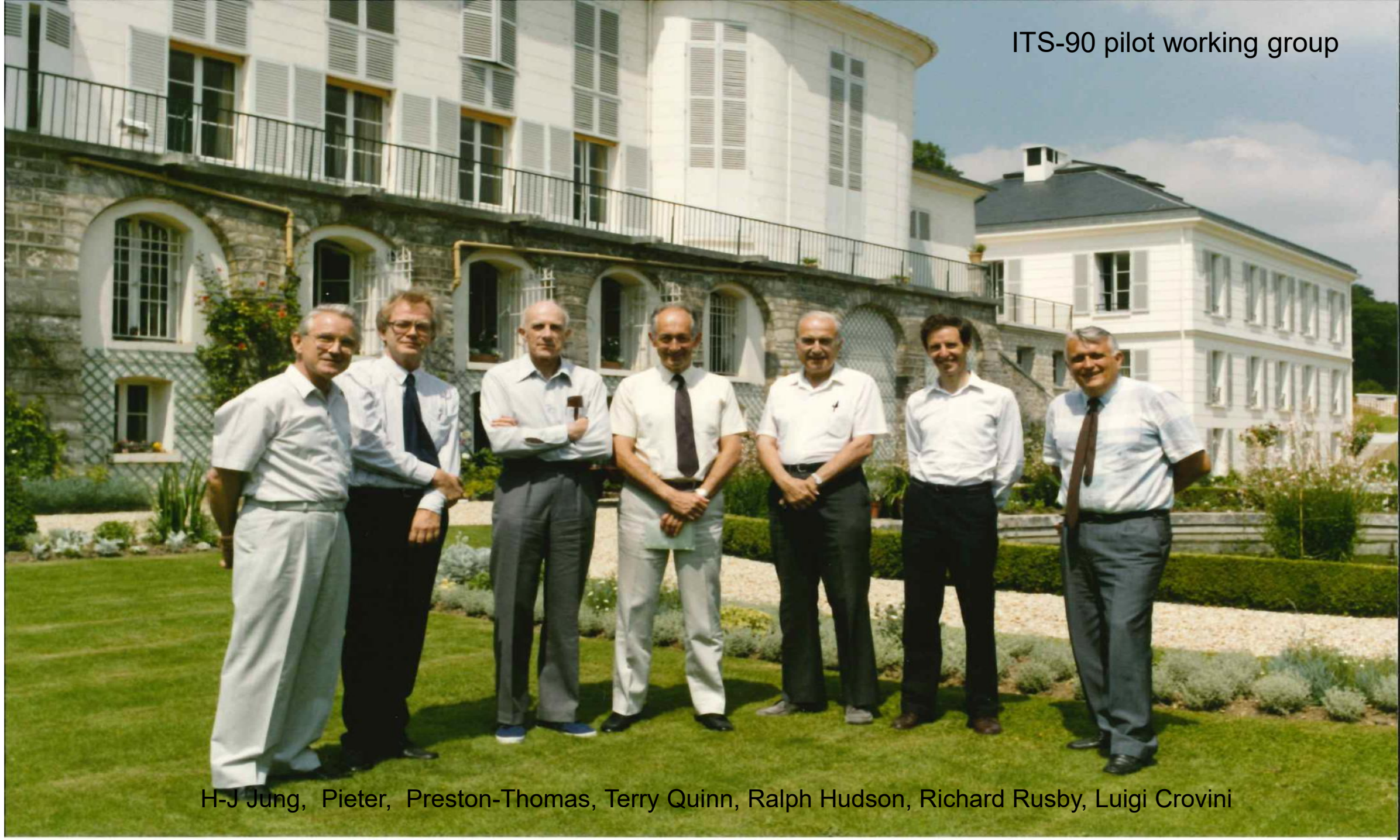
NPL

Dr Pieter Bloembergen

27 Aug 1936 – 17 Aug 2024


ITS-90 pilot working group
H-J Jung, Pieter, Preston-Thomas, Terry Quinn, Ralph Hudson, Richard Rusby, Luigi Crovini

