

RADIATION PROTECTION FOR EVERYONE

# PROGRAMME



**6th European Congress on Radiation Protection**

**30 May – 3 June 2022**

Budapest, Hungary / Budapest Congress Center

**HYBRID EVENT**



Has been growing CdZnTe crystal for 27 years, Imdetek Co., Ltd is the only one CdZnTe detector fabricator in China. Imdetek covers 10 acres. With 68 R&D staff and over a hundred furnaces, it has developed CdZnTe detectors for radiation measurement, spectrum analyzing, and imaging applications, including dosimeter, spectrometer, gamma camera, alpha/beta detector, high-energy-resolution probe, radioisotope identification device. Pre-amplifier, main amplifier, MCA and other electronics are its products also. Our solutions include NaI, CsI(Tl), LaBr<sub>3</sub>, CLYC detectors also.

Warmly welcome you to visit our website for more info. ([www.imdetek.com](http://www.imdetek.com)).



CdZnTe Ingot



Regional Radiation MS



CdZnTe based Dosimeter

**Function:**  
Radiation dosage record and alarm;  
...



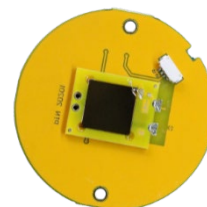
CdZnTe based Radiation Detection Watch

**Features:**

- Radiation detection & alarm;
- Heart rate interface;
- Blood pressure interface;
- Sport interface;
- Weather interface;
- ...

We are willing to support your works.

Call us now for **FREE** detector sample, [info@imdetek.com](mailto:info@imdetek.com).



**Radon detector for consumer market**

# Welcome to IRPA2022

*Dear Colleagues and Friends,*

It is my great pleasure to invite you to the 6<sup>th</sup> European International Radiation Protection Association (IRPA) Congress to be held on May 30 – June 3 2022, in Budapest, Hungary.

With the theme „Radiation Protection for Everyone”, the congress has set a clear objective to engage scientists from different fields and draw attention to the importance of radiation protection. In addition to the traditional IRPA congress programmes (plenary, parallel and poster sessions) new types of events (Start-up Competition, Art & Fun corner) have been added to the programme. Thanks to new technologies, the congress can be attended not only in person but also virtually. Online participation removes all obstacles (viruses, wars) to a high quality and open discussion between experts from all over the world. Until the beginning of the congress it is possible to change between virtual and in-person attendance. But I am sure that the majority will choose the in-person attendance, because of the beauty of Budapest, the interesting technical site visits and the gala dinner on a Danube cruise boat. These programmes can provide an unforgettable experience that is not available online.

An impressive scientific and social programme has been put together with the support of the Organising and Scientific Committees and the European Radiation Protection Associations. The contributions from researchers and

scientists fill the 5 days of congress with high-quality presentations. Fortunately, the future of radiation protection, the young scientists are also actively present, because the congress supports them with reduced fees. EURADOS provided financial support for young scientists and 15 candidates were sponsored by their own associations in the Young Scientists and Professionals Competition.

Recent events in Ukraine have made it more important than ever to share information on radiation protection in an objective and understandable way. The scientific community has to face new challenges such as working from home, isolation, and finding reliable information sources in the ocean of fake news. These new tasks place great pressure and responsibility on radiation protection professionals. To meet these growing expectations, all professionals need to improve themselves, and this congress can help in this process, by refreshing their knowledge and keeping them informed of current trends and research.

I wish you all the best and see you in Budapest!



**János Petrányi, PhD**

chair of the 6th European IRPA Congress  
board member of REPS-HPS (Hungarian IRPA AS)

## Contents

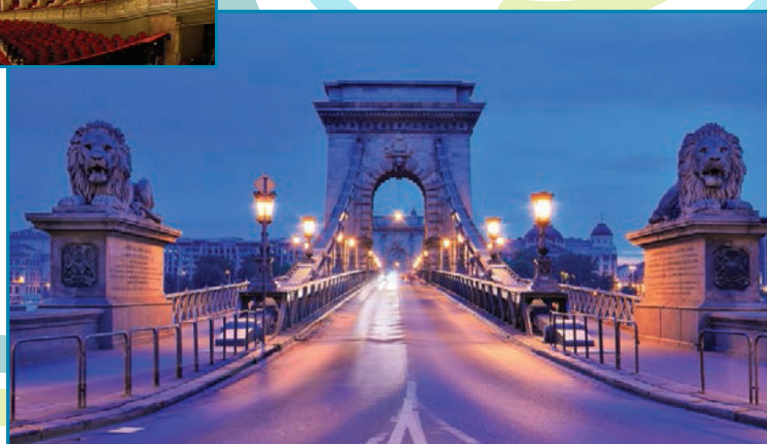
About Budapest .....	2
Congress organizers .....	3
Sponsors and partners .....	5
General information .....	11
Social programmes .....	13
Side events .....	14
Programme overview .....	24
Detailed programme .....	26
Posters .....	40
Author index .....	44
Floorplan .....	46

# About Budapest



Budapest is famous not only for the monuments reflecting its own 1,000-year-old culture, but also for the relics of others who settled here. Remains from both Roman occupation and much later ruled by the Turks can still be seen in the city. After the Ottoman Empire the union with Austria had a particular influence on the city's form and style.

The capital has two sides, Buda and Pest, stretching along the banks of the Danube, representing two different characters of the city. Suburban Buda and its historic castle district offer medieval streets and houses, museums, caves and Roman ruins. The dynamic Pest side boasts the largest parliament building in Europe, riverside promenades, flea markets, bookstores, antique stores and café houses. Budapest has a lot to offer. Museums and galleries, churches and synagogues, palaces and historic buildings, baths and pools are presented together with the influence of Secession in the city. There is an unmistakable feeling that something out of the ordinary is just around the corner, but what it will be is up to you to find out...



# Congress organizers



Radiation Protection for Everyone – 6th European Congress on Radiation Protection  
30 May – 3 June 2022 / Budapest, Hungary

## Local Organizing Committee

**Tamás Pázmándi**

Scientific Programme Committee  
Centre for Energy Research



**Gabriella Taba**

Nuclear Medicine  
Semmelweis University



**Csilla Pesznyák**

Scientific Programme Committee  
Budapest University  
of Technology and Economics  
National Institute of Oncology



**Richárd Elek**

Medical exposures  
National Public Health Institute



**László Szűcs**

Metrology  
Government Office of the Capital City  
Budapest (BFKH)  
Metrological and Technical Supervisory  
Department



**Lajos Kátai-Urbán**

University of Public Service



**Dorottya Jakab**

Young Professional  
Centre for Energy Research



**Árpád Vincze**

Regulatory topics  
International Atomic Energy Agency  
(IAEA)



**Tibor Bujtás**

Reactors and powerplants  
Paks NPP



**Anna Pántya**

Clever Ideas  
Centre for Energy Research



## Core Scientific Committee

**Tamás Pázmándi**

Co-Chair  
Hungary



**Peter Jeschke**

Non-ionizing Radiation  
Germany



**Csilla Pesznyák**

Co-Chair  
Hungary



**Michele Coeck**

Education and Training  
Belgium



**Hannes Stadtmann**

Secretary  
Austria



**Željka Knežević**

Medical Applications  
Republic of Croatia



**Franz Josef Maringer**

Measurement and Standardization  
Austria

**Ivana Vukanac**

Radioecology  
Republic of Serbia

**Daniela Ekendahl**

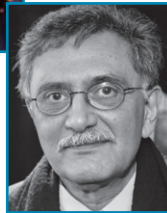
Personal Dosimetry  
Czech Republic

**Constantin Milu**

NORM & Radon  
Romania

**Behrooz Bazargar-Sabet**

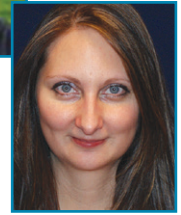
Radioactive Waste Management  
and Geological Disposal  
France

**Benjamin Zorko**

Radioactivity Monitoring  
and Emergency Monitoring  
Republic of Slovenia

**Tünde Katona**

Regulation  
Hungary

**Géza Sáfrány**

Radiobiology  
Hungary

**Mercè Ginjaume**

Industry & NPP  
Spain

**Gaston Meskens**

Perspectives from ethics,  
social sciences and humanities  
Belgium



## Extended Committee

---

**NIR: Non-ionising radiation**

Dragan Poljak, György Thúróczi, Ljiljana Udovicic, Marina Khazova

**Education and Training**

Kinga Szacsvai, Borislava Petrovic, Carmel Caruana, Szabolcs Czifrus, Joanne Stewart, Andrea Luciani

**Medical applications**

Hrvoje Hršak, Tibor Major, Jelena Popic, Richard A. Amos, Joao Seco, Manuel José Buades-Forner, Jenia Vassileva

**Measurement and standardisation**

Hans Richard Doerfel, Milos Zivanovic, László Szűcs, Petr Kuča, Maria Sahagia, Valérie Chambrette

**Radioecology**

Nele Horemans, Hildegard Vandenhove, Dragana Todorovic, Christoph Wilhelm, Pavel Povinecz, Almudena Real, Szabolcs Osváth

**Personal dosimetry and Workplace**

Mirela Angela Saizu, Pavel Fojtik, Filip Vanhavere, Gabriella Taba, Oliver Hupe, Isabelle Clairand, Vadim Chumak, Jonathan Eakins, Bastian Breustedt

**NORM & Radon**

Rainer Gellermann, Margareta Cherestes, Gordana Pantelic, Tibor Kovács, Katerina Navratilova Rovenska

**Radioactive waste management and geological disposal**

Isabel Paiva, Bálint Nős, Barnabás Nagy, Jitka Miksova

**Radioactivity monitoring and emergency monitoring**

Lajos Kátai-Urbán, Gyula Géza Vass, Pierre-Yves Hemidy

**Regulation**

Árpád Vincze, Sylvain Andresz, Karla Petrova, Helena Janžekovič, Bernd Lorenz, Burcin Okyar

**Radiobiology**

Katalin Lumniczky, Branislava Mitrović, Rafi Benotmane, Manuel Bardiès, Loredana G. Marcu, Sisko Salomaa, Dmitry Klokov

**Industry & NPP**

Margarita Herranz, Gregor Omahen

**Perspectives from ethics, social sciences and humanities**

Ivana Fojtikova

**Other radiation protection**

Richárd Elek, Yuri Dekhtyar, Jorge Miguel Sousa Isidoro, Marie Davidkova

## Congress Organization

---

**Csengele BOGNÁR**

AKCongress  
Box 245, H-1519 Budapest, Hungary  
Phone: +36 20 349 0827  
<https://akcongress.com/irpa2022/>  
<https://www.akcongress.com>  
[irpa2022@akcongress.com](mailto:irpa2022@akcongress.com)



AKADÉMIAI KIADÓ



AKCongress

# Sponsors and partners

## γ-Sponsor

---



Radosys Ltd. is a company dedicated for development and manufacturing dosimeter systems based on PADC\* etched-track technology. Traditionally our products were dedicated to the radon test applications by PADC\* etched-track metrology. Our radon test system was launched in 1999 and in the meantime more than 110 systems have been installed worldwide in Europe, Japan, North America and in Asia. A part of the users for our radon test system are private, radon test service provider companies, but the majority are university departments conducting radon research, also governmental organizations that involved in regional radiation protection.

## X-Sponsors

---



LANDAUER simplifies your radiation safety program with occupational dosimetry services and equipment. We also provide patient and PCB dose verification equipment and much more. With over 65 years of continuous industry service, our expertise in radiation safety, commitment to innovation and unrivalled client support gives you the exemplary service that only LANDAUER can provide.



RADCHEM means The SOLUTION OF ISOTOPE APPLICATIONS.

Our knowledge and experience in radiation techniques and isotope applications allows us to maintain our longstanding reputation as a competent partner in solving diverse and difficult measurement problems and as a supplier of innovative and up-to-date instruments of the highest quality and reliability. This ensures that innovation for the benefit of our customers continues to be the focus of our attention.

Our vision is to become the standard company for the Isotope Application industry providing Safe and Secure Solution to satisfied customers through continuous improvement driven by the integrity, commitment and creativity of our people.

Our mission is to provide unique, Safe and Secure Technical solutions beyond the requirements to strive for long-term partnerships.

## Exhibitors

---



We are an Austrian-based manufacturer (formerly BITT Technology), of radiation measuring systems specialized in radiation early warning systems, measurement of radioactive environment radiation, In-situ Isotope identification, Alpha-, Beta-, Gamma -aerosol activity, as well as

Supervisory Control and Data Acquisition. Our products are used in national systems for radioactivity measurement, Aerosol measuring systems for breathing air, food analysis, Waste and drinking water analysing systems, and official and internationally recognized calibration laboratories.

With more than 45 years of experience in developing, designing, and manufacturing radiation measuring systems and total solutions, especially renowned for our national environmental early radiation warning and monitoring systems, we have installed complete systems in more than 35 countries worldwide. We are working locally with dedicated, well-trained service partners, who share the same understanding of GIHMM's high-quality products, solutions, and services we deliver to our customers.

Regarding the continuous development of future products and solutions for our industry, we are in close contact with leading universities and research institutes and participating regularly in local and international research projects leading to new and innovative products.



Radiation protection is one of the most important parts in industrial safety and is subject to strict legal regulations. Exactly for this sensitive area BERTHOLD TECHNOLOGIES provides highly sensitive and reliable instruments.

The Berthold radiation protection division supplies advanced and reliable detection technology for measurement of radioactive contamination, dose and dose rate, activity and airborne radioactivity concentrations. The portfolio ranges from handheld instruments up to large customer-tailored systems for research, nuclear medicine, nuclear energy and decommissioning.

For many decades, customers have trusted Berthold to support their efforts in creating a healthier world, a safer environment and more efficient manufacturing processes. Our deep understanding of science combined with leading-edge technology empowers our clients with tools and solutions to pursue the most challenging applications - we improve life in meaningful ways.

