
 National Institute of Metrology, Standardization and Industrial Quality [INMETRO], Rio de Janeiro
 National Institute of Standards and Technology [NIST], Gaithersburg
 National Measurement Institute of Australia [NMIA], Lindfield
 National Metrology Institute of Japan, AIST [NMIJ/AIST], Tsukuba
 National Physical Laboratory [NPL], Teddington
 National Physical Laboratory of India [NPLI], New Delhi
 National Research Council of Canada [NRC], Ottawa
 Nederlands Meetinstituut/Van Swinden Laboratorium [NMi VSL], Delft
 Physikalisch-Technische Bundesanstalt [PTB], Braunschweig
 Swiss Federal Office of Metrology and Accreditation [METAS], Bern-Wabern
 The Director of the International Bureau of Weights and Measures [BIPM], Sèvres

Observers:

Bundesamt für Eich- und Vermessungswesen [BEV], Vienna
 Central Office of Measures/Główny Urzad Miar [GUM], Warsaw
 Czech Metrology Institute [CMI], Praha
 Institute for Physical-Technical and Radiotechnical Measurements, Gosstandart of Russia [VNIIFTRI], Moscow
 Instituto Português da Qualidade [IPQ]/Laboratório Nacional de Engenharia Civil [LNEC], Lisboa
 International Electrotechnical Commission [IEC]
 International Organization for Standardization [ISO]
 National Metrology Institute of Turkey [UME], Gebze-Kocaeli
 Slovak Institute of Metrology/Slovenský Metrologický Ústav [SMU], Bratislava
 Standards, Productivity and Innovation Board [SPRING Singapore], Singapore
 State Agency for Metrology and Technical Surveillance [SAMTS], Sofia

**Delegates and experts of the member laboratories
at the last meeting (October 2002)**

President: Dr Joaquín Valdés**Members:****Mr Richard Barham, NPL**

Tel: + 44 208 943 6725
 Fax: +44 208 943 6217
 E-mail: richard.barham@npl.co.uk

Mr Christian Barreau, BNM-INM

Tel: + 33 5 57 04 45 89
 Fax: + 33 5 57 04 54 28
 E-mail: christian.barreau@antigone.cea.fr

Msc Salvador Barrera-Figueroa, CENAM

Tel: + 45 4525 3966
 Fax: + 45 4588 0577
 E-mail: sbf@oersted.dtu.dk

Dr Giuseppe Basile, IMGC-CNR

Tel: + 39 011 3977 424
 Fax: + 39 011 3977 426
 E-mail: g.basile@imgc.cnr.it

Dr Klaus Beißner, PTB

Tel: + 49 531 592 1431
 Fax: + 49 531 592 1405
 E-mail: klaus.beissner@ptb.de

Mr Jean-Noël Durocher, BNM-LNE

Tel: + 33 1 30 69 14 88
 Fax: + 33 1 30 69 12 34
 E-mail: jean-noel.durocher@lne.fr

Dr José Salvador Echeverría-Villagómez,

CENAM
 Tel: + 52 442 211 0550
 Fax: + 52 442 211 0553
 E-mail: saleche@cenam.mx

Dr Alfredo Elías, CENAM

Tel: + 52 442 211 0551
 Fax: + 52 442 211 0553
 E-mail: alfredo.elias@cenam.mx

Dr James Filliben, NIST

Tel: + 1 301 975 2855
 E-mail: james.filliben@nist.gov

Mr Erling Frederiksen, DPLA

Tel: +45 4580 0500
 Fax: +45 7741 2013
 E-mail: erlingfred@bksv.com

Dr Claudio Guglielmone, IEN

Tel: + 39 011 391 9626
 Fax: + 39 011 391 9621
 E-mail: guglielm@ac.ien.it

Mr Michel Lecollinet, BNM-INM

Tel: + 33 1 40 27 26 94
 Fax: + 33 1 42 71 37 36
 E-mail: michel.lecollinet@cnam.fr