CCT at time of adoption of ITS-90


Chengdu - China
2019
GY AND CLIMATE
TEMPMEKO & TEMPBEIJING 2019 a
XIV International Symposium on Temperature and Thermal Measureme
IV International Temperature Conference, Beijing
Metrology for Meteorology and Climate
of Metrology (NIM) Chinese Society for Measurement (CSM) Co-organized by: National Institute of Measurement and Tes
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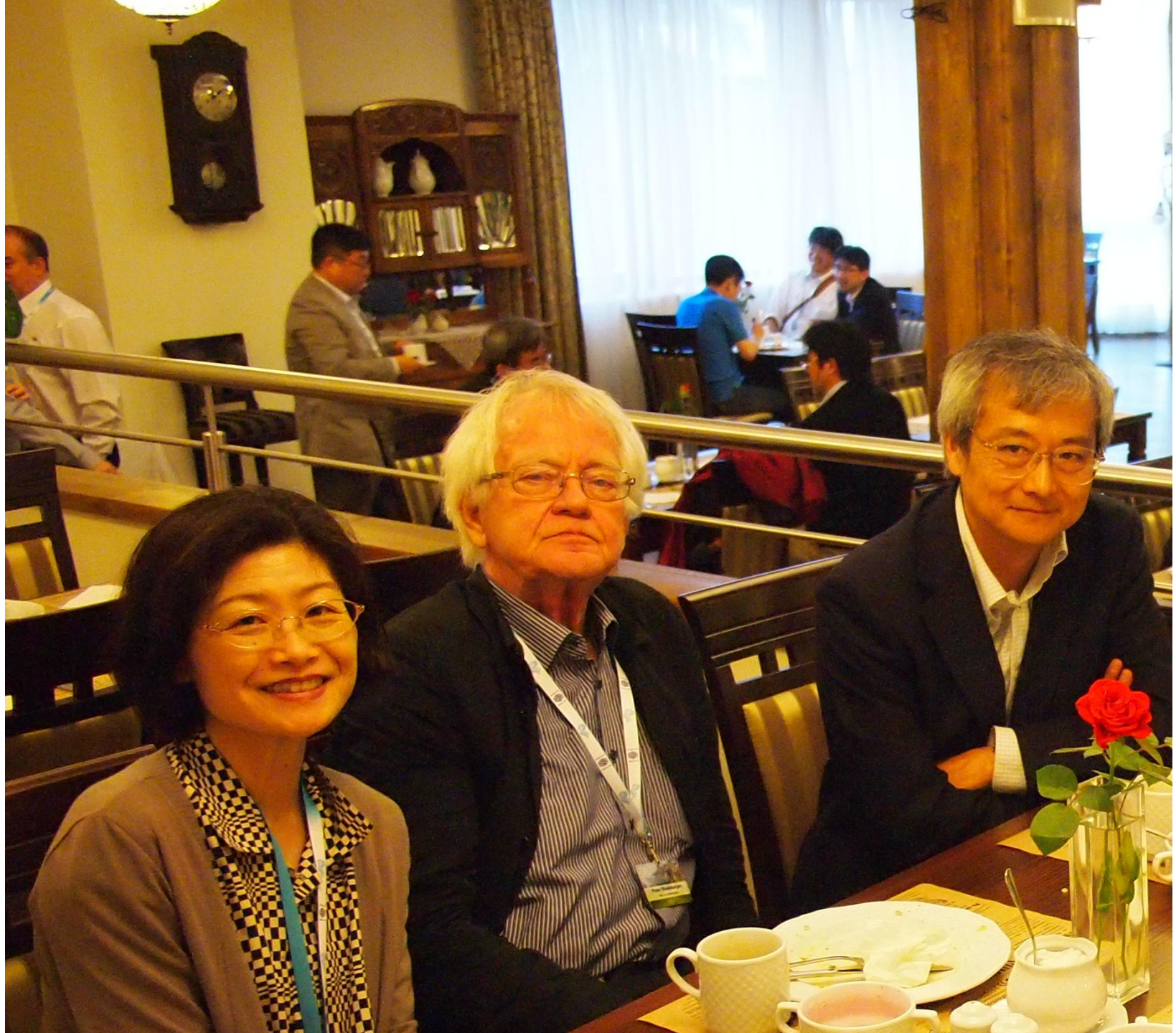