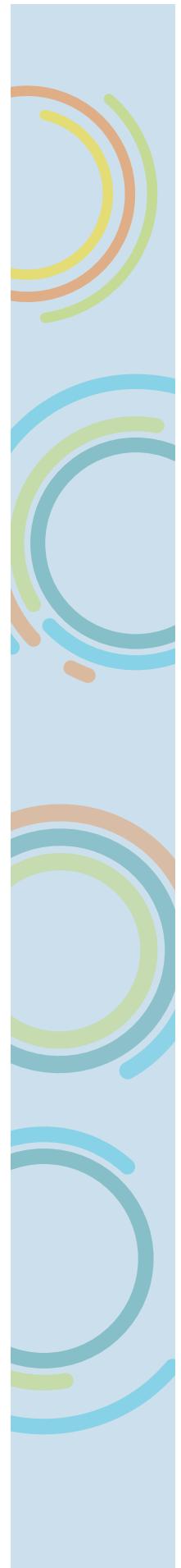


SARAD GmbH is a medium-sized technology company with an international focus, yet with roots in Dresden. Our core competencies are the development and the production of radiation and environmental instrumentation for radiation protection, geology, medicine, nuclear technology and research.

Our claim is to offer technically leading and high-quality products and services. For this reason, our QM system has been certified according to ISO 9001:2018. We operate most modern & automated radon calibration laboratory in Germany in accordance with the requirements of DIN EN ISO/IEC 17025:2018 and have successfully completed the accreditation by the „Deutsche Akkreditierungsstelle (DakKS)“ at the End of 2021. Almost all our Radon monitors will be delivered including DakKS-compliant calibration certificate accepted by authorities across Europe.

A SARAD product like radon monitors Radon Scout/Plus, Radon Scout Professional, RTM 1688-2 and RTM 2200 Soil Gas, etc., as well as aerosol monitors like Aer 5000/5200/5400 are at home at the global market. Our instruments can be found in almost every country in the world. In order to be able to offer our customers optimum support, we maintain a worldwide network of dealers and service partners.

Contact us to get more information or to find a solution suitable for your application!







INNOVÁCIÓS ÉS TECHNOLÓGIAI  
MINISZTERIUM

Programme Your Future! From the academic year 2016/2017 the project will give special support to universities and colleges in enabling young people to acquire the best possible knowledge that is also recognized in the market. The aim of the project is to get as many young graduates as possible to start their careers in the world of IT in the coming years.



**Eckert & Ziegler**

*Contributing to saving lives*

Founded in 1997, the Eckert & Ziegler Group is one of the world's largest providers of isotope technology for medical, scientific and industrial use. The company focuses on applications in cancer therapy, industrial radiometry and nuclear imaging. The operating business is divided into two segments: Medical and Isotope Products.

Eckert & Ziegler's Isotope Products Business Segment:

- Medical Imaging
- Flood Sources, PET Sources, Specialized SPECT Sources and Multimodal Sources
- Industrial
- Sealed Sources for gauging, line sources, XRF, oil well logging
- High Activity Radioactive Sources, Cs-137 and Co-60
- Irradiators, Sources and Services
- Environmental Services and Source Disposal (regional)
- Isotrak™ Reference and Calibration Sources and Solutions

Our Isotrak business supports laboratory quality management, radiation protection, research, security and operations across the nuclear industry. Traceable to national standards, our high-quality radioactive calibration sources, solutions, and gases are used for the checking and calibration of radioactive measurement instruments. We operate three ISO 17025:2017 DakkS accredited calibration laboratories, E&Z Isotope Products in Valencia, USA, E&Z Analytics in Atlanta, USA and E&Z Nuclitec in Braunschweig, Germany.

We are also a Proficiency Testing Provider accredited to the ISO 17043:2010 standard offering a variety of radiochemical, environmental, and decommissioning sample types.



**NMHH** National Media and Infocommunications  
Authority • Hungary

Since 2010, the National Media and Infocommunications Authority has been a convergent authority overseeing media and communications. As an independent regulatory body, it is accountable to Parliament on an annual basis. The authority ensures the use of frequencies without interference and monitors the quality of electronic communications and media services. As the responsible regulatory body, it also sees as its mission promoting digitalisation, protecting consumers' interests and raising consumer awareness.

The National Media and Infocommunications Authority's public measurement programme has both a strictly professional and consumer protection/education role as well. The sight of large-scale equipment for communications services (transmission towers, antennas) often causes unjustified concern among the public. For more than ten years, the public measurement programme has been providing credible information on the radiation from telecommunications equipment, helping to dispel what could be referred to as unfounded fears based on thousands of measurements. The National Media and Infocommunications Authority's system for measuring electromagnetic exposure of the general public collects and publishes test results centrally. Those who are interested can suggest inspection sites using the form available on the Authority's website.

In addition to the above, an automatic calculation system for predicting population exposure is currently being developed. The aim of the scheme is to create a framework for the deployment of communications infrastructure that is also reassuring for those concerned. The National Media and Infocommunications Authority cooperates extensively with the Government Offices responsible for human radiobiology and the National Public Health Centre in investigations in the field.



Southern Scientific is a specialist supplier of radiation detection equipment for the Nuclear, Medical, Security, Defence, Industrial & Research sectors. We develop both installed and handheld systems, with the aim of providing simple but effective solutions to our customer's detection needs.

All design and manufacturing take place at our UK offices in Henfield, where our team of highly experienced engineers work together to bring our products from conceptualisation to market, using knowledge for over 30 years in the radiation detection industry. We have the capability for hardware and software design and are always happy to discuss special applications.

Southern Scientific employs scientifically qualified technical sales staff, who can provide honest and simple advice to our customers across the different market areas in order to identify the most suitable detection solution for any requirement or project. We have a number of professional service engineers who offer installation and maintenance support to our customers in the field.



Tracerco, part of Johnson Matthey Plc is a world-leading industrial technology company with over 60 years' experience. We offer a wide range of award-winning radiation monitors to measure radiation dose rate or monitor process and environmental contaminants in a number of applications. All of our products including; handheld dose rate, contamination, NORM and x-ray monitors, as well as our range of personal electronic dosimeters (PEDs) have been designed to be lightweight and easy to use. Our full range of radiation monitors and PEDs are available for both purchase and hire and we also provide a fast calibration service for all types of radiation monitor. Our Radiation Protection Advisers (RPAs) and Radioactive Waste Advisers (RWAs) (Qualified Experts) are certified to offer advice and training to a worldwide audience ensuring client operational safety and compliance with national and international legislation. Tracerco also has a vast amount of experience in the detection and measurement of radioisotopes and chemical contaminant speciation, across several industry sectors, and offers a full range of standard and customer-specific techniques to meet all your analytical needs. At Tracerco we provide a solution for every radiation monitoring and management need, keeping you and your people safe.



Institute of Isotopes Co. Ltd. is on the frontline of radioisotope technology collaborating with long-term partners and customers. Over the years we have developed numerous products from diagnostic kits to radioactive sources for various radioactive applications. Our company provides varied and flexible services in this unique field.

Our production complies with the highest quality standards: GMP, ISO9001, ISO13485, ISO14001

Fields of expertise:

- Radiosynthesis
- Radiopharmaceuticals
- Radioimmunoassay and other products for human diagnosis and life science
- Radiation technique solutions for medical, research and industrial applications



Our engineering background and experience in radiation technique is a strong base for manufacturing radioactive industrial sources, irradiators and radiation protection systems. Our experts support the medical-, food- and agricultural industry with customized applications.

Our work is acknowledged by various partners within and beyond borders. The cooperation with IAEA and different international associations, companies serve as reference for future projects in designing, installing, dismantling, decommissioning.

Main products, services:

- Industrial sources: Co-60, Ir-192, Cs-137
- Irradiators (multipurpose, research, calibration)
- Radiation Protection Systems
- Transport and storage containers, hot cells

Fulfilling customer inquiries from Hungary and Central Europe in our portfolio, we are also distributing various products – from the field of radioactivity. In addition to our new products, we are looking forward to new possibilities to widen our portfolio and meet our growing customer demands. If you are seeking for an experienced and licenced distributor do not hesitate to contact us.



Gemini Technology specialise in the design and manufacture of Radiation Protection equipment for the Metrology, Dosimetry and Radiochemistry sectors. We have been established 28 years. And are recognised as the Uks leading supplier of Irradiator Facilities for Gamma, Neutron and X-Ray. We have developed a reputation for our flexibility to customers' needs and ability to design and manufacture. Working prototypes to suit the customers' requirements. Our skilled team of service engineers provide a great after sales service to our customers.



Bertin Technologies is a French engineering firm specialized in industrial innovation since 1956. With an extensive experience in the detection and measurement of ionizing radiations, Bertin designs, manufactures and supplies a wide range of systems and instruments dedicated to the detection, measurement and surveillance of ionizing radiations. Its main ambition is to monitor the environment, control processes in nuclear facilities, and protect both workers and people that can be exposed to radioactivity.

Bertin Technologies offers stand-alone and mobile solutions especially designed to comply with the strongest requirements of the nuclear industry players, in terms of quality, reliability and robustness.

Radiation protection; dosimetry; access control; contamination control; environmental radiation monitoring, radon monitoring, etc. are the many applications its global offer addresses. Assistance, training, installation, commissioning, on-site and in-factory servicing are also after-sales solutions provided by Bertin Technologies, for the maintenance in operational conditions of its products.



GAMMA Technical Corporation, a significant defence equipment manufacturer company, with the widest defence product portfolio in Hungary.

GAMMA was founded in 1920 and with several decades of experience GAMMA's products are mainly made for military, civil protection and radiation protection applications.

Our extensive product range consists of radiation detection and measuring instruments, integrated CBRN/HazMat reconnaissance systems, monitoring and early warning networks, meteorological

instruments, as well as reconnaissance and first response vehicles, personal respiratory protective equipment, decontamination and field deployable supporting equipment, special purpose vehicles and trailers.

The company has developed the Hungarian “KOMONDOR” Light Armoured Vehicle Family, too. With all our expertise, we are open to support our partners in the planning and realization of any kind projects in our fields of activity.

## Partners



THE SOCIETY FOR  
RADIOLOGICAL PROTECTION

## Collaboration Organization



## Partner Organizations



REPS-HPS  
Roland Eötvös Physical Society  
Health Physics Section



Fachverband für  
Strahlenschutz e.V.

Für Deutschland und die Schweiz  
Mitgliedsgesellschaft der IRPA  
International Radiation Protection Association



Österreichischer Verband  
für Strahlenschutz  
Mitgliedsgesellschaft der  
International Radiation Protection Association



Romanian Society for  
Radiological Protection



DRUŠTVO ZA ZAŠTITU  
OD ZRAČENJA  
SRBIJE I CRNE GORE



Czech Society for  
Radiation Protection



Croatian Radiation  
Protection Association



RADIATION PROTECTION  
ASSOCIATION OF SLOVENIA



IAEA  
International Atomic Energy Agency

# General information

## Registration desk opening hours

Monday, 30 May	09:00–18:30
Tuesday, 31 May	07:30–19:00
Wednesday, 1 June	08:30–16:00
Thursday, 2 June	07:30–19:00
Friday, 3 June	07:30–13:00

## Conference language

The official language of the Congress is English. No translation facilities will be provided.

## Currency

The unit of Hungarian currency is known as the Forint (HUF). Bills come in 20000, 10000, 5000, 2000, 1000, 500 HUF denominations, coins are 200 (two colored, similar to €1), 100 (two colored, similar to €2), 50, 20, 10, 5 HUF. Euro is now accepted at most hotels and some of the restaurants and shops. You can also use credit cards in major shops and larger restaurants.

## Electricity

230/50Hz (European two-pin plug)

## Public transport

For any questions relating to public transport please visit BKK's (Budapest's public transport company) website at [bkk.hu/en/](http://bkk.hu/en/)

## COVID

If you need a COVID negative PCR test to travel back home, we recommend two companies:

International Vaccination Center Ltd. (Nemzetközi Oltóközpont Kft.) – <https://oltokozpont.hu/en/helyszinek>

They have a test location in the car park of the venue; however, their website is not translated completely to English.

Hivatalos COVID teszt (Országos Foglalkozás-Egészségügyi Szolgálat Kft.) – <https://hivataloscovidteszt.hu/en/>

Their website is available in English as well, and they offer free on-site testing everywhere in Budapest.

## Slide check desk opening hours

Monday, 30 May	09:00–18:00
Tuesday, 31 May	07:30–18:00
Wednesday, 1 June	08:30–10:00
Thursday, 2 June	07:30–18:00
Friday, 3 June	07:30–10:00

## Environmental protection and sustainability

We want to leave as low ecological footprint as possible: the programme brochure, badges, certificates were printed on recycled paper; the Book of Abstracts is published online. The waste generated at our conference is collected selectively. Please place your lanyard into the collection box if you do not wish to keep it.

## Information for presenters

- Plenary talks are 30 minutes long (including Q&A)
- Oral presentations are 15 minutes long (including Q&A)
- Highlighted poster presentations (oral talks) are 7 minutes long (including Q&A)
- Poster presentations are 15 minutes long

### **Please do not use your own laptop for the presentation!**

Please bring your presentation on a USB stick and upload it at the slide check desk (next to the registration desk) a day before your presentation.

At the slide check desk, the technicians will verify if all animations are working properly. Presentation files are accepted in a 16:9 ratio. If you wish to show web pages, instead of live links to the Internet, please use screen shots within your presentation.

If the presentation includes a video, please provide the video file to our technicians for playback if it does not start automatically during the presentation, and let the technician know whether you need the audio in the video or not.

The lecture rooms will be equipped with microphones, projectors, remote controls and laptops, and technical assistance will be granted at all times during the congress.

IRPA2022 is a hybrid event. All the lectures will be recorded and streamed via our virtual platform for the remote audience. On-site participants can also access the virtual platform and watch the uploaded recordings.

## Digital poster session @IRPA 2022

This year we organize digital poster sessions where posters will be shown on digital screens disposed in portrait orientation. 20 posters will be shown at the same time (similarly during a traditional poster session).

Each poster has a dedicated time and place to be presented by the author. Multiple 15-minutes long mini sections are organized. The presenter of the poster has 15 minutes to stand next to her / his poster during the section and introduce the work. Highlighted posters have a dedicated time in the poster section as well.

All posters are available in the Virtual platform as well, and the screens in the venue are available for browsing freely at all the times during the congress.