Dr Victor Nedzelnitsky, NIST
 Tel: + 1 301 975 6638
 Fax: + 1 301 417 0514
 E-mail: victor.nedzelnitsky@nist.gov

Prof. Knud Rasmussen, DPLA
 Tel: + 45 4525 3937
 Fax: + 45 4588 0577
 E-mail: kr@oersted.dtu.dk

Dr Rainer Reibold, PTB
 Tel: + 49 531 592 1400
 Fax: + 49 531 592 1405
 E-mail: rainer.reibold@ptb.de

Mr Stephen Robinson, NPL
 Tel: +44 208 943 7152
 Fax: + 44 208 943 6217
 E-mail: stephen.robinson@npl.co.uk

Dr Sojun Sato, NMJJ/AIST
 Tel: + 81 298 61 5519
 Fax: + 81 298 61 5592
 E-mail: sojun.sato@aist.go.jp

Dr Victor Smirnov, VNIIM
 Tel: + 7 812 422 0159
 Fax: + 7 812 113 0114
 E-mail: hal@onti.vniim.spb.su

Dr Sang Joon Suh, KRISS
 Tel: + 82 42 868 5300
 Fax: + 82 42 868 5643
 E-mail: sjs@kriss.re.kr

Dr Suszanne Thwaites, NMIA
 Tel: + 61 2 9413 7416
 Fax: + 61 2 9413 7161
 E-mail: suszanne.thwaites@measurement.gov.au

Dr Takashi Usuda, NMJJ/AIST
 Tel: + 81 298 61 4356
 Fax: + 81 298 61 4047
 E-mail: takashi.usuda@aist.go.jp

Dr Arnie Lee Van Buren, NIST
 Tel: + 1 401 832 3617
 Fax: + 1 401 832 4157
 E-mail: vanburenal@npt.nuwc.navy.mil

Dr Paul van Kan, NMi VSL
 Tel: + 31 15 269 1500
 Fax: + 31 15 361 3497
 E-mail: pvankan@nmi.nl

Mr Ian Veldman, CSIR-NML
 Tel: + 27 12 841 4008
 Fax: + 27 12 841 2131
 E-mail: csveldma@csir.co.za

Dr Hans-Jürgen von Martens, PTB and ISO
 Tel: + 49 531 592 1220
 Fax: + 49 531 592 1241
 E-mail: hans-juergen.v.martens@ptb.de

Dr George Wong, NRC
 Tel: + 1 613 993 6159
 Fax: + 1 613 990 8765
 E-mail: george.wong@nrc.ca

Dr Bajram Zeqiri, NPL
 Tel: + 44 208 943 6806
 Fax: + 44 208 943 6161
 E-mail: bajram.zeqiri@npl.co.uk

Mr Yue Zhang, NIM
 Tel: + 86 10 6421 8628
 Fax: + 86 10 6421 8703
 E-mail: zhangy@nim.ac.cn

Observers:

Dr Alexander Enyakov, VNIIFFTRI
 Tel: + 7 095 535 9397
 Fax: + 7 095 535 9230
 E-mail: enyakov@vniiiftri.ru

Dr Anatolij Konkov, VNIIFFTRI
 Tel: + 7 095 535 9256
 Fax: + 7 095 535 9256 or 9230
 E-mail: akustika@vniiiftri.ru

Dr Enver Sadikoglu, UME
 Tel: + 90 262 679 5000
 Fax: + 90 262 679 5001
 E-mail: enver.sadikoglu@ume.tubitak.gov.tr

Dr Merita Sinojmeri, BEV
 Tel: + 43 1 49 110 390
 Fax: + 43 1 49 20 875
 E-mail: m.sinojmeri@metrology.at

Ms Maria Szelag, GUM
Tel: + 48 22 620 4259
Fax: + 48 22 620 8378
E-mail: acoustics@gum.gov.pl

Invited by the President:

Mr Gustavo Ripper, INMETRO
Tel: + 55 21 2679 9191 or 9112
Fax: + 55 21 2679 1296
E-mail: lavib@inmetro.gov.br

Acronyms and Addresses

ANSTO Australian Nuclear Science & Technology Organisation
Organization Building 16
Private Mail Bag 1
2234 Menai
Australia

ARPANSA Australian Radiation Protection And Nuclear Safety Agency
Lower Plenty Road
Yallambie
3085 Victoria
Australia

BAM Federal Institute for Materials Research and Testing/Bundesanstalt für Materialforschung und -prüfung
Unter den Eichen 87
D-12205 Berlin
Germany

BEV Bundesamt für Eich- und Vermessungswesen
Arltgasse 35
A-1160 Vienna
Austria

BNM Bureau National de Métrologie
1, rue Gaston Boissier
75015 Paris
France

BNM-INM Institut National de Métrologie
292, rue Saint-Martin
75141 - CEDEX 03 Paris
France

BNM-LNE Laboratoire National d'Essais
1, rue Gaston Boissier
75015 Paris
France

BNM-LNE/LAMA Laboratoire André Marie Ampère
29, avenue Roger Hennequin
78197 Trappes cedex
France

BNM-LNHB Laboratoire National Henri Becquerel
DIMRI - CEA Saclay
Boite postale 52
91193 Gif-sur-Yvette
France

BNM-SYRTE SYstèmes de Référence Temps-Espace
Observatoire de Paris
61 avenue de l'Observatoire
75014 Paris
France

CEM Centro Español de Metrología
Calle del Alfar n° 2
28760 Tres Cantos - Madrid
Spain

CENAM Centro Nacional de Metrología
km 4,5 Carretera a Los Cués
Municipio El Marqués
76241 Querétaro
Mexico

CIAE China Institute of Atomic Energy
P.O. Box 275 (20)
102413 Beijing
China

CIE Commission internationale de l'éclairage
Central Bureau
Kegelgasse 27
A-1030 Vienne
Austria

CIEMAT Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas
Ministerio de Industria y Energía
Avenida Complutense, 22
28040 Madrid
Spain

CMI Czech Metrology Institute
110 00 Praha 1
Hybernská 8
Praha
Czech Republic

CSIR-NML CSIR - National Metrology Laboratory
P.O. Box 395
0001 Pretoria
South Africa

CSIR-NML CSIR - National Metrology Laboratory
Radioactivity Standards Laboratory
15 Lower Hope Road
Rosebank 7700 Cape Town

South Africa	ICRU International Commission on Radiation Units and Measurements 7910 Woodmont Avenue Suite 800 MD 20814-3095 Bethesda United States
DFM Danish Institute of Fundamental Metrology Matematiktorvet Building 307 DK-2800 Lyngby Denmark	IEC International Electrotechnical Commission 3, rue de Varembé P.O. Box 131 1211- 20 Geneva Switzerland
DPLA Danish Primary Laboratory for Acoustics Brüel & Kjaer A/S Shodsborgvej 307 DK-2850 Naerum Denmark	IEN Istituto Elettrotecnico Nazionale "Galileo Ferraris" Strada delle Cacce 91 I-10135 Turin Italy
ENEA-INMRI Ente per le Nuove Tecnologie, l'Energia e l'Ambiente -Istituto Nazionale di Metrologia delle Radiazioni Ionizzanti via Anguilarese km 1,300 00060 S. M. di Galeria C. P. 2400 Roma Italy	IFA-CSIC Instituto de Física Aplicada-Consejo Superior de Investigaciones Científicas Calle Serrano, 144 28006 Madrid Spain
GOSSTANDARD State Committee of the Russian Federation for Standardization and Metrology Leninsky prospekt, 9 117049 Moscou Russian Federation	IFCC International Federation of Clinical Chemistry and Laboratory Medicine
GUM Central Office of Measures/Główny Urzad Miar P.O. Box P-10 PL 00-950 Warsaw Poland	IIR Institut für Isotopenforschung und Kernphysik "Radiuminstitut" der Universität Wien Boltzmanngasse 3 A-1090 Vienna Austria
HUT Helsinki University of Technology P.O. Box 3000 FIN-02015 Espoo Finland	IMGC-CNR Istituto di Metrologia "Gustavo Colonna" del Consiglio Nazionale delle Ricerche Strada delle Cacce, 73 I-10135 Turin Italy
IAEA International Atomic Energy Agency Wagramerstrasse, 5 P.O. Box 100 A-1400 Vienna Austria	INMETRO National Institute of Metrology, Standardization and Industrial Quality Santa Alexandrina St, 416 Rio Comprido 20261-232 Rio de Janeiro Brazil
IAU International Astronomical Union IAU Secretariat 98 bis, Boulevard Arago 75014 Paris France	INPL National Physical Laboratory of Israel Danciger "A" Bldg Hebrew University, Givat-Ram 91904 Jerusalem Israel
	INTI Instituto Nacional de Tecnología Industrial Parque Tecnológico Miguelete