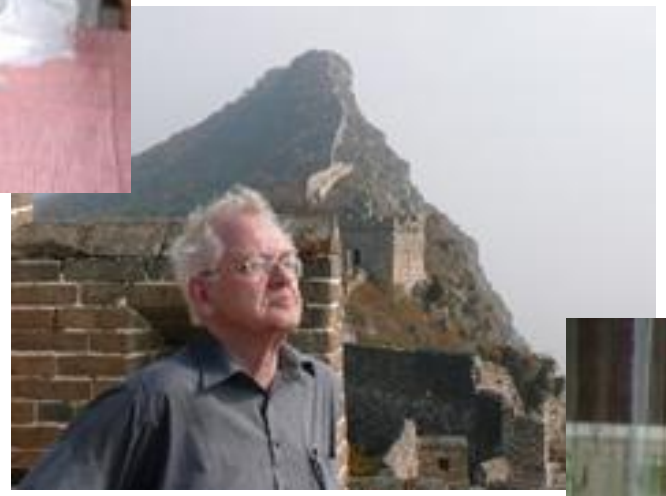

On the International Temperature Scale of 1990 (ITS-90). Part II: Recommended techniques for comparisons, at the highest level of accuracy, of fixed-point cells used for contact thermometry

B W Mangum, P Bloembergen, M V Chattle, B Fellmuth, P Marcarino and A I Pokhodun

Metrologia, Volume 36, Number 2
1999 *Metrologia* **36** 79**DOI** 10.1088/0026-1394/36/2/2

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Tempmeko 1990

Investigation of high temperature standard platinum resistance thermometers

M.J. de Groot, J.F. Dubbeldam, P. Bloembergen.

Van Swinden Laboratory, The Netherlands.

We present a comparative study of several (7 manufacturers, 9 types) commercially available Platinum resistance thermometers for use at temperatures up to 1000 °C. The high temperature stability of these thermometers was studied during an annealing process. Shunt resistances were measured at temperatures up to 950 °C. For the high temperature anneal we used a specially designed insert in a vertical tube furnace, based upon aluminium nitride (AlN). To avoid possible contamination, the thermometers were put into closely fitting platinum tubes during each anneal at temperatures above 700 °C.

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Tempmeko 1990

THE CHARACTERIZATION OF RADIATION THERMOMETERS SUBJECT TO THE SIZE-OF-SOURCE EFFECT

Bloembergen P.[1], Duan Y.[2], Bosma R.[1], Yuan Z.[2]
[1] *Nederlands Meetinstituut, Van Swinden Laboratorium (NMi-VSL), Delft, The Netherlands*
[2] *Heat Division, National Institute of Metrology (NIM), Beijing, P.R. China*

Tempmeko 1996

Abstract

A general formalism is developed to describe the size-of-source effect, serving as a basis for the correction to be applied when calibrating radiation thermometers, or when using them subsequently to measure the temperature of an arbitrary source. The SSE will be considered for plane sources, uniform and non-uniform in radiance, as well as for conical sources in a configuration, simulating a fixed-point radiator and its direct surrounding. Special attention will be given to the influence of interreflections between lens surfaces on the SSE. Finally we will show the SSE, measured for a 'variable-focus' RT as a function of the object distance.

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Van Swinden Laboratory, The Netherlands.