Poster session – Tuesday, 1 hour in total

Section 1	17:30–17:45
Section 2	17:45–18:00
Section 3	18:00–18:15
Section 4	18:15–18:30

Poster session – Thursday, 1 hour in total

Section 5	18:00–18:15
Section 6	18:15–18:30
Section 7	18:30–18:45
Section 8	18:45–19:00

How to access the Virtual platform?

You only need to log into your registration profile and go to Virtual Sessions.

## Art & Fun Corner



# Social programmes

Besides attending the outstanding lectures and scientific sessions, we invite you to join our *Eat & Meet* social programs, that will make your stay unforgettable at IRPA 2022!

## Welcome reception at the conference venue

Monday, 30 May 2022 • 18:00-20:00

Let's celebrate the opening of IRPA 2022! At the Welcome reception you will have the opportunity to get acquainted with the venue and meet the participants of the conference. Snacks and refreshments will be served.

## Gala cruise dinner

Wednesday, 01 June 2022 • 18:30-23:00

While cruising the river under the magnificent bridges across the river Danube, and in front of the World Heritage view of historic Buda, the famous Parliament building and the cultural-governmental districts of Pest with relaxing music played in the background, you can enjoy a wide range of delicious Hungarian dishes paired with a great Hungarian wine selection.

Price: 74 EUR / person. For on-site ticket purchase please inquire at the registration desk.



## Visiting the Hospital in the Rock Nuclear Bunker Museum and the Buda Castle district

Monday, 30 May 2022 / 9:30-13:00

During this tour we will walk through the key sites of the Buda Castle hill neighbourhood like the former Royal Palace, the Fisherman's bastion, the iconic Matthias church, the Alexander Palace which currently serves as the Presidential Palace. During the tour we will also cover various topics about

Hungary, like the country's history, gastronomy and you can also enjoy the breathtaking view of the river Danube and the city of Budapest from above. We will finish our tour in the amazing Hospital in the Rock; a thrilling, unique and moving place that was kept secret until 2002. It was built as an underground military hospital and a nuclear bunker – nowadays it's the biggest Hungarian waxwork exhibition with more than a hundred figures, a lot of original machinery and furniture that are still in working conditions. The multi-award-winning museum is one of the most unique and fascinating attractions of Budapest. More info: <https://www.sziklakorhaz.eu/en/> / Tripadvisor

Price: 20 EUR / person. For on-site ticket purchase please inquire at the registration desk.



## Art & Fun Corner

At the IRPA2022 Congress, not only professional curiosity can be met, but there is also an opportunity for an artistic refreshment. At Arts & Fun exhibition, you can view your colleagues' artworks related to radiation protection, from cartoon to paintings!

# Side events

## Young Scientists and Professionals Competition (YSC)

A Young Scientists and Professionals Competition (hereinafter referred to as YSC) was announced to be organized as part of the Congress. The YSC aims to provide students, young scientists and professionals with the opportunity to present their valuable research works to a broad scientific community, with the most excellent works being recognized and awarded by prizes.

To participate in the YSC, the young scientists and professionals were nominated by European IRPA Associate Societies, which selected the most outstanding young representatives of their countries following their corresponding procedures. In total 15 nominations were received from 11 countries, and the Candidates submitted abstracts on a wide variety of scientific fields of radiation protection.

No.	Name of Candidate	Nominating IRPA Associate Society	Country
1	Victor MERZA	Austrian Radiation Protection Association (ÖVS)	Austria
2	Reinhard WAGNER	Austrian Radiation Protection Association (ÖVS)	Austria
3	Martin SEFL	Czech Society for Radiation Protection (ČSOZ)	Czech Republic
4	Guillaume GARNIER	French Radiation Protection Society (SFRP)	France
5	Charlotte SCHÜTTE	German-Swiss Association for Radiation Protection (FS)	Germany
6	Dávid HAJDÚ	Health Physics Section of the Roland Eötvös Physical Society (ELFT SV)	Hungary
7	Vanda PAPP	Health Physics Section of the Roland Eötvös Physical Society (ELFT SV)	Hungary
8	Davide BOZZATO	Italian Association of Radioprotection (AIRP)	Italy
9	Whitney N. COULOR	Dutch Society for Radiation Protection (NVS)	Netherlands
10	Georgian V. TOBOSARU	Romanian Society for Radiological Protection (SRRP)	Romania
11	Mariia A. IANISHEVSKAIA	Sectiya Radiazionnoy Gigieny of Russia	Russia
12	Anna A. RASTORGUEVA	Sectiya Radiazionnoy Gigieny of Russia	Russia
13	Claudia R. CODOSERO NAVARRO	Spanish Society of Radiological Protection (SEPR)	Spain
14	Víctor GARCÍA BALCAZA	Spanish Society of Radiological Protection (SEPR)	Spain
15	Kathryn L. AMBROSE	Society for Radiological Protection (SRP-UK)	United Kingdom

The evaluation of the research works in the Competition is based on two main pillars: the Full Papers prepared and submitted by the Competitors, and the Oral Presentations given by them in the section of related scientific topic. The evaluation and ranking are carried out by an international

scientific Jury, which takes into account several aspects and criteria, including the novelty of the underpinning research, the importance of the scientific results, and the scientific quality and sophistication of the Papers and Presentations.

### Jury of the Competition

Name	Repres. / IRPA AS
Bernard LE GUEN (chair)	IRPA EC / SFRP (FR IRPA AS)
Hiroko YOSHIDA	IRPA EC / JHPS (JP IRPA AS)
Sylvain ANDRESZ	IRPA YGN / SFRP (FR IRPA AS)
Joel PIECHOTKA	IRPA YGN / FS (GER IRPA AS)
Csilla PESZNYÁK	ENEN / ELFT SV (HUN IRPA AS)
Tünde KATONA	ELFT SV (HUN IRPA AS)
Jim THURSTON	SRP-UK (UK IRPA AS)
Filip VANHAVERE	EURADOS
Jenia VASSILEVA	IAEA



## Technical Site Visits

Following the traditions of IRPA congresses we are also organizing technical site visits (TSV) for our participants to help them further broadening their knowledge and professional network. Preregistration was required at most of the sites, for still available site visit tickets please inquire at the registration desk.

### **TSV1 • Extreme Light Infrastructure – Attosecond Light Pulse Source (ELI-ALPS) Szeged**

---

TYPE: **EDUCATION**

The primary mission of the ELI-ALPS Szeged research facility is to make a wide range of ultrashort light sources accessible to the international scientific community user groups. Laser driven secondary sources emitting coherent extreme-ultraviolet (XUV) and x-ray radiation confined in attosecond pulses is a major research initiative of the infrastructure. The secondary purpose of the facility is to contribute to the necessary scientific and technological developments required for high peak intensity and high power lasers.

**More info:** [eli-alps.hu](http://eli-alps.hu)

### **TSV2 • MVM Paks Nuclear Power Plant**

---

TYPE: **INDUSTRY**

**Existing:**

4 reactors type: VVER V-213 (4x500 MW), a pressurized water reactor

First power: 1982-12

Capacity: 1902 MWe – its four reactors produced more than 50% of Hungary's electricity production in 2019.

**New:**

2 reactors type: VVER-1200/V-527

First power: 2026

Capacity: 2400 Mwe

**More info:** [atomeromu.hu](http://atomeromu.hu)

### **TSV3 • Public Limited Company for Radioactive Waste Management (PURAM), Bataapáti, HU**

---

TYPE: **WASTE MANAGEMENT**

**Managing low and intermediate level NPP radioactive waste**

The liquid and solid, low and intermediate level radioactive waste generated by the nuclear power plant must be safely disposed of. Solid radioactive waste generated during the operation of the nuclear power plant is compacted into 200 litre steel drums; liquid wastes are collected in storage tanks. Only solid waste is suitable for final disposal; therefore, liquid wastes must also be solidified before transport to the national repository. Some low and intermediate level radioactive waste will also be generated during the decommissioning of the NPP, which can be disposed of in treated, solidified form.

**The National Radioactive Waste Repository (NRWR)**

During the operation of the nuclear power plant, besides spent fuel, low and intermediate level radioactive waste is also produced, which must be safely managed and disposed of. For the final disposal of such waste the National Radioactive Waste Repository was established. Waste disposal had been done according to the original storage concept (waste drums placed in reinforced

concrete containers; the internal spaces filled with inactive concrete mixture; the resulting waste package is called a monolith block) until 2017. The first storage chamber (I-K1) of the facility was filled up to full capacity in May, 2017. Future waste packages, which are going to be produced by the NPP, will be placed into the I-K2 and subsequent chambers.

The final disposal chambers are located 200-250 metres below surface. Two tunnels provide access to the chambers. The tunnels are 1.7 km long and have a 10% inclination; they are also connected with a cross-tunnel at every 250 metres, providing an escape route in case of an emergency. The almost 6 km long tunnel system is divided into two sections, the radiation controlled area with the in-use storage chambers, and the construction zone. These two sections are separated from each other by sealed gates. Waste packages are disposed to their final resting place in the chambers, meanwhile the construction area allows further expansion of the underground storage area.

**More info:** [rhk.hu](http://rhk.hu)

---

#### **TSV4 • Department of Nuclear Medicine, Semmelweis University, Budapest**

---

TYPE: **MEDICAL**

The Center carries out a full range of isotope diagnostic and isotope therapy activities. She is involved in outpatient and inpatient care. It is one of the widest nuclear medicine profile jobs in the country. The center is designated to perform several special diagnostic procedures as part of progressive care. It is involved in the introduction of several new diagnostic procedures in Hungary. The Center also has SPECT-CT equipment.

**More info:** <https://semmelweis.hu/kepalkotas/en/>

---

#### **TSV5 • Budapest Research Reactor and exercise fields at the KFKI Campus (Centre for Energy Research, EK)**

---

TYPE: **RESEARCH**

The Budapest Research Reactor (BRR) is a VVER-type (water-cooled, water-moderated) reactor of Soviet design and construction, which, following several upgrades, currently has a thermal power of 10 MW. BRR is utilized as a neutron source to meet the needs of basic and applied research and various industrial and medical applications. Numerous researchers from Hungarian and foreign research institutes and universities have carried out measurements here in the past and continue to do so today. BRR has decades of tradition in using neutron beams for neutron-based element analysis for which the most commonly used methods around the reactor are small angle neutron scattering (SANS), neutron radiography, prompt-gamma activation analysis and neutron diffraction. The range of equipment to use is constantly and considerably expanding, both in terms of quantity and quality.

In Hungary, a Governmental Decree designates EK as the responsible institution for analysis and characterization of confiscated or found nuclear materials with unknown origin. This activity is carried out by the only Nuclear Forensic Laboratory in Hungary maintained by the Nuclear Security Department of EK. In recent years, in close cooperation with the Hungarian Police, a special operating procedure for radiological crime scene management has been developed to intervene at specific scenes where nuclear or other radioactive material is present. Exercise fields have been established to meet national and international needs, providing an opportunity for organizations involved in the exploration and analysis of nuclear and radioactive materials to test and practice operating procedures in various type of scenarios.

**More info:** [ek-cer.hu](http://ek-cer.hu)

## **TSV6 • Training Reactor Budapest University of Technology and Economics**

---

TYPE: **EDUCATION**

The Training Reactor of the Budapest University of Technology and Economics is a light water moderated and cooled reactor of 100 kW nominal thermal power. The core consists of EK-10 type fuel assemblies, containing 10% enriched UO<sub>2</sub> in metal magnesium matrix. The fuel region is surrounded by graphite reflector assemblies. The maximum thermal neutron flux in the reactor core is  $2.7 \cdot 10^{12}$  n/cm<sup>2</sup>s.

More info: [reak.bme.hu](http://reak.bme.hu)

## **TSV7 • Nuclear measuring instrument production Gamma Technical Co., Budapest, HU**

---

TYPE: **INDUSTRY**

Get to know the representatives of the Hungarian radiation protection industry

### **Gamma Technical Co.**

Producer of radiation detection and measuring instruments, integrated CBRN/HazMat reconnaissance systems, monitoring and early warning networks, meteorological instruments, as well as reconnaissance and first response vehicles, personal respiratory protective equipment, decontamination and field deployable supporting equipment, special purpose vehicles and trailers.

More info: [gammatech.hu](http://gammatech.hu)

### **The Institute of Isotopes Co.**

Research, development and production of a wide variety of radioactive isotopes and other products for a broad range of application areas, especially healthcare, research and industry.

More info: [izotop.hu](http://izotop.hu)

### **RADCHEM**

Solution for Isotope Applications

Radiation techniques and isotope applications allows us to maintain our longstanding reputation as a competent partner in solving diverse and difficult problems.

More info: [radchem.hu](http://radchem.hu)

### **IsotopTech Zrt.**

Technical research and development, innovative technological solutions.

More info: [isotoptech.hu](http://isotoptech.hu)

## **TSV8 • MedAustron, Carbon Beam Radiotherapy Centre, Wiener Neustadt, AU**

---

TYPE: **MEDICAL**

The particle accelerator generates the particle beam used for medical treatment and research. At MedAustron either protons or carbon ions are used, generated by three ion sources. The charged particles are pre-accelerated in the so-called "Linac" ("Linear Accelerator") on a straight path by electrical alternating fields and are then injected into the synchrotron. In the synchrotron, a circular

accelerator with a circumference of 80 meters, the particles are further accelerated until they reach their final velocity of approximately two thirds of the speed of light, or 200.000 km/s. Finally, the ion beam is led into the irradiation rooms on a so-called extraction line. The particles are held in place within a vacuum tube by strong magnetic fields, generated by 300 magnets in total. The synchrotron has been developed in close cooperation with CERN.

**More info:** [medauston-technology.at](https://medauston-technology.at)

## **TSV9 • Seibersdorf Laboratories, Seibersdorf, AU**

---

TYPE: **INDUSTRY**

Seibersdorf Laboratories combines the knowledge gained from 30 years of research and development with unparalleled service. Their experts are renowned worldwide and represent Austria in various international committees.

**More info:** [seibersdorf-laboratories.at](https://seibersdorf-laboratories.at)

## **Refresher courses**

We are organizing refresher courses (RC) as micro side events at IRPA2022. Participants will have the opportunity to update their knowledge in specific areas of radiation protection science and practice, at beginner and advanced levels.

