

DETAILED PROGRAMME

SUNDAY 26 March 2023

16:00 - 18:00 **Guided Bucharest City Tour** - bus leaves from Hotel Radisson Blu

17:00 - 21:00 **Registration & Informal Reception at Hotel Radisson Blu Bucharest**

MONDAY 27 March 2023

8:00 **Registration, Poster Mounting**

9:00 Opening Session – Chair: Aurelian Luca (IFIN-HH)

9:00 **Welcome to ICRM 2023** ICRM President
IFIN-HH Director General

9:10 **Maria Sahagia, IFIN-HH, Romania** I-01
Herceg-Novi Summer School, the starting point in the history of the International Committee of Radionuclide Metrology

9:30 Aspects of International Metrology (AIM) – Chairs: L. Karam, C. Michotte

9:30 **Romain Coulon, BIPM, France** O-10
CCRI(II)-P1.Co-60 Pilot Study – Validation of the Extended International Reference System (ESIR) for medium and high energy beta emitting radionuclides

9:50 **Stefaan Pommé, EC JRC, Belgium** O-20
Ambient humidity, the overlooked influencer of radioactivity measurements

10:10 Posters Overview: AIM – Chair: L. Karam

Romain Coulon, BIPM, France P-46
Traceability of the radionuclides in the environment: the status of primary radioactivity standards

Christian Balpardo, LMR-CNEA, Argentina P-67
Activity determination of ^{65}Zn

Arūnas Gudelis, FTMC, Lithuania P-92
Transfer of developed pre-selection and free release technology to decommissioning industries

10:20 Coffee Break

**10:50 Quality Assurance and Proficiency Tests (QA)
– Chairs: M. Bruggeman, D. Glavič-Cindro**

10:50 **Denis Glavič-Cindro, JSI, Slovenia** O-21
An overview of 20 years of accreditation in gamma-ray spectrometry laboratory at Jožef Stefan Institute

11:10 **Freda van Wyngaardt, ANSTO, Australia** O-65
Cross-validation of standardisation techniques at ANSTO using Cobalt-60 and subsequent learnings from the presence of non-gamma emitting impurities

11:30 **Tanita J. Ballé, PTB, Germany** O-107
Calibration of novel transfer standards with new ^{222}Rn emanation sources

11:50 Posters Overview: QA – Chair: M. Bruggeman

Hermawan Candra, BRIN, Indonesia P-76
A National Inter-Laboratory Comparison for the Activity Measurement of ^{152}Eu Source in Indonesia

Ioana Lalău , <i>IFIN-HH, Romania</i>	P-82
Performance evaluation of radon monitors at IFIN-HH, Romania	
Wan-Tzu Hung , <i>INER, Taiwan</i>	P-86
Proficiency Test for Low and Intermediate Level Radio-assay Laboratories in Taiwan for one decade	
Wei-Han Chu , <i>INER, Taiwan</i>	P-87
Inter-laboratory comparison of radionuclide in food in Taiwan	
Ileana Rădulescu , <i>IFIN-HH, Romania</i>	P-94
Quality assurance key point for environmental measurements using various techniques: Intercomparisons	
Hyun Su Lee , <i>KRISS, ROK</i>	P-97
Application of High-sensitivity Radon Monitor on Walk-in Type Radon Calibration Chamber at KRISS	
Sanghoon Hwang , <i>KRISS, ROK</i>	P-99
Development of a KRISS radon detector for the active ventilation system for radon reduction	
Jasmina Kožar Logar , <i>JSI, Slovenia</i>	P-105
IARMA: review of the first ten years and challenges for a next decade	
12:10 Lunch	
13:30 Conference Group Photo & Visit at the Romanian Athenaeum	
14:00 Radionuclide Metrology in Life Sciences (RMLS) – Chairs: J. Cessna, B. Zimmerman	
14:00 Benoit Sabot , <i>CEA: LNE-LNHB, France</i>	O-47
Development of a portable device for primary measurement of radiopharmaceuticals volume activity	
14:20 Andrew Fenwick , <i>NPL, UK</i>	O-54
From Primary Standards to Primary Care; Metrology in nuclear medicine imaging	
14:20 Posters Overview: RMLS – Chair: J. Cessna	
Seokwon Yoon , <i>KRISS, ROK</i>	P-16
Radiobioassay strategies of radiation workers in various field for internal contamination and on-site screening procedure study	
Raphael Galea , <i>NRC, Canada</i>	P-34
Dissemination of Canada's National Standards for Radionuclide Metrology	
Emma Bendall , <i>NPL, UK</i>	P-57
A Review of the Accuracy of Radionuclide Calibrators in UK Hospitals	
Andrew Fenwick , <i>NPL, UK</i>	P-59
The NPL secondary standard radionuclide calibrator; Design information and calibration factors	
Kirill Skovorodko , <i>FTMC, Lithuania</i>	P-62
Application of the national standard of radionuclide activity for calibration of activity meters in Lithuanian hospitals	
Christine Keevers , <i>ANSTO, Australia</i>	P-68
Facilitating direct Traceability to the Primary Standard for Australian Nuclear Medicine Departments	
Virginia Peyrés , <i>CIEMAT, Spain</i>	P-81
Standardisation and half-life of ¹⁷⁷ Lu	
Lucrezia Spagnuolo , <i>INMRI-ENEA, Italy</i>	P-110
National Programme for the Reliability of Ionising Radiation Measurements based on Inter-Laboratory Comparisons (ILC) n°2 on Radiopharmaceutical Activities	

