

# Highlights 2013



Global Metrology Academy





# HIGHLIGHTS OF ACHIEVEMENTS 2013

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## Group courses

- . GMA-GT-2013-01 Metrology in Electricity and Magnetism
- . GMA-GT-2013-02 Metrology in Chemistry
- . UNIDO-KRISS workshop: Length, MRQ, Thermometry/Humidity

2

## Individual courses

- . Length, Thermometry, Fluid flow, Acoustics/Vibration, Gas Analysis

3

## What we have done for raising

- . Effectiveness in Close Partnership

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## Acknowledgements

- . From Participants
- . To everyone who has made it possible

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## GMA group courses 2014

- . Three technical courses scheduled

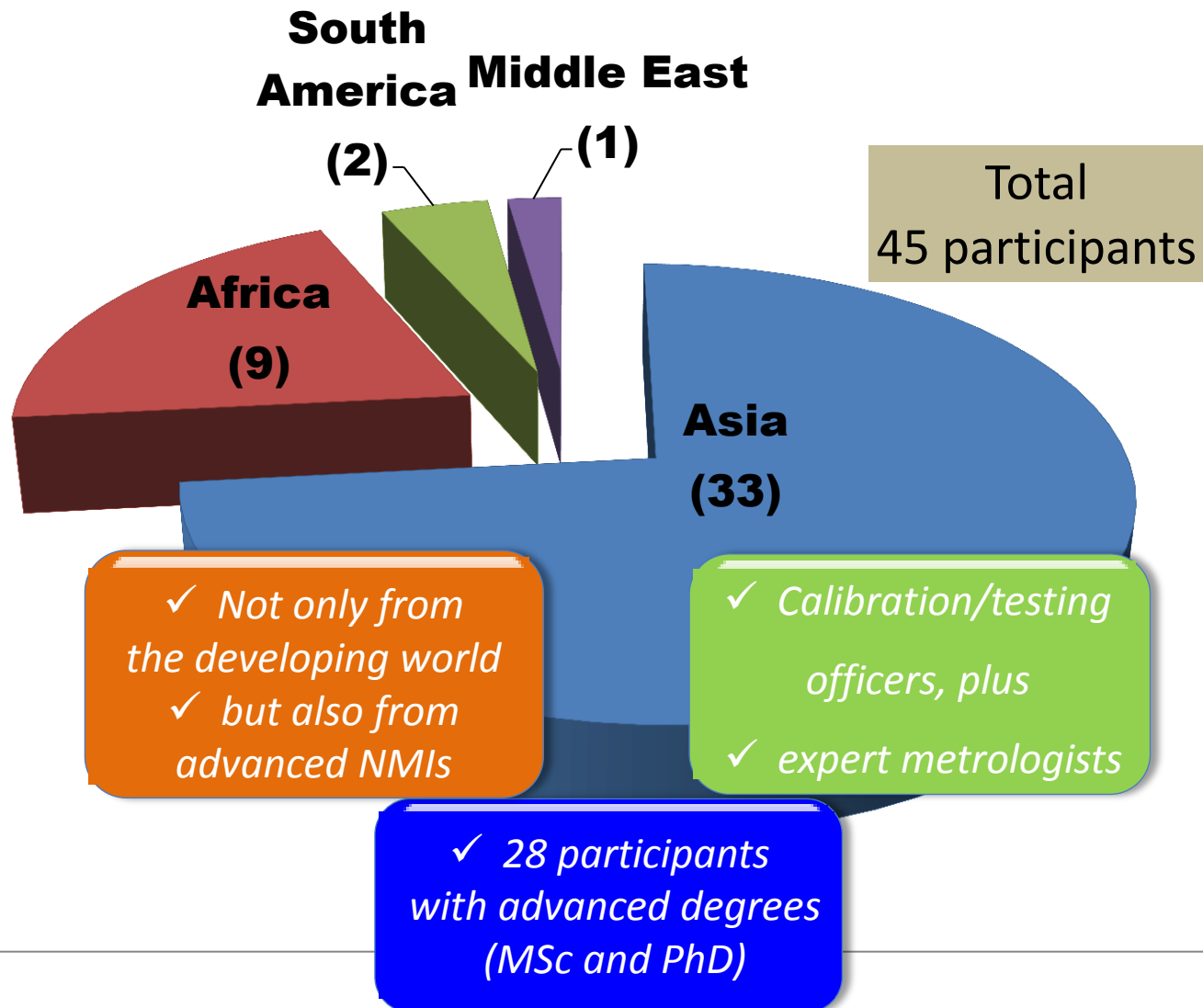
# GROUP COURSES 2013



Offering **THREE (3)** courses

Course	Themes	Dates	Participants
<b>UNIDO-KRISS Workshop 4</b>	Length, Mass, Thermometry/Humidity	April 14 - 26, 2013	14 (7 countries)
<b>GMA-GT-2013-01 Electricity and Magnetism</b>	Voltage and current, DC resistance and impedance, High voltage/current and power, Magnetic field	June 23 - July 4, 2013	15 (13 countries)
<b>GMA-GT-2013-02 Chemistry</b>	Gas analysis, Bio analysis Organic analysis, Inorganic analysis	September 2 - 13, 2013	16 (11 countries)

Accommodating **45** participants



# INDIVIDUAL COURSES 2013



Areas	Beneficiary countries	Employers
Length	Lithuania	Vilnius Gediminas Technical University
Length	Pakistan	National Physical and Standards Laboratory (NPSL)
Thermometry	Syria	National Standards and Calibration Laboratory (NSCL)
Gas Analysis	Singapore	National Metrology Center, A*STAR (NMC/A*STAR)
Length	Lithuania	Vilnius Gediminas Technical University
Fluid Flow	The Philippines	National Metrology Laboratory – ITDI (NML-Phil)
Acoustics and Vibration	Vietnam	Vietnam Metrology Institute (VMI)

covering 5 areas

62 person-weeks



# WE'VE DONE FOR EFFECTIVENESS...

## Close Communications

### ❑ Close partnership

- GMA-Participants-Lecturers
- Sharing information