The courses are delivered by selected instructors according to their outstanding expertise and competence in teaching.

RC tickets are available for 25 EUR in the registration system or at the registration desk.

Tuesday, 8:00–8:50

### **RC1 • Radiation detriment calculation methodology**

---

Presenter: **Enora Clero**

Level: Basic

Room: Bartók II.

#### Course overview

Radiation detriment is a concept developed by the ICRP to quantify the burden of stochastic effects from low-dose and/or low-dose-rate exposures to the human population. It is determined from the lifetime risks of cancer for a set of organs and the risk of heritable effects, taking into account the severity of the consequences. The future ICRP Publication 152 (planned in 2022) will be presented: historical review, details of the procedure developed in Publication 103, sensitivity analysis on major sources of variation and uncertainty, and potential ways to improve the detriment calculation in the future.

### **RC2 • Learning from incidents in radiotherapy: retrospective and prospective risk analysis**

---

Presenter: **Eduard Gershkevitch**

Level: Advanced

Room: Liszt

#### Course overview

Incidences, mistakes and near misses may happen in every radiotherapy department. The course is aimed to show how to use and minimise those events to improve radiotherapy safety through establishment of incidence learning system. As radiotherapy treatment techniques get more complex, there is a need to prospectively analyse and develop risk management system.

### RC3 • New challenges in radiation protection

---

Presenter: **Peter Zagyvai**, Centre for Energy Research (CER) & Budapest University of Technology and Economics (BME), Budapest, Hungary

Level: Advanced

Room: Lehár

#### Course overview

Initiated by the comprehensive ICRP Publication #103 (“The 2007 Recommendations of the International Commission on Radiological Protection”) significant progress is experienced both in scientific and regulatory-legislative areas of radiation protection, often termed also as “health physics”. Some “selected chapters” of this large discipline will be presented and discussed in detail, somewhat reflecting the subjective choice of the presenter as well. The two topics selected for this short course are the radiation protection issues of a serious nuclear or radiological emergency and the interpretation of the concepts of exemption and clearance, with special emphasis on the tasks and challenges of decommissioning. Lessons learned from major nuclear emergencies, especially from the Fukushima accident, induced extensive work in – inter alia – dose projection modelling, rapid and still efficient procedures of personal and environmental monitoring in order to improve effectiveness of emergency response planning.

In addition to the decommissioning of obsolete nuclear facilities, major accidents with significant environmental impact also resulted in the generation of large masses of potential radioactive wastes, the processing of which shall be preceded by an accurate, precise and cost-effective classification procedure based on internationally accepted terms of exemption and clearance which are in turn directly related to the estimated dose consequences of the selected fate of these materials.

### RC4 • How to apply the systematic approach to radiation protection training?

---

Presenter: **Tom Clarijs**, SCK CEN Academy of the Belgian Nuclear Research Centre

Level: Basic

Room: Brahms

#### Course overview

In this short refresher course, participants will learn about how to apply the systematic approach to radiation protection training. Via examples and cases, the logical steps of designing a training activity in radiation protection are discussed, starting from a needs analysis towards the development and implementation, including the multi-level evaluation. Working with learning outcomes forms an essential part of this process. Practical tips and tricks will be shared so that participants can apply the systematic approach to their own E&T activities in radiation protection.

Thursday, 8:00-8:50

### RC6 • Challenges in radiation protection research and their radiobiological bases

---

Presenter: **Katalin Lumniczky**, MD, PhD, National Public Health Centre

Level: Basic

Room: Liszt

#### Course overview

The topic of the refresher course is focused on cellular and molecular mechanisms of non-targeted effects of ionizing radiation and how these effects impact direct irradiation effects and modify an individual's response to ionizing radiation.

## **RC7 • Patient dose assessment in diagnostic radiology: from modality specific to patient specific metrics**

---

Presenter: **Dr. Jenia Vassileva**, International Atomic Energy Agency

Level: Basic

Room: Lejár

### Course overview

The course will present the current developments in the patient dose assessment approaches in diagnostic radiology, with a focus on metrics representing risks for individual patients for tissue reactions or stochastic effects associated with radiological procedures. An overview will be presented of the modality-specific measurable dose quantities and the approaches to assess organ doses using generic or patient-specific phantoms, and the associated uncertainties.

## **RC8 • Human Exposure to Electromagnetic Fields**

---

Presenter: **Dragan Poljak**, University of Split, FESB, Split, Croatia

Level: Advanced

Room: Brahms

### Course overview

The course covers several aspects of human interaction with non-ionizing electromagnetic fields (EMF) including not only the undesired exposure from artificial sources, but also the biomedical applications of electromagnetic fields. The course deals with basic aspects of electromagnetic fields in environment, coupling mechanisms between humans and electromagnetic fields, established biological effects of electromagnetic fields from static to high-frequency range, international safety guidelines related to limiting human exposure to those fields, including relevant exposure limits and safety guidelines, electromagnetic-thermal dosimetry models and the related analytical/numerical solution methods.

Friday, 8:00–8:50

## **RC9 • Strategic planning for attracting young people to radiation protection and medical physics university programmes**

---

Presenter: **Carmel J. Caruana**, Medical Physics, University of Malta

Level: Advanced

Room: Pátria

### Course overview

In this short refresher course, participants will learn how to apply the Strengths-Weaknesses-Opportunities-Threats (SWOT) strategic planning approach to the development and marketing of university courses in radiation protection and medical physics among young people. It is no use having the best planned programmes in the world if there are no students! What type of programmes would be attractive? How to market the programmes? The author will present a case study of how he went about such an exercise for his highly successful BSc Physics, Medical Physics and Radiation Protection.

## Workshops

### IAEA Workshop

Date: 1 June 2022, 9:00–16:30

Room: Lehar

Title: **Satellite IAEA-IRPA workshop on Radiation safety culture training for healthcare professionals**

#### Purpose

The purpose of the event is to contribute to the knowledge sharing on broader aspects of improving radiation protection and safety culture in healthcare. The focus of discussion will be around the effective training approaches for enhancing the radiation safety culture traits as suggested in the IAEA Radiation Safety: Trait Talks handbook.

#### Audience

The workshop will be attended by participants nominated by the IAEA Member States through the Technical cooperation project for Europe on radiation protection in medical exposure. Other congress participants who are interested in the topic can also attend the workshop. Pre-registration is needed at no additional costs.

### PEROSH Workshop

Date: 3 June 2022, 8:15–10:30

Room: Brahms

Title: **EMF Exposure of Electronic Article Surveillance Systems at Workplaces**

#### Purpose

Electronic article surveillance (EAS) systems are widely used in retail and logistics, e.g. to prevent thievery or to locate and monitor numerous products automatically at the same time. EAS-systems use different frequency bands ranging from static magnetic fields, over intermediate to radio frequencies. Depending on their functioning principles, selected EAS-systems emit intense electromagnetic fields, that in some practical situations may even exceed maximum exposure level at the workplace. Hence, EAS-systems exceeding permissible exposure levels may be of concern for workers, workers at particular risk (e.g. with active implanted medical devices such as cardiac implants), and pregnant workers. Customers may be affected as well as.

In addition, it proved challenging for operators/employers of such systems to obtain sufficient information about safe and healthy operation of EAS-systems from manufacturers or distributors. The major intention of the information sharing workshop is to connect stakeholders with a background in occupational safety and health as well as market surveillance across Europe, in order to bundle attention to the potential problems arising from EAS-systems. Therefore the workshop will:

- discuss problems with EMF exposure of EAS-systems at workplaces on a PanEuropean perspective and
- evaluate the necessity to initiate a PanEuropean research- and information dissemination-approach to enable safe and health working conditions.

#### Audience

The workshop will be attended by occupational safety and health specialists and procurement engineers of EASS-applying companies (retail, logistics etc.), labour inspectors and governmental radiation protection agencies, as well as researchers in the field of bioelectromagnetics. Other participants who are interested in the topic are warmly invited to attend the workshop. Please pre-register your participation, no additional costs apply.

## IRPA Startup Competition

IRPA2022 Startup Competition 2022 is a regional European startup competition organized as a satellite event of the 6th European Congress on Radiation Protection (IRPA2022), which is dedicated to find the most promising solutions and innovations in the radiation protection fields. The Competition is scheduled on Thursday, room Bartók I.



Kinepict's game-changer medical imaging technology substantially reduces the risk associated with angiography procedures. This novel method, called Digital Variance Angiography (DVA) is implemented within a platform: Kinepict Medical Imaging Tool (KMIT), which is a CE marked and FDA cleared class IIa medical device software and fully complies with ISO 13485 standard.

KMIT is a major advancement in the angiography field as it drastically enhances the quality of the images (3-10 times higher signal-to noise ratio in CO<sub>2</sub> angiography), allowing the reduction of radiation exposure for CO<sub>2</sub> and ICM angiography by 70-90% and the reduction of ICM dose by 50%. As such, KMIT enables safer and faster procedure for the intervention of vascular and oncological diseases through a universal platform that can be connected to current angiography systems.

This new technology solves unmet needs, both from the side of the end-users (hospitals and clinics) as well as the main market equipment manufacturers, to confront the excessive use of X-ray radiation and ICM dose growth during medical imaging and to help doctors detect vascular disorders in a faster and safer manner.

## 27G™-Technology

27G-Technology Ltd. (27G) started to research an integrated dosimeter circuit solution that could be able to sense the most important parameters of the radiation environment such as the energy of the striking particles, the intensity of radiation and the total dose. Originally the development aimed to help space exploration, several prototypes participated in satellite missions. Ultra-low power consumption, tiny size and directly usable digital results describing the developed prototypes surpassing existing solutions. These circuits hold the title of the world's smallest electrical dosimeters.

27G-Technology aimed to extend further the capabilities of the integrated dosimeters for a wider range of applications. 27G is closely cooperating in the business incubation program of the European Space Agency to make such solutions widely available for the public soon.

A presentation will be given by the founder representing 27G-Technology in the Startup Competition session of the 6th European Congress on Radiation Protection about the history of the research, the results achieved so far and the present challenges to realize the targeted dosimeter integrated circuit. For more information, please visit [27g.space](http://27g.space).



## RADONCONTROL

Radoncontrol is a unique spin-off in Romania that combines the results of research conducted at the Radon Laboratory "Constantin Cosma" (LiRaCC) at Babeş-Bolyai University with the experience, vision and capital of private investors to provide services and products specific for the field.



The problem which the Radoncontrol address is the indoor air quality. More than 90% of our time, we spend indoors (homes, nurseries, kindergartens, schools, workplaces) without enough daylight or fresh air. We don't think about it anymore – but science has shown that this can be harmful to our health and wellbeing”-Velux.

We are offering radon measurements, mapping, remediation solutions, and additionally intelligent indoor air quality monitoring systems for radon, CO<sub>2</sub>, CO, VOC, temperature, pressure, and humidity.

The main utility and benefit of measuring radon in any type of buildings is the health aspect, reducing Sick Building syndrome – the newest health problem in the 21st century. Reducing the risk of lung cancer and other respiratory illnesses.

Taking into account that Romania is an incipient market in in this environmental health area the growing opportunity is above a multimillion perspective.

We have a list of 10 different services with a variable price range. Depending on the need of the customer, the price can be negotiated based on a set of already established pricing packages.

Our competitive advantage is the fact that we are unique in the Romanian and Eastern European markets in terms of the type, profile, and quality of the spin-off business. We are the only company covering everything from identifying, diagnosing, planning, and executing radon mitigation solutions for our clients. This is the main factor which we are different than anyone on the market and of course our twenty plus years of combined knowledge and experience in the field of radon.

A presentation will be given, by the team member, representing the Radoncontrol services in the Startup Competition session of the 6th European Congress on Radiation Protection.

Sponsors of the IRPA2022 Startup Competition:

#### **EB Hungary Invest & QTICS Group**



Start up incubation is offered by the sponsor companies – a specific certification service (or education or training): which is a prize of

- HUF 300,000 gross for the first place winner,
- HUF 200,000 gross for the second place,
- HUF 100,000 gross for the third place.