15:00 Working Group (WG) Meeting: Radionuclide Metrology in Life Sciences (50 min.)

15:50 Alpha- and Beta-Particle Spectrometry (ABS) – Chairs: S. Pommé, X. Mougeot

15:50 **Alejandro Martín Sánchez**, *UEx, Spain* 0-58
Experimental measurements for the intensities of the long-range alpha-particles from ^{212}Po

16:10 **Xavier Mougeot**, *Univ. Paris-Saclay, CEA, LNHB, France* 0-61
Atomic exchange correction in forbidden unique beta transitions

16:30 Coffee Break

16:50 **Hiroki Hashimoto**, *Hirosaki University, Japan* 0-75
False Alarm Reduction in Measurement of Artificial Radionuclide Using a Radioactive Aerosol Monitor

17:10 **Maksym Luchkov**, *PTB, Germany* 0-93
Ultraviolet imaging of alpha sources via radioluminescence

17:30 WG Meeting: Alpha-Particle Spectrometry (15 min.)

17:45 End of conference day 1

TUESDAY 28 March 2023

9:00	Dr. Mark A. Kellett , <i>Université Paris-Saclay, CEA, List, LNHB, France</i> The discovery of radioactivity: The French-Polish connection	I-02
9:20	Dr. Daniel Ursescu , <i>IFIN-HH: ELI-NP, Romania</i> Controlling the driver of ionizing radiations beams at ELI-NP: metrology at the High-Power Laser System	I-03
9:40	WG Meeting: Beta-Particle Spectrometry (45 min.)	
10:25	Radionuclide Metrology Techniques (RMT) – Chairs: R. Fitzgerald, C. Bobin	
10:25	Posters Overview: RMT – Chair: R. Fitzgerald	
	Steven Bell , NPL, UK Ongoing research at NPL for Radioactive Gas Metrology	P-01
	Mauro S. Dias , IPEN-CNEN: SP, Brazil Primary standardization and Monte Carlo modelling of (²⁴³ Am + ²³⁹ Pu) by means of a 4π(PC)-γ coincidence counting system	P-15
	Ryan Fitzgerald , NIST, USA Primary standardization of I-125 in aqueous form using a gamma well counter	P-38
	Justyna Marganiec-Gałązka , NCBJ RC:POLATOM, Poland Activity determination of ¹¹³ Sn by LS methods	P-48
	James Renaud , NRC, Canada Primary Internal Gas Counting at NRC	P-63
	Michael L. Smith , ANSTO, Australia Commissioning and validation of a high-pressure proportional counting system at ANSTO	P-66
	Andrei Antohe , IFIN-HH, Romania Standardization of Cd-109 by two methods at IFIN-HH	P-69
	Agung Agusbudiman , UST, ROK Activity standardization of ⁶⁴ Cu by 4πβ (LS)-γ coincidence and TDCR counting method	P-72
	Takahiro Yamada , Kindai University, Japan α-γ digital anti-coincidence spectroscopy and its application to activity measurement of ²²⁵ Ac	P-78
	Brittany Broder , NIST, USA Comparison of calibration factors for Vinten ionization chamber simulated using four Monte Carlo methods	P-84
	Minji Han , KRISS: UST, ROK Digital coincidence counting system with 4πβ(PPC)-γ for the standardization of Co-60	P-100
10:50	Coffee Break	
11:20	Radionuclide Metrology Techniques: follow-up	
11:20	Karsten Kossert , PTB, Germany A bilateral comparison between LNHB and PTB to determine the activity concentration of the same ¹²⁵ I solution	O-11
11:40	Haoran Liu , NIM, China Implementation of digital selective sampling method (SESAM) on a 4πβ(PC)-γ(NaI) system	O-13
12:00	Marcell P. Takács , PTB, Germany Standardization of Tc-99m by digitizer-based 4πce(LS)-γ coincidence counting	O-19
12:20	M. Teresa Durán , IRA, Switzerland Comparative study of digital electronic systems available at IRA primary laboratory	O-24
12:40	Lunch	