- Finding solutions to problems faced
- Social events

### ❑ Interactive classes

- Two-way communications between Lecturers and participants
- Clear understanding of needs/problems
- Better understanding of knowledge in subject metrology areas

## Lectures & Hands-on practice combined

### ❑ Programming for effective learning

- Lectures (AM) + • Intensive lab session for practice (PM)

### ❑ "Metrology in General" incorporated

- Lectures on NQI, CIPM MRA, QMS, Measurement uncertainty

### ❑ Action plans developed

- Achievements leading to substantial applications on site

## Sharing Effort & Resources

### ❑ Financial resources shared

- KRISS
- UNIDO (✓)
- PTB



✓ *KRISS is a privileged partner of UNIDO.*

### ❑ Global/Regional network

- provided:** websites/members
- BIPM, DCMAS
  - APMP, SIM, COOMET, AFRIMETS





GMA and global KRISsians



# PROGRAMMING DAILY SCHEDULE



<b>Metrology Electricity and Magnetism</b>	<b>Subjects</b>	<b>Time slots allocated</b>
MiG	Metrology in General	Two days (including evaluation)
EM-01	Voltage and Current	Two days each (technical lectures plus hands-on practice)
EM-02	DC Resistance and Impedance	
EM-03	High Voltage/Current, and Power	
EM-04	Magnetic Field	
<b>Metrology in Chemistry</b>	<b>Subjects</b>	<b>Time slots allocated</b>
MiG	Metrology in General	Three days
	Lab report presentation	One day (presentations followed by Q&A)
QM-01	Gas Analysis	One day each (technical lectures plus hands-on practice)
QM-02	Bio Analysis	
QM-03	Inorganic Analysis	
QM-04	Organic Analysis	



# PROGRAMMING DAILY SCHEDULE



UNIDO-KRISS Workshop 4	Subjects	Time slots allocated
MiG	Metrology in General	THREE days
	Lab report presentation	One day
	Technical tour, cultural experience	One day
Length	Length standards, Gauge block	Four days each – parallel sessions (technical lectures plus hands-on practice, wrap-up discussion)
MRQ	Mass, Pressure, Vacuum	
TH	SPRT, TPW, Thermocouple, Humidity, Hygrometer	

Programming  
focused  
on  
a most effective  
learning

- **Intensive Laboratory Session**

Lectures (AM) + Practice (PM)