# Programme overview

30 May, Monday			31 May, Tuesday				
08:00–8:50	Registration	Associate Societies Forum	08:00–8:50	Refresher courses		MELODI Workshop	
09:00–10:30			09:00–10:30	Sessions			
10:30–11:15			Visiting the Hospital in the Rock Nuclear Bunker Museum and the Buda Castle district	10:30–11:15	Coffee break		
11:15–12:45				11:15–12:45	Sessions		MELODI Workshop
13:00–14:00	Lunch break		12:45–14:15	Lunch break			
14:00–15:00	Opening ceremony		14:15–15:45	Sessions	Startup Competition (14:30–15:30)	MELODI Workshop	
15:00–16:00	Plenary talks						
16:00–16:30	Coffee break		15:45–16:15	Coffee break			
16:30–18:00	Sessions		16:15–17:30	Sessions		MELODI Workshop	
18:00–20:00	Welcome Reception		17:30–18:30	Poster session			

1 June, Wednesday		2 June, Thursday				3 June, Friday	
09:00–16:00	Technical site visits	08:00–8:50	Refresher course	MELODI Workshop		8:00–8:50	Refresher course
		09:00–10:30	Sessions			9:00–9:30	Plenary talk
	IAEA Workshop	10:30–11:15	Coffee break			10:30–11:00	Coffee break
		11:15–12:45	Sessions	MELODI Workshop		11:00–12:00	Sessions
		IRPA Executive Council Meeting	12:45–14:15	Lunch break			12:00–12:15
	14:15–15:45		Sessions	MELODI Workshop		12:15–12:45	Closing ceremony
	MELODI Workshop	15:45–16:15	Coffee break			12:45–14:45	Lunch break
19:00–23:00		16:15–18:00	Sessions	MELODI Workshop			
		18:00–19:00	Poster session				

# Detailed programme

MONDAY		
9:00–	<b>REGISTRATION</b> <b>Associate Societies Forum</b> in ROOM <b>BARTÓK II</b> (09:00–12:00)	09:30–13:00: <b>Social programme for early birds:</b> Visiting the Hospital in the Rock Nuclear Bunker Museum and the Buda Castle district
13:00–14:00	LUNCH	
ROOM	PÁTRIA	BRAHMS
14:00–15:00	<b>Opening ceremony</b>	
	<b>SESSION CHAIR – HANNES STADTMANN &amp; TIBOR BUJTÁS</b>	
	János Petrányi – Chair of the Congress	
	Bernard LeGuen, President of IRPA	
	Csilla Pesznyák Co-Chair & Tamás Pázmándi Co-Chair	
	Franz Josef Maringer, Austrian Radiation Protection Society	
	Young Generation Network	
	International Atomic Energy Agency	
	Werner Rühm, Chair of International Commission on Radiological Protection	
	Csilla Pesznyák, European Nuclear Education Network	
	Paddy Gilligan, European Federation of Organisations For Medical Physics	
	Filip Vanhavere, European Radiation Dosimetry Group	
	Kádár Andrea Beatrix, President of HAEA	
	Other	
<b>Plenary talks</b>		
<b>SESSION CHAIR – KATONA TÜNDE &amp; CSILLA PESZNYÁK</b>		
15:00–15:30	Jenia Vassileva and Burcin Okyar (IAEA): Meeting the radiation protection challenges – „Novel approaches for medical and occupational exposure control”	
15:30–16:00	Werner Rühm: Progress on the review and revision of the ICRP system of radiological protection	
16:00–16:30	COFFEE BREAK	
Highlighted presentations I.		Combined Session NIR
<b>SESSION CHAIR – FRANZ JOSEF MARINGER &amp; TAMÁS PÁZMÁNDI</b>		<b>SESSION CHAIR – SIGURDUR MAGNUSSON &amp; PETER JESCHKE</b>
16:30–16:45	<b>Harald Breißkreutz:</b> Identification and quantification of anomalies in gamma dose rates of environmental radiation monitors using artificial intelligence	<b>Emilie van Deventer (Virtual participant):</b>  A Framework for non-ionizing radiation protection
16:45–17:00	<b>Nathalie Vanhoudt (Virtual participant):</b>  Influence of earthworms on the bioavailability of radium and metals in soil	<b>Eric van Rongen (Virtual participant):</b>  The ICNIRP 2020-2024 work plan
17:00–17:15	<b>Gonzalo Garcia-Fernandez:</b> Impact of new delivery methods on the operational radiation protection of Compact Proton Therapy Centers (CPTC)	<b>Julien Modolo &amp; Alexandre Legros (Virtual participant):</b>  Communication with the public of EMF health effects: creation of a non-ionizing radiation task group at IRPA
17:15–17:30	<b>Mandy Birschwilks (Virtual participant):</b>  RadoNorm – Towards effective radiation protection based on improved scientific evidence and social considerations – focus on radon and norm	<b>Nigel A. Cridland (Virtual participant):</b>  Limits of scientific insight when updating ICNIRP guidelines
17:30–17:45	<b>Filip Vanhavere:</b> Personal on-line dosimetry using computational methods: the PODIUM project	Plenary Discussion
17:45–18:00	<b>Joanne Stewart:</b> Working together on E&T in radiation protection	Plenary Discussion
18:00–20:00	Welcome reception	

## TUESDAY




ROOM	BARTÓK II	LISZT	LEHÁR	BRAHMS	MOZART	STRAUSS	BARTÓK I
08:00–08:50	Refresher course I.  <b>Enora Clero:</b> Radiation detriment calculation methodology	Refresher course II.  <b>Eduard Gershkevitsh:</b> Learning from incidents in radiotherapy: retrospective and prospective risk analysis	Refresher course III.  <b>Péter Zagyvai:</b> New challenges in radiation protection	Refresher course IV.  <b>Tom Clarijs:</b> How to apply the systematic approach to radiation protection training?			Scientific Committee meeting 08:30–09:00
	Industry & NPP	Medical applications I	Radioactivity monitoring and emergency monitoring I	Measurement and standardisation			
<b>SESSION CHAIR</b>	<b>MÁTÉ SOLYMOSI &amp; TIBOR BUIJTÁS</b>	<b>LUKAS JÄGERHOFER &amp; RICHARD ELEK</b>	<b>MAURO MAGNONI &amp; JANOS PETRANYI</b>	<b>FRANC JOZEF MARINGER &amp; LÁSZLÓ SZÜCS</b>			
09:00–09:15	YOUNG SCIENTIST COMPETITION <b>YSCI Kathryn L. Ambrose:</b> Conservatism versus sustainability	<b>Clémence Baudin</b> (Virtual participant): Dysfunction of the salivary and lacrimal glands after radioiodine treatment: preliminary results of a self-controlled study in France	<b>Bharath Bharath:</b> Carbon-14 specific activity in atmospheric air in the vicinity of a PHWR nuclear power plant in India	<b>Peir Kuča:</b> Citizen Monitoring of ambient dose rate: the SAFECAST project	MELODI Workshop		
09:15–09:30	YSC2 <b>Georgian V. Tobosaru:</b> Implementation of the novel source term monitoring factors at CANDU plant for outage radiation field reduction	<b>Gonzalo Garcia-Fernandez:</b> Study of activation of air, water and soil in Compact Proton Therapy Centers (CPTC)	<b>Benjamin Zorko:</b> Modeling and measurement of airborne tritium	<b>André Gomes Lamas Otero:</b> A deep learning model for gamma spectroscopy analysis			
09:30–09:45	<b>Helena Janžekovič:</b> European nuclear arena after the Fukushima accident	<b>Leticia Irazola</b> (Virtual participant): Nuclear activation in protontherapy treatments	<b>Héloïse Gervot:</b> Adaptation of an analytical method for radium 226 in water to urine matrix	<b>Federico A. Geser:</b> Energy calibration of pulse-height spectra in plastic scintillators for clearance monitors using Monte Carlo simulations			
09:45–10:00	<b>Máté Solymosi:</b> Monitoring system of the fuel-cassette-free state of the control rod sleeves at the Paks Npp	<b>Domonkos Szegedi:</b> Neutron dose around high energy linacs in Hungarian radiotherapy centers	<b>Claudia Olaru:</b> Monte Carlo simulations of the radioluminescence photons induced by alpha particles in air	<b>Raquel Idoeta</b> (Virtual participant): Selection tool of in situ measurement techniques for radiological characterization in D&D processes			

TUESDAY

ROOM	BARTÓK II	LISZT	LEHÁR	BRAHMS	MOZART	STRAUSS	BARTÓK I
10:00–10:15	<b>Allan Wilson:</b> Updating a radiation protection programme for a change in business use and fingerprint	<b>Ana Beatriz S. Morais:</b> Risk management in srs treatments	<b>David Breitenmoser:</b> Non-proportional scintillation response model for airborne gamma-ray spectrometry applications	<b>YOUNG SCIENTIST COMPETITION</b> <b>YSC3 Dávid Hajdú:</b> Reproduction of shielding concrete activation measurements by simulations		MELODI Workshop	
10:15–10:30	<b>Omar Al-Somali:</b> Radiation protection for well logging operations in Saudi Arabia						
10:30–11:15	COFFEE BREAK & POSTERS						
	Personal dosimetry I	Medical applications II	Radioactivity monitoring and emergency monitoring II	Hot Topics Optical Radiation			
<b>SESSION CHAIR</b>	<b>JOSEF SABOL &amp; TAMÁS PÁZMÁNDI</b>	<b>JENIA VASSILEVA &amp; CARMEL J. CARUANA</b>	<b>BENJAMIN ZORKO &amp; PÉTER ZAGYVAI</b>	<b>LJILJANA UDOVICIC &amp; PETER JESCHKE</b>			
11:15–11:30	<b>David Endesfelder</b> (Virtual participant): RENEB inter-laboratory comparison (2021): biological dosimetry based on dicentric chromosomes	<b>Josep M. Martí-Climent</b> (Virtual participant): Optimization of patient dose in brain [18F]-DOPA PET/CT	<b>YOUNG SCIENTIST COMPETITION</b> <b>YSC4 Reinhard Wagner:</b> Differences in the assessment of the number of victims of the Chernobyl nuclear disaster	<b>Volkher Onuseit</b> (Virtual participant): Laser safety for high power and high intensity emerging laser applications. This lecture is 20+5 minutes long.		MELODI Workshop	
11:30–11:45	<b>Bernard Landry:</b> CADORmed a tool for internal dose assessment	<b>Szilvia Gazdag-Hegyesi:</b> The dose index of kilovoltage cone beam computed therapy for various imaging protocols	<b>Mauro Magnoni:</b> Optimisation of gamma spectrometry measurements in atmosphere during nuclear emergencies	<b>Rudolf Weber</b> (Virtual participant): Generation of soft X-rays during laser materials processing with ultrashort laser pulses. This lecture is 20+5 minutes long. →			
11:45–12:00	<b>Maia Avtandilashvili:</b> Modified human respiratory tract model to describe the retention of plutonium in scar tissues	<b>Adam Galdi:</b> kV-CBCT dose length product and effective dose estimation on Halcyon linear accelerator	<b>Alexandru O. Pavelescu:</b> Comparative re-analysis evaluation of the Fukushima accident atmospheric radioactive emissions				

TUESDAY

ROOM	BARTÓK II	LISZT	LEHÁR	BRAHMS	MOZART	STRAUSS	BARTÓK I
12:00–12:15	<p><b>YOUNG SCIENTIST COMPETITION</b></p> <p><b>YSC5 Victor Merza:</b> Is the ISO slab phantom appropriate for calibrations of the new ICRU 95 operational quantity personal dose?</p>	<p><b>Maria Gracia-Ochoa:</b> Design and development of a national patient dose registry</p> <p><b>Bela Kari:</b> Unique in-vivo non-invasive multimodality imaging based translational research laboratory established at medical imaging center of Semmelweis University</p>	<p><b>Norbert Kavasi:</b> Comparison of radiometric and mass spectrometric 90Sr analysis in the context of the Fukushima nuclear accident</p>	<p>→ <b>Rudolf Weber</b> (Virtual participant): Generation of ...</p> <p><b>Ewan Eadie</b> (Virtual participant): The efficacy and safety of disinfection with 222 nm ultraviolet-C. This lecture is 20+5 minutes long.</p> <p><b>Sven Connemann</b> (Virtual participant): Occupational exposure to optical radiation. This lecture is 10+5 minutes long.</p> <p><b>Aspasia Petri:</b> Public exposure to artificial optical radiation in the aesthetics and the entertainment sector in Greece. Risk management actions. This lecture is 10+5 minutes long.</p>			
12:15–12:30	<p><b>YSC6 Martin Seft:</b> Estimation of plutonium concentration in skeleton from occupationally exposed individuals</p>		<p><b>Caroline Simonucci:</b> Drone mapping radioactivity in emergency situation</p>				
12:30–12:45	<p><b>Evgenia Tolstykh:</b> Personal dose estimation based on cytogenetic FISH data after internal exposure, model approach</p>		<p><b>János Petrányi:</b> Assessing the radiation contamination of large areas using advanced technologies</p>				
12:45–13:00							
12:45–14:15	LUNCH & POSTERS						
	Personal dosimetry II	Medical applications III	Regulation	IEEE and ICNIRP and Hot Topics EMF. I			
	<b>HANNES STADTMANN</b>	<b>BORISLAVA PETROVIC &amp; EDUARD GERSHKEVITSH</b>	<b>ZSOLT STEFÁNKA</b>	<b>DRAGAN POLJAK &amp; PETER JESCHKE</b>			
14:15–14:30	<p><b>Maia Avtandilashvili:</b> Biokinetics of highly enriched uranium in a female nuclear worker</p>	<p><b>YOUNG SCIENTIST COMPETITION</b></p> <p><b>YSC7 Claudia R. Codosero Navarro</b> (Virtual participant): Three-dimensional dose calculation in CT/SPECT treatments with internal emitter LU-177 using Monte Carlo techniques</p>	<p><b>Tünde Katona:</b> The Hungarian radiation protection regulatory system</p>	<p><b>Eric van Rongen</b> (Virtual participant): The ICNIRP 2020 RF Guidelines – what is new? →</p>			

TUESDAY						
ROOM	BARTÓK II	LISZT	LEHÁR	BRAHMS	MOZART	STRAUSS
14:30–14:45	<b>Jozef Sabol:</b> The protection against radiation vs. the protection against Covid-19: some useful parallels	<b>YSC8 Whitney N. Coulor:</b> Developing a radiation safety program in countries without legislation in radiation safety – a report on Caribbean countries	<b>Eszter Reffalvi:</b> Regulatory radiational protection oversight program for Hungarian research reactors	 <b>Eric van Rongen</b> (Virtual participant): The ICNIRP 2020 RF...		
14:45–15:00	<b>YOUNG SCIENTIST COMPETITION</b> <b>YSC9 Guillaume Garnier:</b> Experimental reconstruction of an accidental external exposure: how the dosimetric methods complement each other?	<b>Lukas Jägerhofer:</b> MEDAUSTRON – Radiation protection for an ion therapy center in Austria	<b>Helena Janžekovič:</b> Twenty years of inspection interventions in Slovenia	 <b>Akimasa Hirata</b> (Virtual participant): Comparison of limits in ICNIRP guidelines and IEEE C95.1 standard		
15:00–15:15	<b>Lily Bossin:</b> Transitioning to radiophotoluminescence (RPL) dosimetry for environmental and area monitoring: the Paul Scherrer Institute's experience	<b>Nina Tuncel:</b> Dosimetric comparison of tomotherapy and three dimensional conformal radiotherapy: planning for graves oftalmopathy	<b>Silke C. Wouters:</b> Dose rate calculations for a new radioactive waste interim storage facility at PSI			
15:15–15:30	<b>Highlighted posters</b>  <b>Alberto Stablini:</b> Performance assessment and improvement of fluorescent nuclear track detectors as neutron dosimeters (7 min.)	<b>Juan D. Palma Copefe:</b> Establishment of radiation qualities for use in medical diagnostic according to the IEC 61267:2005 standard in the secondary standard dosimetry laboratory of the Centro Nacional de Dosimetría (7 min.)	<b>Viktorija Grill:</b> Termination of Cs-137 and Sr-90 in wood and wood ash purchased in Austria  <b>Andrzej Wojcik:</b> Education and training program of the project RadonNorm: towards effective radiation protection based on improved scientific evidence and social considerations – focus on radon and NORM	 <b>Jolanta Karpowicz</b> (Virtual participant): Numerical modeling of occupational hazards related to electromagnetic emission from surgical diathermy		
						<b>Startup Competition</b> 14:30–15:30 Open for everybody!  MELODI Workshop