13:30- Visit to IFIN-HH – optional: bus leaves from Hotel Radisson Blu at 13:30

17:00 Tour 1: Ionizing Radiation Metrology Laboratory (LMRI)

Tour 2: Extreme Light Infrastructure - Nuclear Physics (ELI-NP)

14:10 Radionuclide Metrology Techniques: follow-up

14:10 **Rio Furukawa**, NMIJ, Japan 0-70
Standardization of Rn-222 concentration using the multi-electrode proportional counter

14:30 **Boxue Liu**, CTBTO, Austria 0-83
A Calibration procedure of beta-gamma coincidence measurements using four radioxenon spikes

14:50 **Robert Shearman**, NPL, UK 0-88
The standardisation of ^{125}I and ^{109}Cd using gamma-X coincidences via the National Nuclear Array

15:10 Coffee Break

15:40 **Ben Russell**, NPL, UK 0-98
Application of inductively coupled plasma tandem mass spectrometry for re-measuring the half-life of long-lived radionuclides

16:00 WG Meeting: Radionuclide Metrology Techniques (80 min.)

17:20 End of conference day 2

WEDNESDAY 29 March 2023

9:00	Octavian Sima (University of Bucharest: IFIN-HH, Romania) 50 years of progress in gamma-ray spectrometry	I-04
9:20 Gamma-Ray Spectrometry (GS) – Chairs: M. -C. Lépy, O. Sima		
9:20	Víctor H. Elvira , CEA, France Radionuclide-free efficiency calibration of an HPGe detector using monochromatic photon beams measured with a cryogenic radiometer	O-17
9:40	Michel Bruggeman , SCK CEN, Belgium Verification of gamma-ray spectrometry analysis software for the computation of characteristic limits according to ISO 11929	O-29
10:00 Posters Overview: GS – M.-C. Lépy		
	Jiří Šuráň , CMI, Czech Republic Unmanned Long Range Helicopter System for Radiological Emergency HPGe Spectrometry	P-03
	Ciprian Coşar , UniBuc, Romania Gamma-ray interrogation of some neutron source using MCNP	P-05
	Doru Stângă , IFIN-HH, Romania Calibrating GESPECOR Model of Computing the Full-Energy Peak Efficiency of Coaxial High-Purity Germanium Detectors by Monte Carlo Simulation	P-06
	Doru Stângă , IFIN-HH, Romania A Novel Method of Fast Computing of the Full-Energy Peak Efficiency for Cylindrical Sources Using Coaxial High-Purity Germanium Detectors	P-07
	Michel Bruggeman , SCK CEN, Belgium Measuring mass attenuation coefficients for materials with unknown composition by performing transmission measurements with a HPGe detector for X-rays and low-energy gamma rays	P-18
	Marie-Christine Lépy , CEA: LNE-LNHB, France Self-attenuation in the low-energy range: an experimental study on Pb-210	P-35
	Toni Petrovič , JSI, Slovenia Calculation of detection limits with the LSQ method in gamma-ray spectrometry using interpolation	P-51
	Arūnas Gudelis , FTMC, Lithuania Surface activity determination in metallic waste samples by using HPGe and CeBr ₃ detectors and MCNP modelling of γ -spectra	P-60
	Callum Grove , UKAEA, UK Initial Gamma spectroscopy of ITER materials irradiated in the JET D-T neutron environment	P-90
	Miroslav Hýža , NRPI, Czech Republic Machine learning approach to the fast screening analysis of atmospheric radioactive aerosols	P-109
10:25	Coffee Break	
10:55 Gamma-Ray Spectrometry: follow-up		
10:55	Marie-Christine Lépy , CEA: LNE-LNHB A benchmark for Monte Carlo simulations in gamma-ray spectrometry – Part II: True coincidence summing correction factors	O-39
11:15	Aurelian Luca , IFIN-HH, Romania Testing the low energy photon detection capability of three activity standardization installations from IFIN-HH (Romania)	O-50