Av. Gral. Paz e/Albarelos y Constituyentes
(B1650KNA)
C.C. 157 - (B1650WAB) San Martín Prov.
Buenos Aires
Argentina

IOMP International Organization for Medical Physics

IPQ Instituto Português da Qualidade
Laboratório Central de Metrologia
Rua António Gião, 2
2829-513 Caparica
Portugal

IRA-METAS Institut de Radiophysique Appliquée
Centre Universitaire
CH-1015 Lausanne
Switzerland

IRI Interfaculty Reactor Institute
Department of Radiation Technology
Mekelweg 15
2629 JB Delft
The Netherlands

IRMM Institute for Reference Materials and Measurements
European Commission - Directorate General JRC
Retieseweg
B-2440 Geel
Belgium

IRPA International Radiation Protection Association

ISO International Organization for Standardization
Central Secretariat
1, rue de Varembé
Case postale 56
CH-1211 Geneva
Switzerland

ISO REMCO International Organization for Standardization, Committee on Reference Materials

ITU International Telecommunication Union
Radiocommunication Bureau
Place des Nations
CH-1211 Genève 20
Switzerland

IUGG International Union of Geodesy and Geophysics

IUPAC International Union of Pure and Applied Chemistry
P.O. Box 13757
Research Triangle Parc
NC 27709-3757
United States

IUPAP International Union of Pure and Applied Physics

JILA Joint Institute for Laboratory Astrophysics
80303-0440 Colorado, Boulder,
United States

JV Justervesenet
Norwegian Metrology and Accreditation Service
Fetveien 99
2007 Kjeller
Norway

KRISS Korea Research Institute of Standards and Science
P.O. Box 102
Yuseong
305-600 Daejeon
Korea, Republic of

LGC Laboratory of the Government Chemist
Queens Road
Middlesex TW11 OLY
Teddington
United Kingdom

LNEC Laboratório Nacional de Engenharia Civil
Av. Brasil, 101
1700-066 Lisbonne
Portugal

LNMRI/IRD National Laboratory for Metrology of Ionising Radiation/Institute of Radiation Protection and Dosimetry CNEN
Av. Salvador Allende
s/nº - Recreio
CEP. 22780-160 Rio de Janeiro
Brazil

METAS Swiss Federal Office of Metrology and Accreditation
Lindenweg 50
CH - 3003 Bern-Wabern
Switzerland

MIKES Centre for Metrology and Accreditation
P.O. Box 239
FIN-00181 Helsinki

Finland

MSL Measurement Standards Laboratory of New Zealand
PO Box 31 310 Lower Hutt
New Zealand

NICT National Institute of Information and Communications Technology
4-2-1 Nukui-Kitamachi
Koganei
184-8795 Tokyo
Japan

NIM National Institute of Metrology
N° 18, Bei San Huan Dong Lu
100013 Beijing
China

NIST National Institute of Standards and Technology
325 Broadway
CO 80305-3328 Boulder
United States