## TUESDAY

ROOM	BARTÓK II	LISZT	LEHÁR	BRAHMS	MOZART	STRAUSS	BARTÓK I
15:30–15:45				<b>Ante Lojčić Kapetanović</b> <i>(Virtual participant):</i> Machine learning-assisted antenna modelling for realistic assessment of human exposure reference levels at frequencies above 6 GHz		MELODI Workshop	
15:45–16:15	COFFEE BREAK & POSTERS						
	Personal dosimetry III (medical)		Highlighted posters	Hot Topics EMF, II			
	<b>FIJIP VANHAVERE &amp; RICHÁRD ELEK</b>  <b>Meng-En Lian</b> <i>(Virtual participant):</i> Occupational radiation dose and radiation protection to the eye lens of interventional professionals from departments of interventional radiology and interventional cardiology		<b>CSURGAI JÓZSEF &amp; VIKTORIA GRILL</b>  <b>Victor Metzra:</b> Measurements of backscatter factors of phantoms for the correct evaluation of uncertainty contributions in occupational dosimetry  <b>Klara Poljškruh:</b> Gross alpha beta method and dose estimation  <b>Irina Avram:</b> Radiological protection assessment using Monte Carlo simulation code (7 min.)	<b>GYÖRGY THUROCZY &amp; PETER JESCHKE</b>  <b>Fabriziomaria Gobba</b> <i>(Virtual participant):</i> Occupational exposure to EMF and health surveillance of exposed workers			
16:15–16:30							
16:30–16:45	<b>Guang Yee Wong</b> <i>(Virtual participant):</i> Medical radiation exposure during Cone-Beam Computed Tomography (CBCT) guided pulmonary intervention (7 min.)			<b>Anna Šušnjara</b> <i>(Virtual participant):</i> Assessment of absorbed power density in multilayer planar model of human tissue		MELODI Workshop	
16:45–17:00	<b>Richard Milecz-Mityko:</b> Preliminary study on individual radiation dose received by medical staff for dose constraint determination			<b>Julien Modolo &amp; Alexandre Legros</b> <i>(Virtual participant):</i> Potential contribution of the transcranial stimulation literature to EMF exposure standards			
17:00–17:15	YOUNG SCIENTIST COMPETITION <b>YSC10 Victor Garcia Balcaza:</b> PymCG-IR Monte Carlo code for occupational dosimetry in interventional radiology			<b>Jens Hauelsen</b> <i>(Virtual participant):</i> Transcranial electric and magnetic stimulation			

TUESDAY							
ROOM	BARTÓK II	LISZT	LEHÁR	BRAHMS	MOZART	STRAUSS	BARTÓK I
17:15-17:30				<b>Peter Jeschke:</b> EMF-Risk assessment - supporting german SME with technical rules  <b>György Wersényi:</b> Evaluation of physiological effects of the electromagnetic field caused by fully electric and hybrid drives in the passenger compartment		MELODI Workshop	
17:30-18:30	POSTERS						
18:00-19:00	YG Career Guidance – Workshop		EUTERP meeting				

WEDNESDAY						
ROOM	LEHÁR			MOZART	STRAUSS	BARTÓK I
9:00–16:30	IAEA Workshop			MELODI Workshop 9:00–18:00	MELODI Workshop 9:00–18:00	IRPA Executive Council Meeting
19:00-23:00	Gala Dinner Cruise					

THURSDAY

BARTÓK I

STRAUSS

MOZART

BRAHMS

LEHÁR

LISZT

BARTÓK II

ROOM




ROOM	BARTÓK II	LISZT	LEHÁR	BRAHMS	MOZART	STRAUSS	BARTÓK I
08:00–08:50		<p>Refresher course VI.</p> <p><b>Katalin Lumniczky:</b> Challenges in radiation protection research and their radiobiological bases</p>	<p>Refresher course VII.</p> <p><b>Jenia Vasilleva</b> (IAEA): Patient dose assessment in diagnostic radiology: from modality specific to patient specific metrics</p>	<p>Refresher course VIII.</p> <p><b>Dragan Poljak:</b> Human exposure to electromagnetic fields</p>			
	NORM & Radon I	Other radiation protection	Education and training I	Radioecology			
SESSION CHAIR	CONSTANTIN MIHU & ZSOLT HOMOKI	CELSO OSIMANI	CARMEL J. CARUANA	IVANA VUKANAC			
09:00–09:15	<p><b>Wolfgang Ringer:</b> Radon mapping of a different kind: mapping activities and collaborations on radon of international organizations and associations</p>	<p><b>Giulia Castellani:</b> The fitness to work at risk of ionizing radiation: criteria and assessment process in employees with an oncological disease</p>	<p><b>Clemens Walther:</b> Augmented cooperation in education and training in nuclear and radiochemistry</p>	<p><b>Franz Josef Maringer:</b> A review on 60 years radioecological research of the Danube River</p>			
09:15–09:30	<p><b>Sylvain Andresz:</b> The application of the ALARA principle for radon at work: feedbacks from the European ALARA network</p>	<p><b>Filip Vanhavere:</b> The importance of MEENAS in the European radiation protection research and innovation scene</p>	<p><b>Salome Kiparoidze:</b> Effectiveness of online trainings on radiation protection in the context of the covid-19 pandemic</p>	<p><b>Sophie Beauquier:</b> Interest of ecosystem services concept for environmental radiation protection</p>	MELODI Workshop		
09:30–09:45	<p><b>Ruxandra Cristina Săpoi:</b> Raising awareness through continuous radon measurements in indoor workplaces</p>	<p><b>Linda K. Janssen-Pinkse:</b> Supporting the radiation protection professional in promoting radiation protection culture in the Netherlands</p>	<p><b>Jan-Willem Vahlbruch:</b> Online radiation protection courses - lessons learned during the Corona crises</p>	<p><b>Benoit Charrasse:</b> Does the use of reference organism in impact assessments provide an adequate protection of site-specific species in routine release? Clarification and reassurance</p>			
09:45–10:00		<p><b>Marianna Koutrouli:</b> Comparison of the secondary cancer risk induced by prostate external beam radiotherapy for partially in-beam organs between two different regimes in different patient age groups</p>	<p><b>Jim Thurston:</b> A remote radiation protection training initiative in the UK</p>	<p><b>Eduardo Gallego</b> (Virtual participant): Methodologies to assess radiological impact of a nuclear fusion test facility</p>			

THURSDAY

ROOM	BARTÓK II	LISZT	LEHÁR	BRAHMS	MOZART	STRAUSS	BARTÓK I
10:00–10:15		<p><b>Julie J. Burtt</b> (Virtual participant): Outputs of a horizon style exercise to advance the use of the adverse outcome pathway in radiation protection</p> <p>Highlighted posters</p> <p><b>Seung Hun Shin:</b> Respiratory protection strategies for the public in emergency response</p> <p><b>Hassan Salah Ibrahim:</b> Assessment of pediatric radiation dose and cancer risk from pediatric enhanced ct abdomen examination</p>	<p>YOUNG SCIENTIST COMPETITION</p> <p>YSC11 <b>Charlotte Schütte:</b> A teaching concept for school experiments on radioactivity using augmented reality methods</p> <p><b>Tom Clarijs:</b> Radiation protection education and training: initiatives from the SCK CEN Academy</p>			MELODI Workshop	
10:15–10:30							
10:30–11:15	COFFEE BREAK & POSTERS						
	NORM & Radon II	Radiobiology I	Education and training II	5G Communication Systems, I			
SESSION CHAIR	<b>RAINER GELLERMANN &amp; TÍMEA HÜLBER</b>	<b>SISKO SALOMAA &amp; GÉZA SAFRANY</b>	<b>TOM CLARIJS &amp; CSILLA PESZNYAK</b>	<b>GYÖRGY THUROCZY &amp; MATS-OLOF MATTSON</b>			
11:15–11:30	<b>Zsolt Homoki:</b> Indoor gamma radiation and radon risk assessment in Hungarian dwellings	<b>Vadim Chumak:</b> Dose reconstruction for epidemiological studies among Chernobyl cleanup workers: review of accomplishments and outlook	<b>Carmel J. Caruana:</b> Increasing the number of students in radiation protection and medical physics - finding a formula that works	<b>Akimasa Hirata</b> (Virtual participant): EMF dosimetry and assessment above 6 GHz			
11:30–11:45	<b>Annette Röttger:</b> Exploitation of results: Radon metrology for the use in climate change observation and radiation protection	<b>Dominique Laurier:</b> Effects of radiation exposure on offspring and next generations: current issues and potential impact for radiological protection	<b>Hielke-Freerk Boersma:</b> Developing (education and training in) radiation protection in suriname and beyond – the role of the Dutch Society for Radiation Protection				

THURSDAY

ROOM	BARTÓK II	LISZT	LEHÁR	BRAHMS	MOZART	STRAUSS	BARTÓK I
11:45–12:00	<p><b>Rocco Marchese</b> (Virtual participant): Simple one-parameter function to retrieve the correct exposure value from CR-39 radon detectors in high saturation regime. Checks on two kinds of analysis systems</p>	<p><b>Sisko I. Salomaa:</b> Effects of radiation exposure on offspring and next generations: genetic and epigenetic effects</p>	<p><b>Claire-Louise Chapple:</b> UK Experience of Professional Registration in Radiation Protection</p>	<p><b>Dragan Poljak:</b> Assessment methods for radiation of 5G systems</p>			
12:00–12:15	<p><b>Eric Petermann:</b> On the effectiveness of radon priority areas – a critical evaluation</p>	<p><b>Christelle Adam-Guillermín:</b> Effects of radiation exposure on offspring and next generations: heritable effects in non-human species</p>	<p><b>Stéphane Pepin:</b> Information on cosmic radiation received by Belgian aircrew: a survey</p>				
12:15–12:30	<p><b>Hailvard Haanes:</b> Outdoor measurements of thoron progeny in a 232Th-rich area with deposition-based alpha track detectors and corrections for wind bias</p>	<p><b>Stéphane Grison:</b> Multigenerational effects of co-exposure to chronic low-dose in utero exposure to internalized Cs-137 and post-natal high-fat diet in mice: study plan and collaboration opportunities</p>	<p>Highlighted posters</p> <p><b>Isabel Paiva:</b> MPSR: A unique Master's Course on "Radiation Protection and Safety" in Portugal. Lessons learnt and recommendations for the future (7 min.)</p>				
12:30–12:45	<p>Highlighted posters</p> <p><b>Konstantin Kovler:</b> A difficult way towards a rational and harmonized international regulation of indoor radon (7 min.)</p>						
12:45–14:15	Lunch & Posters						
	NORM & Radon III	Radiobiology II	Perspectives from ethics, social sciences and humanities	5G Communication Systems, II			
	<b>WOLFGANG RINGER</b>	<b>DMITRY KLOKOV &amp; KATALIN LUMNICZKY</b>	<b>GASTON MESKENS &amp; RENATE CZARWINSKI</b>	<b>MYRTILL SIMKO &amp; DRAGAN POLJAK</b>			
14:15–14:30	<p><b>Thomas Makumbi:</b> Assessment of uncertainties affecting dosimetric calculations for intake of radon and NORM</p>	<p><b>Dmitry Klokov:</b> Low dose research projects database: a new tool to facilitate global collaboration and effective funding decisions</p>	<p><b>Anja J. Dijkman:</b> Learning from daily work processes promotes safe working</p>	<p><b>Mats-Olof Mattsson:</b> 5G NR and human health: current knowledge and important knowledge gaps →</p>			

THURSDAY							
ROOM	BARTÓK II	LISZT	LEHÁR	BRAHMS	MOZART	STRAUSS	BARTÓK I
14:30–14:45	<b>Hélène Caplin:</b> Occupational exposure in industries involving NORM: special case of the inadvertent ingestion	 <b>Vinita Chauhan</b> (Virtual participant): The adverse outcome pathway approach in radiation protection and efforts towards global co-ordination	<b>Peter Bryant:</b> Communicating radiation risk: the role of public engagement in reaching ALARA	→ <b>Mats-Olof Mattsson:</b> 5G NR and human health...			
14:45–15:00	<b>Rainer Gellermann:</b> Classification of NORM as a basis for dose estimation	<b>Teisuhiro Kinugawa:</b> Analysis of radiation effects on cancer using a mathematical model	<b>Marie Claire Cantone:</b> Ethics in radiological protection in medicine –ICRP TG 109	<b>Szilvia Nagy:</b> Investigation of exposure to electromagnetic waves by using unmanned aerial vehicles			
15:00–15:15	<b>Rainer Gellermann:</b> Experience with NORM-waste disposal in different European countries			<b>Krzysztof Gryz:</b> Comparison of exposure to radiofrequency electromagnetic field emitted by RTV and mobile communication transmitters in urban environment			
15:15–15:30	<b>Iuliia Gushchina:</b> Radiation monitoring in the areas of uranium legacy sites and facilities of the Central Asian countries during the environmental remediation			 <b>Matia Vaccarone</b> (Virtual participant): A methodology to assess the EMF exposure Of 5G signals			
15:30–15:45	Highlighted posters  <b>Rainer Gellermann:</b> The European NORM association (ENA) – promoting radiation protection in the field of NORM in Europe						
15:45–16:15	 <b>Coreichi Liuba</b> (Virtual participant): Radon survey and exposure assessment in Republic of Moldova						
Coffee break & Posters							