11:35	Octavian Sima , UniBuc, IFIN-HH, Romania Uncertainty and covariance matrix of the coincidence summing correction factors due to decay data uncertainties	O-52
11:55 WG Meeting: Gamma-Ray Spectrometry (80 min.)		
13:15	Lunch	
14:30 Research in Industry: commercial companies presentations		
14:30	Gabriela Ilie , Mirion Technologies Inc., USA HPGe detectors for challenging applications: Latest advancements and outlook	RI-01
14:45	Matteo Corbo , CAEN SPA, Italy Digital multi-input DAQ for low background measurements	RI-02
15:00 Measurement Standards and Reference Materials (MSRM) – Chairs: L. Karam, N. Navarro Ortega		
15:00	Krasimir Mitev , Sofia Univ. „St. Kliment Ohridski“, Bulgaria Towards a Radon-in-water primary standard at LNHB	O-27
15:20 Posters Overview: MSRM – Chair: L. Karam		
	Simona Zaharov , SNN-Cernavoda NPP, Romania Intercomparison Exercises for Organically Bound Tritium to Develop Reference Materials of Environmental Matrices	P-37
	Yoonhee Jung , KRISS, ROK Development of Reference Material for Quality Control of Uranium Analysis in Marine Sediments	P-42
	Dobromir Pressyanov , Sofia Univ. „St. Kliment Ohridski“, Bulgaria Influence of humidity on activated carbon fabrics scheduled for use in high sensitivity radon detectors	P-43
	Minju Lee , KRISS, ROK Development of soil reference material for gamma radioactivity measurement in environmental samples	P-44
	Sang-Han Lee , KRISS, ROK Development of metal radioactive liquid reference material for the measurement of gamma and beta emitted radionuclide	P-102
15:30 Source Preparation Techniques (SP) – Chairs: L. Karam, N. Navarro		
15:30	Denis Bergeron , NIST, USA Gravimetric deposition of microliter drops with radiometric confirmation	O-40
15:50 Posters Overview: MSRM – Chair: L. Karam		
	Gatot Wurdianto , BRIN, Indonesia Preparation of ^{137}Cs sources from nuclear fuel element plate $\text{U}_3\text{Si}_2/\text{Al}$ post irradiation for calibrating nuclear instruments	P-64
	Yasushi Sato , NMIJ, Japan Source preparation for activity measurement of Po-210 by transition-edge sensor	P-77
15:55	Coffee Break	
16:25	Dilan Tuzun , Univ. Paris-Saclay, CEA, LNHB, France Novel production method for traceable surface sources by aluminium functionalisation	O-53
16:45	End of conference day 3	

19:00 - 22:00 Conference Dinner at Restaurant Pescăruș in Herăstrău Park
- bus leaves from Hotel Radisson Blu at 18:30
Granting the JARI Medal and Hubbell Award - by the representatives of ELSEVIER – Applied Radiation and Isotopes Journal.