- **Action Plan Development**

solutions to problems in face, future development plan

- **“Metrology in general” incorporated**

Lectures on NQI, CIPM MRA, QMS, Uncertainty

Substantial  
Applications  
for  
better services  
on site

Average rating  
of  
Satisfaction (\*)

4.72/5.00

(\* GMA group courses 2013)

Documentations developed for facilitating  
delivery/sharing of results  
and sustained monitoring of impact

**TRAINING REPORT**  
ON  
**METROLOGY IN ELECTRICITY AND MAGNETISM**  
KOREA RESEARCH INSTITUTE OF STANDARDS AND SCIENCE

KRISS-DAEJEON KOREA

24 JUNE - 5 JULY 2013

By

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**IMPACT OF ACTIVITY UNDERTAKEN**

KRISS-NML Technical Collaboration in Metrology  
(to be accomplished 6 months after the activity & after a year)

1. Type of Activity
  - Technical study at KRISS
  - Technical Expert Advice at NML
  - Donation of Equipment
2. Details of the Activity
  - 2.1 For technical study: scope of study topics, schedule of study, trainer(s), trainee(s), duration
  - 2.2 For technical advice: specific concern/area where technical advice is needed, technical expert(s), duration
  - 2.3 For donated equipment: Equipment Name, Brand, Model, Serial No., delivery date, date put in service, purpose of equipment
3. Describe the outcome of the activity undertaken, elaborating through examples. You may add other results of the activity undertaken not mentioned below.
  - cite new service(s) offered ; month when service started
  - improvement in existing services offered ; cite examples
  - improved CMC ; cite concrete example

Technical Study Report on Thermometry

[GMA-IT-2013-05]

Course Title: Thermometry (Temperature measurement).

Activities and Outcomes

A. Key subjects of study (1<sup>st</sup> Week: July 1 - 5, 2013)

- Realization of ITS-90 from mercury to aluminum fixed points: Practice on the realization method of aluminum (Al), zinc (Zn) and tin (Sn) freezing points, as well as gallium melting point, triple point of water (TPW) and triple point of mercury (Hg). The practice was focused on heating, cooling and annealing of SPRT and the role of supper cooling phenomenon in pure metals as an indicator of quality of freezing plateau. The supper cooling plateau and recovery time were observed and the cell was induced to form the inner and outer layer mantels, where the equilibrium state takes place. I have learnt how to get good flat freezing plateau (stable plateau), which can continue for a long period of time.

## They say thanks in a voice...

The course was very nice and very important. The course content was so rich coupled with extensive hands-on laboratory sessions which made learning and understanding easier.

I learnt great lessons in organizing trainings, making people at feel at home and also encouraging the spirit of sharing. Thanks for the pictures, training materials and all the gifts. And both your smiles made the photos look very good.

I want to extend my deepest gratitude to you and Miss Hanna and GMA for the excellent job that you did to organise such an excellent training course. The course was a big success and i believe all participants benefited.

I really appreciate what KRISS is doing to train people from the whole world. The knowledge gained there is very rear to gain from anywhere in the world.

Asking the global metrology community  
for **more opportunities** of HRD in metrology  
and support for **more people** from the developing world



# ACKNOWLEDGEMENT TO ALL PARTNERS



Profound thanks and appreciation to

Participants,  
their NMIs, and  
governments  
over the globe

BIPM, APMP, SIM,  
COOMETs, AFRIMETS  
for promoting  
GMA courses

UNIDO, PTB  
Sharing resources  
for participants



and to KRISs colleagues

✓ KRISs is a privileged partner of UNIDO.

who shared effort in offering  
group and individual courses in  
2013

and agreed to continue offering  
metrology HRD programs in  
2014

# GMA GROUP COURSES 2014

**Mass & Related  
Quantities (MRQ)**

March 10-21, 2014

**Length & Dimensional  
Measurement (LDM)**

April 7-18, 2014

**GMA  
Group  
Courses  
2014**

**Thermometry  
& Humidity (TH)**

June 9-20, 2014

**Metrology in General  
(MiG)**

Early 2015  
(\* to be confirmed)

For inquiry regarding the course information, please contact:  
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*GMA  
pursues to be  
a most productive & friendly partner  
for HRD in metrology  
in the spirit of  
sharing the fruits of shared efforts!*