MELODI Workshop

THURSDAY

ROOM	BARTÓK II	LISZT	LEHÁR	BRAHMS	MOZART	STRAUSS	BARTÓK I
	Radioactive waste management and geological disposal	Radiobiology III	Perspectives from ethics, social sciences and humanities	Health Effects of Lighting			
SESSION CHAIR	ISABEL PAVIA & BEHROOZ BAZARGAR-SABET	GÉZA SÁFRÁNY	GASTON MESKENS	MARINA KHAZOVA & PETER JESCHKE			
16:15–16:30	YOUNG-SCIENTIST COMPETITION YSC12 <b>Davide Bozzato:</b> Operational Radiation Protection Challenges For The LHC Experiments	<b>Takahiro Wada:</b> Radiation and lifespan: revisiting the concept of radiation-induced aging		<b>John O'Hagan</b> (Virtual participant): Health effects of lighting			
16:30–16:45	YSC13 <b>Vanda Papp:</b> Investigation of the structure of binders related to the final disposal of radioactive waste	<b>Masanori Tomita</b> (Virtual participant): Significance of stem cell competition in the dose rate effects	ETHICS ROUND TABLE: ethics and social sciences and humanities for radiological protection: an approach that concerns us all				
16:45–17:00	<b>Carlo Bergamaschi:</b> Remediation of a concrete underground artifact containing radiferous preparations of Ra-226 and disposal of the radioactive or contaminated material until complete restoration of the area	<b>Sandrine Pereira:</b> Predicting toxicity after head and neck cancer radiotherapy: synergistic role of biological markers and dosimetry?		<b>Mariëlle P. J. Aarts</b> (Virtual participant): Importance of indoor lighting for well-being, physical and mental health			
17:00–17:15	<b>Eszter M. Kovács:</b> Preparation of a sorbent suitable for sorption of anionic and cationic radioactive contaminants	<b>Géraldine Landon:</b> Liposomal formulations of new decorporation molecules for the treatment of internal strontium/cobalt contaminations					
17:15–17:30	<b>Isabel Paiva:</b> Introduction to the application of COMSOL Multi-physics to radionuclide transport calculations of migrating species from a repository for low-level radioactive waste	Highlighted posters <b>Stanislav S. Silkin:</b> Cancer risk in the cohort of exposed population of the East Urals radioactive trace <b>Elena Shishkina:</b> Extensive measurements of Sr-90 body-burden as a basis of retrospective internal dosimetry for population of the Urals region					
				Plenary Discussion			

THURSDAY








ROOM	BARTÓK II	LISZT	LEHÁR	BRAHMS	MOZART	STRAUSS	BARTÓK I	
17:30–17:45	<p><b>Malgorzata U. Sliz:</b> Newly built clearance facility at the Paul Scherrer Institute, Switzerland</p>	<p>Highlighted posters</p> <p><b>Nadia Boroumand:</b> Cancer-related changes in cells exposed to alpha radiation in combination with nicotine</p> <p><b>Zuzanna Pawłowska:</b> Progress of TraceRadon – Empir 19ENV01 project</p>				MELODI Workshop		
17:45–18:00	<p><b>Angelo Infantino:</b> Radiation protection challenges in the upgrade, autopsy and disposal of the LHC beam dump</p>							
18:00–18:10	Highlighted posters							
	<p><b>Jean-Michel Horodyski:</b> SimB-AD project: methodology to assess beta-only radionuclides activation into cyclotron materials (7 min.)</p>							
18:00–19:00	POSTERS							



## FRIDAY

ROOM	PÁTRIA	BRAHMS
	Refresher course IX.	PEROSH workshop "Electronic Article Surveillance"
		SESSION CHAIR – KLAUS SCHIESSL & PETER JESCHKE
08:00–08:50	<b>Carmel J. Caruana:</b> Strategic planning for attracting young people to radiation protection and medical physics university programmes	08:15–08:45: EAS: overview, exposure and electromagnetic hazards
	Plenary	
	SESSION CHAIR – FRANZ JOSEF MARINGER	
09:00–09:30	<b>Bernard LeGuen:</b> Enhancing radiation safety culture in health care : a joint IRPA WHO IOMP IAEA initiative	08:45–09:15: Challenges in application
	Highlighted presentations II	
	SESSION CHAIR – TAMÁS PÁZMÁNDI & CSILLA PESZNYÁK	
09:30–09:45	<b>Dóra Buzetky:</b> Application of cation-exchanged bentonites in nuclear waste treatment	09:15–09:30: Reasonably foreseeable use of EAS and product safety
09:45–10:00	<b>Oliver Hupe</b> <span style="color: red; font-weight: bold; font-size: 1.2em;">V</span> (Virtual participant): The novel European Metrology Network (EMN) for radiation protection	09:30–10:00: Short reports on national (or personal) experiences with EAS
10:00–10:15	<b>Stéphane Pepin:</b> The issue of Cs-137 in firewood and biomass combustion: a review	Discussion
	Sponsored presentation	
10:15–10:30	<b>Imdetek:</b> Recent progress of CdZnTe based room temperature detectors in industrial applications	10:20–10:30: Wrap up
10:30–11:00	COFFEE BREAK & POSTERS	
	SESSION CHAIR – RENATE CZARWINSKI & HANNES STADTMANN	
	Sponsored presentation	
11:00–11:15	<b>József Krausz:</b> Development of an automatic calculation system of public exposure to RF in Hungary	
	Highlighted presentations III	
11:15–11:30	<b>Ulf Stolzenberg</b> <span style="color: red; font-weight: bold; font-size: 1.2em;">V</span> (Virtual participant): Radiation protection at ultrashort-pulsed lasers in materials processing	
11:30–11:45	<b>Thierry Schneider:</b> Reasonableness and tolerability in the system of radiological protection: ICRP on-going reflection	
11:45–12:00	<b>Angelo Infantino:</b> Radiation protection challenges in the Large Hadron Collider upgrade	
12:00–12:15	COMPETITIONS AWARDS CEREMONY	
12:15–12:45	CLOSING CEREMONY	
12:45–14:45	LUNCH	

# Posters

SCREEN	TUESDAY POSTERS							
	17:30–17:45		17:45–18:00		18:00–18:15		18:15–18:30	
	NIR: Non-ionising radiation							
1	<b>Zsuzsanna Vecsei</b>	Radiofrequency exposure measurements of 2G-5G mobile systems during youngster's outdoor entertainment	<b>Patryk Zradziński</b>	Occupational hazards related to energy and information transfer near radifrequency readers	<b>Bertalan Pintér</b>	Investigation of UV-induced gH2AX phosphorylation on human keratinocyte and fibroblast cells in vitro	<b>Zsófia Szilágyi</b>	Investigation of the intermediate frequency magnetic field induced adaptive response on human fibroblasts in vitro
	Education and training							
2	<b>Tamás Pázmándi</b>	Training and tutoring for the experts of nuclear regulatory authorities of countries outside the EU	<b>Wout P. Moerman</b>	Interactive digital learning tools for radiation protection training	<b>Mary E. Allan</b>	Heads of profession network	<b>Isabel Paiva</b> <i>Virtual participant</i> 	MPSR: A unique Master's Course on "Radiation Protection and Safety" in Portugal. Lessons learnt and recommendations for the future
	Medical applications							
3	<b>Patricia B. R. Gasparian</b> <i>Virtual participant</i> 	Radiosurgery Dosimetry using OSL film made with CaSO4:Eu – a feasibility study	<b>Erik Hülber</b>	An OCT scanner for 3D assesment of clinical LINAC dose fields and developmens of specific polymer gels	<b>Gustavo E. Camargo</b> <i>Virtual participant</i> 	Development of phantom for current modulation quality assurance test on computed tomography	<b>Kristjan Talts</b>	Investigation of scatter radiation field and active survey dosimeter parameters applying standard protocol for chest radiography
4	<b>Zoltan Kolozsi</b>	Impact of x-ray machine replacement on the radiation protection at interventional radiological workplaces	<b>Tatsuhiko Gotanda</b> <i>Virtual participant</i> 	Dosimetry using a radiochromic film and a mammography phantom	<b>Aída López Romero</b> <i>Virtual participant</i> 	Patient dose reduction with the implementation of low dose protocols in computed tomography	<b>José Calatayud-Jordán</b> <i>Virtual participant</i> 	Local diagnostic reference levels for diagnostic and interventional radiology at a Spanish university hospital
	Measurement and standardisation							
5	<b>Sophie Harzmann</b> <i>Virtual participant</i> 	Clearance measurements at PSI	<b>Rodrigo De Lazzari</b> <i>Virtual participant</i> 	Intercomparison study of sensitivities from commercial OSL readers and a new developed OSL reader	<b>Juan D. Palma Copete</b>	Establishment of radiation qualities for use in medical diagnostic according to the IEC 61267:2005 standard in the secondary standard dosimetry laboratory of the Centro Nacional de Dosimetrí	<b>Radoslav Radev</b>	Recent developments in the international IEC and European EN standards for radiation protection instrumentation
6	<b>Jozef Sabol</b>	Difficultirs in using the present system of the quantification of radiation exposure	<b>Victor Merza</b>	Measurements of backscatter factors of phantomS for the correct evaluation of uncertainty contributions in occupational dosimetry	<b>Hee Seo</b>	Effect of raining and temperature on background signal of radiation portal monitor		

SCREEN	TUESDAY POSTERS							
	17:30–17:45	17:45–18:00	18:00–18:15	18:15–18:30				
	Radioecology							
7	<b>Viktoria Grill</b>	Determination of Cs-137 and Sr-90 in wood and wood ash purchased in Austria	<b>Željka Knežević</b> Virtual participant 	Environmental monitoring of the Krško NPP surroundings	<b>Alexandru O. Pavelescu</b>	Radiological risk assessment for a radioactive effluents buffer tank decommissioning	<b>Szabolcs Osváth</b>	Radioactivity in Hungarian drinking waters
	Personal dosimetry							
8	<b>Tamás Pázmándi</b>	Review of measurement methods and calibration procedures used in personal neutron dosimetry	<b>Ondrej Mišík</b>	Deposition of radon progeny in laryngeal and pharyngeal regions of respiratory tract	<b>Shinya Imai</b> Virtual participant 	Evaluation of factors associated with the effectiveness of radiation protection glasses	<b>Mastaneh Zadehrafii</b> Virtual participant 	Romanian national metrological traceability chain associated with eye lens dosimetry by high-precision dosimetry phantoms and Monte Carlo technique
9	<b>Alberto Stabilini</b>	Performance assessment and improvement of fluorescent nuclear track detectors as neutron dosimeters	<b>Borislava Petrovic</b>	Radiation safety of sentinel node biopsy procedure – institutional experience	<b>Evelin Derugin</b>	Deep TL: Progress of a machine learning aided personal dose monitoring system	<b>Coretchi Liuba</b> Virtual participant 	Health assessment of chronic exposed personnel to ionizing radiation
	NORM & Radon							
10	<b>Konstantin Kovler</b>	A difficult way towards a rational and harmonized international regulation of indoor radon	<b>Zuzanna Pawlowska</b>	Progress of TraceRadon – Empir 19ENV01 project	<b>Kinga Hening (Szacsvai)</b>	Indoor radon distribution in residential and public building from some major urban agglomerations of Romania	<b>Jana N. Djounova</b>	Analysis of indoor radon concentration in kindergartens of two Bulgarian districts
11	<b>Ileana Radulescu</b> Virtual participant 	Outdoor radon measurements by means of SSNDT and active monitoring	<b>Rosabianca Trevisi</b> Virtual participant 	Radon levels distribution in University's buildings located in an Italian karst region	<b>Hannah Wiedner</b> Virtual participant 	Experiences with accreditation for radon measurement laboratories	<b>Lisa Pedrazzi</b> Virtual participant 	Challenges associated with disposal of exhaust air filters at PSI
	Radioactive waste management and geological disposal							
12	<b>Zoltán Hlavathy</b>	Determination of nuclide concentration in waste materials in the insider project	<b>Gabriel Inalegwu Iklaga</b>	Assessing the effect of natural zeolite additives on the immobilization of boric acid radioactive waste by cement	<b>Mojtaba Rostamparsa</b>	Immobilization of novel radioactive waste of B-10 enriched boric acid with OPC and SAC cementitious materials	<b>Jean-Michel Horodyski</b>	SimB-AD project: methodology to assess beta-only radionuclides activation into cyclotron materials
	Radioactivity monitoring and emergency monitoring							
13	<b>Ákos Kóvágó</b>	The first integrated geodynamic station in central Europe	<b>István Róbert Nikolényi</b>	A remote and real-time optical detection of alpha-emitting radionuclides in the environment	<b>Anna Pántya</b>	Monte Carlo simulation of measurements of I-131 in age-dependent thyroid model	<b>Dorottya Jakab</b>	Practical aspects of assessing the performance characteristics of environmental radiation measurements
14	<b>Lumen Haendler</b>	Radiation protection challenges at SwissFEL	<b>Vadim Chumak</b>	Mobile apps for radiation doses, health and well-being after a nuclear accident: recommendations for users, developers and public authorities	<b>Irén Kerekes</b>	The role of the Regional Laboratory (Tolna County) of the RAMDAN in the Paks NNP related monitoring programme	<b>Michaela Kozlovská</b> Virtual participant 	Radioactivity monitoring after dirty bomb explosion simulation