THURSDAY 30 March 2023

9:00 Liquid Scintillation Counting Techniques (LSC) – Chairs: K. Kossert, P. Cassette		
9:00	Philippe Cassette , Sofia Univ. „St. Kliment Ohridski“, Bulgaria Uncertainties in TDCR measurement revisited: contribution of optical effects	0-14
9:20	Christophe Bobin , LNE-LNHB, France Activity standardization of ^{60}Co and $^{106}\text{Ru}/^{106}\text{Rh}$ by means of the TDCR method and the importance of beta spectrum	0-28
9:40	Ryszard Broda , NCBJ RC:POLATOM, Poland Measurement of the activity and determination of the half-life of ^{225}Ac at POLATOM	0-31
10:00	Raphael Galea , NRC, Canada Primary standardization of Ac-225 at NRC	0-33
10:20 Posters Overview: LSC – Chair: K. Kossert		
	Romain Coulon , BIPM, France Liquid scintillation counting of internal conversion electrons for the quantification of ^{109}Cd activity using a 3 photomultipliers tubes system and a specific energy distribution unfolding method	P-09
10:25 Coffee Break		
11:00 WG Meeting: Liquid Scintillation Counting Techniques (45 min.)		
11:45	Alan Nichols (University of Surrey, UK: MAHE, Manipal, India) A Personal Evaluation of Atomic and Nuclear Decay Data Over the Years	I-05
12:05 Nuclear Decay Data (ND) – Chairs: M. Kellett, A. Nichols		
12:05	Leticia Pibida , NIST, USA Absolute emission intensities of the gamma-ray for ^{224}Ra and ^{212}Pb progeny and half-life of ^{212}Pb decay	0-08
12:25	Sylvain Leblond , LNE-LNHB, France New DDEP recommendations for the radioactive decay scheme of ^{137}Cs	0-36
12:45 Posters Overview: ND – Chair: M. Kellett		
	Brian Zimmerman , NIST, USA A New Evaluation of the Decay Data for Ho-166	P-04
	Benoit Sabot , LNE-LNHB, France On-site measurement of C-11 and F-18 half-life by TDCR counting	P-22
12:50 Lunch		
13:30- Visit to IFIN-HH – optional: bus leaves from Hotel Radisson Blu at <u>13:30</u>		
17:00 Tour 1: Ionizing Radiation Metrology Laboratory (LMRI) Tour 2: Extreme Light Infrastructure - Nuclear Physics (ELI-NP)		
14:15 Nuclear Decay Data: follow-up		
14:15	Denis Bergeron , NIST, USA Liquid scintillation efficiencies, gamma-ray emission intensities, and half-life for Gd-153	0-41
14:35	Natasha Ramirez , NPL, UK Determination of the ^{68}Ga half-life	0-91
14:55	Marco Capogni , INMRI-ENEA, Italy Measurement of the absolute gamma emission intensities from the decay of ^{166}Ho	0-111
15:15 WG Meeting: Nuclear Decay Data (60 min.)		
16:15 End of conference day 4		
16:15 Coffee Break		
16:30- Meeting: Decay Data Evaluation Project (DDEP) – Chair: Xavier Mougeot		
18:30		

FRIDAY 31 March 2023

9:00	Low Level Radioactivity Measurement Techniques (LL) – Chairs: B. Quintana Arnés, Dirk Arnold	
9:00	Paul Malfrait , IRSN, France Online analysis of gamma-ray spectrum by spectral unmixing	O-89
9:20	Begoña Quintana , Univ. of Salamanca, Spain Low-level activity determination of ¹⁴ C from marine shells by the CIEMAT/NIST method	O-108
9:40	Iolanda Osvath , IAEA, Marine Env. Laboratories, Monaco Improvements in the detection capability for monitoring low levels of radionuclides in atmospheric aerosols at IAEA's Marine Environment Laboratories in Monaco	O-106
10:00	Posters Overview: LL – Chairs: B. Quintana Arnés, Dirk Arnold	
	Stefan Röttger , PTB, Germany Radon metrology for use in climate change observation and radiation protection at the environmental level	P-23
	Dirk Arnold , PTB, Germany Metrology for the harmonisation of measurements of environmental pollutants in Europe	P-25
	Mirela Vasile , SCK CEN, Belgium A comparison of different approaches for the analysis of ³⁶ Cl in graphite samples	P-45
	Ivelina Dimitrova , Sofia Univ., Bulgaria Estimation of Correction Factors for RadonEye Continuous Radon Monitors	P-73
	Tomislav Ilievski , RBI, Croatia Upgrade of HPGe spectrometry system for low level activity determination with cosmic veto	P-85
	Charles Philippe Mano , CEA, France Algorithms development for low level radon spectrum analysis	P-104
10:10	Best Poster Award – Chair: Brian Zimmerman	
10:25	Coffee Break	
11:00	WG Meeting: Low Level Radioactivity Measurement Techniques (80 min.)	
12:20	Closing the ICRM 2023 – Chairs: Brian Zimmerman, Aurelian Luca	
12:30	Lunch	
14:00	The General Meeting of ICRM (ICRM GM): Part 1	
16:00	Coffee Break	
16:20	ICRM GM: Part 2 & Meeting Close	
17:00	Break	
17:30-	ICRM Executive Board Meeting	
19:30		