Tempmeko 1990

Realizing the High-Temperature Part of a Future ITS with the Aid of Eutectic Metal-Carbon Fixed Points

P. Bloembergen[1], Y. Yamada[1], N. Yamamoto[1], and J. Hartmann[2]

[1]*National Metrology Institute of Japan (NMIJ), AIST, Tsukuba, Japan*
[2]*Physikalisch Technische Bundesanstalt (PTB), Berlin, Germany*

TMSCI 2002

Abstract. In the proposed scheme temperatures are defined by interpolation and extrapolation with respect to two reference fixed points (n=2), with assigned temperatures. The definition includes one full-range and two sub-ranges in temperature. The scheme in question will be compared with two alternatives referred to (1) as n=1, using one reference point only, as in the ITS-90, and (2) as n=0, involving direct measurement of the thermodynamic temperature by means of absolute radiometry.

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NMi-VSL), Delft, The Netherlands
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B W Mangum, Pokhodun
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ON THE PROPERTIES OF HYPER-EUTECTIC METAL-CARBON FIXED POINTS

Yoshiro Yamada, Pieter Bloembergen

National Metrology Institute of Japan/ AIST, Tsukuba, Ibaraki, Japan

Tempmeko 2004

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ABSTRACT

It has previously been noticed that porous structures are often formed when filling metal-carbon eutectic cells, which maintain their shape even when molten. These structures are difficult to remove once formed. Investigation was conducted to study the nature of this structure, which revealed that its formation is induced by the high viscosity of the molten metal and its affinity to graphite. The porous ingot shows comparable

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On the International Temperature Scale of 1990 (ITS-90). Part II: Recommended techniques for comparisons, at the highest level of accuracy, of

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Investigation of high temperature standard platinum resistance thermometers

Int J Thermophys (2010) 31:1779–1788
DOI 10.1007/s10765-010-0834-5

Practical Implementation of the *Mise en Pratique* for the Definition of the Kelvin Above the Silver Point

G. Machin · P. Bloembergen · K. Anhalt · J. Hartmann · M. Sadli · P. Saunders · E. Woolliams · Y. Yamada · H. Yoon

Tempmeko 2010

Received: 1 March 2010 / Accepted: 22 September 2010 / Published online: 24 October 2010

Abstract The "*Mise en pratique* for the definition of the kelvin" (*MeP*-K) was established in April 2006 to be the repository of information required to perform a "practical measurement of temperature in accordance with the International System of Units (SI)." This article describes the progress made by the *MeP*-K HT (High Temperature Task Group) of CCT-WG5 (radiation thermometry) in drawing together the appropriate methods for accessing thermodynamic temperature above the silver point involving direct radiometric measurements on the one hand and indirect extrapolation

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The Effect of Impurities on the Evolution of the Melting Front Analyzed in a Two-Dimensional Representation for the Eutectic Pt–C

P. Castro · P. Bloembergen · W. Dong

Tempmeko 2013

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On the International Temperature Scale of 1990 (ITS-90). Part II: Recommended techniques for comparisons, at the

h **Comparison of the ITS-90 using a transfer standard infrared radiation thermometer between seven EU national metrological institutes**

Metrologia 1996

G. Machin, T. Ricolfi, M. Battuello, G. Negro, H.-J. Jung, P. Bloembergen, R. Bosma, J. Ivarsson and T. Weckstrom

Abstract. The primary purpose of the comparison was to establish the equivalence of the calibration of infrared radiation thermometers within Europe in the temperature range 800 C to 2000 C. Seven EU national metrological institutes (NMIs) participated. The equivalence of calibrations was determined by circulating a transfer standard infrared radiation thermometer between the participating laboratories. The calibrations obtained were compared with the reference calibration performed by the co-ordinating laboratory (National Physical Laboratory). It was found that, after correction for the size-of-source effect, the calibrations of the participating laboratories nearly all agree to better than 0,1 % of temperature.

ABSTRACT

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Y. Yamada[1], N. Yamamoto[1], and J. Hartmann[2]

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