NIST National Institute of Standards and Technology
100 Bureau Drive
Maryland 20899-0001, Gaithersburg
United States

NMi VSL Nederlands Meetinstituut/Van Swinden Laboratorium
Schoemakerstraat 97
P.O. Box 654
2600 AR Delft
The Netherlands

NMIJ/AIST National Metrology Institute of Japan, AIST
Department of National Institute of Advanced Industrial Science and Technology
Tsukuba Central 3
305-8563 Tsukuba
Japan

NMIA National Measurement Institute of Australia
PO Box 264
West Lindfield
NSW 2070
Australia

NPL National Physical Laboratory
Queens Road
Middlesex
TW11 0LW Teddington
United Kingdom

NPLI National Physical Laboratory of India
Dr K.S. Krishnan Road
110012 New Delhi
India

NRC National Research Council of Canada
Institute for National Measurement Standards
Montreal Road
K1A 0R6 Ottawa
Canada

NRCCRM National Research Center for Certified Reference Material
N° 18 Bei San Huan Dong Lu
Chaoyangqu
100013 Beijing
China

OIML International Organization of Legal Metrology

OMH National Office of Measures/Országos Mérésügyi Hivatal
P.O. Box 919
1535 Budapest
Hungary

ON Observatoire Cantonal de Neuchâtel
58, rue de l'Observatoire
CH-2000 Neuchâtel
Switzerland

ORB Observatoire Royal de Belgique
Avenue Circulaire, 3
B-1180 Bruxelles
Belgium

PTB Physikalisch-Technische Bundesanstalt
Bundesallee 100
D-38116 Braunschweig
Germany

RC Radioisotope Centre POLATOM
Metrological Laboratory of Radioactive Materials
05-400 Otwock- Swierk
Poland

ROA Real Instituto y Observatorio de la Armada
Cecilio Pujazón S/N
11.110 San Fernando Cadiz
Spain

SAMTS State Agency for Metrology and Technical Surveillance
21, "6th Septemvri" St.

1000 Sofia Bulgaria	UME National Metrology Institute of Turkey P.O. Box 54 41470 Gebze-Kocaeli Turkey
SL State Laboratory Abbotstown 15 Dublin Ireland	URSI International Union of Radio Science Secrétariat Général c/o INTEC, Universiteit Gent Sint-Pietersnieuwstraat 41 B-9000 Gent Belgium
SMU Slovak Institute of Metrology/Slovenský Metrologický Ústav Karloveská 63 842 55 Bratislava Slovakia	USNO U.S. Naval Observatory Time Service Department 3450 Massachusetts Avenue NW 20392-5420 Washington D.C. United States
SP Swedish National Testing and Research Institute PO Box 857 S-501 15 Borås Sweden	VNIIFTRI Institute for Physical-Technical and Radiotechnical Measurements, Gosstandart of Russia Mendeleyev 141570 Moscow Russian Federation
SPRING Singapore Standards, Productivity and Innovation Board National Metrology Centre 1 Science Park Drive 118 221 Singapour Singapore	VNIIM D.I. Mendeleyev Institute for Metrology, Gosstandart of Russia 19, Moskovsky Prospekt 198005 St Petersburg Russian Federation
SRC Space Research Centre of Polish Academy of Sciences Bartycka 18A 00-716 Warszawa Poland	VNIIOFI Institute for Optico-Physical Measurements, Gosstandart of Russia Ozernaya 46 119361 Moscow Russian Federation
SRPI Swedish Radiation Protection Institute/Statens Stralskyddsinstitut S-171 16 Stockholm Sweden	VTT Information Technology Centre for Metrology and Accreditation Technical Research Centre of Finland Measurement Technology POB 1304 FIN 02044 Espoo Finland
STUK Radiation and Nuclear Safety Authority P.O. Box 14 Laippatie 4 FIN-00881 Helsinki	
TUG Technical University of Graz Rechbauerstraße 12 A-8010 Graz Austria	