SCREEN	THURSDAY POSTERS							
	18:00–18:15		18:15–18:30		18:30–18:45		18:45–19:00	
	NIR: Non-ionising radiation						NORM & Radon	
1	<b>Cristian Goiceanu</b> <i>Virtual participant</i> 	Some considerations on challenges related to the use of the new ICNIRP restrictions for human exposure to radiofrequency fields	<b>Mattia Vaccarone</b> <i>Virtual participant</i> 	Magnetic fields exposure in electric vehicles: a real-life study case	<b>Péter Pál Necz</b>	Measurement of radiofrequency (RF) exposure around a 5G base station	<b>Coretchi Liuba</b> <i>Virtual participant</i> 	Radon survey and exposure assessment in Republic of Moldova
	Education and training							
2	<b>Andrzej Wojcik</b>	Education and training program of the project RadoNorm: towards effective radiation protection based on improved scientific evidence and social considerations – focus on radon and NORM	<b>Wout P. Moerman</b>	The impact of Covid19 on radiation protection exam results	<b>Tom Clarijs</b>	Changing face to face to online radiation protection training: experiences of the trainers and trainees	<b>Hielke-Freerk Boersma</b>	8th International Conference on Education and Training in Radiological Protection (ETRAP): Groningen NL, 26 – 30 June 2023
	Other radiation protection							
3	<b>Claire-Louise Chapple</b>	Comparison of the secondary cancer risk induced by prostate external beam radiotherapy for partially in-beam organs between two different regimes in different patient age groups	<b>Seung Hun Shin</b>	Respiratory protection strategies for the public in emergency response	<b>Tatsuki Kimura</b> <i>Virtual participant</i> 	Occupational risk in terms of mortality	<b>Chia-Yi Liu</b> <i>Virtual participant</i> 	GA3C for anomalous radiation source detection
	Medical applications				Personal dosimetry			
4	<b>Corina Pera</b> <i>Virtual participant</i> 	Radiation doses and associated risks for CT head exposures	<b>José Calatayud-Jordán</b> <i>Virtual participant</i> 	Digital radiography reject analysis at a Spanish university hospital	<b>Amir Dareini</b>	Investigation of radiation dose around C-arm fluoroscopy and its related incident cancer risk on operating room staff		
	Measurement and standardisation						NORM & Radon	
5	<b>Ivana S. Vukanac</b>	Verification of the sampling procedure for waste and industrial material	<b>Nur Rahmah Hidayati</b> <i>Virtual participant</i> 	Analysis of attenuation factors for therapeutical radioisotopes in indonesia: preparation of image quantification for radionuclide therapy dosimetry	<b>Raquel Idoeta Hernandez</b> <i>Virtual participant</i> 	ISO 17025 accreditation of LSC measurements in the LMBA	<b>Réka Incze</b>	Radon In Covasna And Harghita Counties (Romania): From Epicurian To All-Pervasive Perspective
	Personal dosimetry							
6	<b>Philippe Lestaevel</b> <i>Virtual participant</i> 	The most exposed flight crews in France over the period 2015-2019	<b>Biljana Petrovic</b>	Extremity dosimetry for exposed workers in positron emission tomography in Bosnia and Herzegovina	<b>Eugenia Mihaela Coiciu</b>	Dosimetry techniques for complex mixed ionizing radiation fields	<b>Aída López Romero</b> <i>Virtual participant</i> 	Comparison between radio-embolizations with yttrium-90 and holmium-166 concerning radiation protection of health professionals

SCREEN	THURSDAY POSTERS							
	18:00–18:15		18:15–18:30		18:30–18:45		18:45–19:00	
	NORM & Radon							
7	<b>Kremena Georgieva Ivanova</b>	Indoor radon concentration in state schools of four Bulgarian districts	<b>Rainer Gellermann</b>	The European NORM Association (ENA) – promoting radiation protection in the field of NORM in Europe	<b>Primal Pinto</b>	Ambient Gamma Level, Seasonal and Spatial Distribution of NORM in Beach Placer Deposits	<b>Rosabianca Trevisi</b> <i>Virtual participant</i> <b>V</b>	Inventory of NORM industrial sectors in Italy: preliminary results
	Radioactivity monitoring and emergency monitoring							
8	<b>Yuki Sato</b> <i>Virtual participant</i> <b>V</b>	Visualization software for radioactive contamination based on Compton camera: COMRIS	<b>Iurii Belskikh</b>	Radiation survey at the remediated dumps of mine No.2 of the Lermontov Production Association "Almaz"	<b>Peter Oluwadamilare Olagbaju</b> <i>Virtual participant</i> <b>V</b>	Radiological assessment of irrigation water used in Rustenburg, South Africa		
9	<b>Klara Poiškruh</b>	Gross alpha beta method and dose estimation	<b>Cristina Nucetelli</b> <i>Virtual participant</i> <b>V</b>	The SIREN Project: development of a real time system to report and collect data for the dose assessment of operators in abnormal events in nuclear medicine therapy	<b>Irina Avram</b>	Radiological protection assessment using Monte Carlo simulation code		
	Industry & NPP							
10	<b>Sanghoun Joung</b>	Comparative analysis of power system open phase conditions in Korea's standard nuclear power plants	<b>Megan J. Hopkins</b>	Feasibility study of 3D gamma imaging for improving radiological protection at Sizewell B Nuclear Power Plant	<b>Péter Kirchknopf</b>	Gamma spectrometric investigation of fission product activity ratios to calculate burnup, cooling time and power history of spent nuclear fuels	<b>Maxime Karst</b>	Edf's eye lens dose study: methodology, results and strategy chosen for interventions in an industrial environment
	Radiobiology							
11	<b>Nadia Boroumand</b>	Cancer-related changes in cells exposed to alpha radiation in combination with nicotine	<b>Ahmad Sleiman</b> <i>Virtual participant</i> <b>V</b>	Development of microfluidic chips to immobilize C. elegans for nervous system irradiation with proton microbeam	<b>Sonia Spandole-Dinu</b> <i>Virtual participant</i> <b>V</b>	Radioprotective effect of green barley juice on rat testis	<b>Nur Rahmah Hidayati</b> <i>Virtual participant</i> <b>V</b>	Proinflammatory cytokine of human TNF-alpha in the blood plasma of medical workers occupationally exposed to radiation
12	<b>Tímea Hülber</b>	Harmonization protocol on the quality of the micronucleus samples that are scored automatically	<b>Rita Hargitai</b>	Reactive oxygen metabolites in murine radiation-induced acute myeloid leukemia	<b>Mostafa Karimi Roshan</b>	Nectar: a new horizon to address Alzheimer's treatment	<b>Anna Pántya</b>	Role of individual characteristics in thyroid dose estimation
13	<b>Sandrine Pereira</b> <i>Virtual participant</i> <b>V</b>	Performances of a binary blood assay for predicting radiosensitivity	<b>Coretchi Liuba</b> <i>Virtual participant</i> <b>V</b>	Biological markers of ionizing radiation	<b>Tamara Fuciarelli</b>	Ionizing radiation alters male (Acheta domestica) courtship songs that are critical for mating success		
	Regulation				Radioecology			
14	<b>Jos van den Eijnde</b>	Avoiding multiple conservative assumptions: a case on a laboratory rule	<b>Silke C. Wouters</b> <i>Virtual participant</i> <b>V</b>	Dose rate calculations for a new radioactive waste interim storage facility at PSI	<b>Carmen A. Tuca</b>	Activity levels of natural and artificial radionuclides from soil in a VVR-S nuclear research reactor decommissioning area		

# Author index

- A**
- Aarts, Mariëlle P.J. 37  
Adam-Guillermin, Christelle 35  
Allan, Mary E. 40  
Al-Somali, Omar 28  
Ambrose, Kathryn L. 14, 27  
Andresz, Sylvain 4, 14, 33  
Avram, Irina 31, 43  
Avtandilashvili, Maia 28, 29
- B**
- Baudin, Clémence 27  
Beauquier, Sophie 33  
Belskikh, Iurii 43  
Bergamaschi, Carlo 37  
Bharath, Bharath 27  
Birschwilks, Mandy 26  
Boersma, Hielke-Freerk 34, 42  
Boroumand, Nadia 38, 43  
Bossin, Lily 30  
Bozzato, Davide 14, 37  
Breitenmoser, David 28  
Breitkreutz, Harald 26  
Bryant, Peter 36  
Burt, Julie J. 34  
Buzetzký, Dóra 39
- C**
- Calatayud-Jordán, José 40, 42  
Camargo, Gustavo E. 40  
Cantone, Marie Claire 36  
Caplin, Hélène 36  
Caruana, Carmel J. 4, 20, 28, 33, 34, 39  
Castellani, Giulia 33  
Chapple, Claire-Louise 35, 42  
Charrasse, Benoit 33  
Chauhan, Vinita 36  
Chumak, Vadim 4, 34, 41  
Clarijs, Tom 19, 27, 34, 42  
Clero, Enora 18, 27  
Codosero, Claudia R. 14, 29  
Coiciu, Eugenia Mihaela 42  
Connemann, Sven 29  
Copete, Juan D. Palma 30, 40  
Coulour, Whitney N. 14, 30  
Cridland, Nigel A. 26
- D**
- Dareini, Amir 42  
Derugin, Evelin 41  
van Deventer, Emilie 26  
Dijkman, Anja J. 35  
Djounova, Jana N. 41
- E**
- Eadie, Ewan 29  
van den Eijnde, Jos 30, 43  
Endesfelder, David 28
- F**
- Fuciarelli, Tamara 43
- G**
- Galdi, Adam 28  
Gallego, Eduardo 33  
Garcia Balcaza, Victor 14, 31  
Garcia-Fernandez, Gonzalo 26, 27  
Garnier, Guillaume 14, 30  
Gasparian, Patricia B. R. 40  
Gazdag-Hegyési, Szilvia 28  
Gellermann, Rainer 4, 34, 36, 43  
Gershkevitsh, Eduard 18, 27, 29  
Gervot, Héloïse 27  
Geser, Federico A. 27  
Gobba, Fabriziomaria 31  
Goiceanu, Cristian 42  
Gotanda, Tatsuhiro 40  
Gracia-Ochoa, Maria 29  
Grill, Viktoria 30, 31, 41  
Grison, Stéphane 35  
Gryz, Krzysztof 36  
Gushchina, Iuliia 36
- H**
- Haanes, Hallvard 35  
Haendler, Lumen 41  
Hajdú, Dávid 14, 28  
Hargitai, Rita 43  
Harzmann, Sophie 40  
Haueisen, Jens 31  
Hening (Szacsvai), Kinga 4, 41  
Hidayati, Nur Rahmah 42, 43  
Hirata, Akimasa 30, 34  
Hlavathy, Zoltán 41  
Homoki, Zsolt 33, 34  
Hopkins, Megan J. 43  
Horodyski, Jean-Michel 38, 41  
Hupe, Oliver 4, 39  
Hülber, Erik 40  
Hülber, Tímea 34, 43
- I**
- Idoeta, Raquel 27, 42  
Iklaga, Gabriel Inalegwu 41  
Imai, Shinya 41  
Incze, Réka 42  
Infantino, Angelo 38, 39  
Irazola, Leticia 27  
Ivanova, Kremena Georgieva 43
- J**
- Jägerhofer, Lukas 27, 30  
Jakab, Dorottya 3, 41  
Janssen-Pinkse, Linda K. 33  
Janžekovič, Helena 4, 27, 30  
Jeschke, Peter 3, 26, 28, 29, 31, 32, 37, 39  
Joseph, Wout 35  
Joung, Sanghoun 43
- K**
- Kari, Bela 29  
Karimi Roshan, Mostafa 43  
Karpowicz, Jolanta 30  
Karst, Maxime 43  
Katona, Tünde 4, 14, 26, 29  
Kavasi, Norbert 29  
Kerekes, Irén 41  
Kimura, Tatsuki 42  
Kinugawa, Tetsuhiro 36  
Kiparoidze, Salome 33  
Kirchknopf, Péter 43  
Klokov, Dmitry 4, 35  
Knežević, Željka 3, 41  
Koutrouli, Marianna 33  
Kovács, Eszter M. 37

Kovler, Konstantin	35, 41	<b>P</b>		Sleiman, Ahmad	43
Kozlovská, Michaela	41	Paiva, Isabel	4, 35, 37, 40	Sliz, Malgorzata U.	38
Kővágó, Ákos	41	Pántya, Anna	3, 41, 43	Solymosi, Máté	27
Krausz, József	39	Papp, Vanda	14, 37	Spandole-Dinu, Sonia	43
Kuča, Petr	4, 27	Pavelescu, Alexandru O.	28, 41	Stabilini, Alberto	30, 41
<b>L</b>		Pawłowska, Zuzanna	38, 41	Stewart, Joanne	4, 26
Landon, Géraldine	37	Pázmándi, Tamás	3, 26, 28, 39, 40, 41	Stolzenberg, Ulf	39
Landry, Bernard	28	Pedrazzi, Lisa	41	Šušnjara, Anna	31
Laurier, Dominique	34	Pepin, Stéphane	35, 39	Szegedi, Domonkos	27
De Lazzari, Rodrigo	40	Pera, Corina	42	Szilágyi, Zsófia	40
Legros, Alexandre	26, 31	Pereira, Sandrine	37, 43	<b>T</b>	
LeGuen, Bernard	26, 39	Petermann, Eric	35	Talts, Kristjan	40
Lestaevel, Philippe	42	Petrányi, János	1, 26, 27, 29	Thurston, Jim	14, 33
Lian, Meng-En	31	Petri, Aspasia	29	Tobosaru, Georgian V.	14, 27
Liu, Chia-Yi	42	Petrovic, Biljana	42	Tolstykh, Evgenia	29
Liuba, Coretchi	36, 41, 42, 43	Petrovic, Borislava	4, 29, 41	Tomita, Masanori	37
López Romero, Aída	40, 42	Pintér, Bertalan	40	Trevisi, Rosabianca	41, 43
Lumniczky, Katalin	4, 19, 33, 35	Pinto, Primal	43	Tuca, Carmen A.	43
<b>M</b>		Poiškruh, Klara	31, 43	Tuncel, Nina	30
Magnoni, Mauro	27, 28	Poljak, Dragan	4, 20, 29, 33, 35	<b>V</b>	
Makumbi, Thomas	35	<b>R</b>		Vaccarono, Mattia	36, 42
Marchese, Rocco	35	Radev, Radoslav	40	Vahlbruch, Jan-Willem	33
Maringer, Franz Josef	4, 26, 27, 33, 39	Radulescu, Ileana	41	Vanhavere, Filip	4, 14, 26, 31, 33
Martí-Climent, Josep M.	28	Retfalvi, Eszter	30	Vanhoudt, Nathalie	26
Mattsson, Mats-Olof	35-36	Ringer, Wolfgang	33, 35	Vasilleva, Jenia	33
Merza, Victor	14, 29, 31, 40	van Rongen, Eric	26, 29-30	Vecsei, Zsuzsanna	40
Milecz-Mityko, Richard	31	Rostamiparsa, Mojtaba	41	Vukanac, Ivana S.	4, 33, 42
Mišik, Ondrej	41	Röttger, Annette	34	<b>W</b>	
Modolo, Julien	26, 31	Rühm, Werner	26	Wada, Takahiro	37
Moerman, Wout P.	40, 42	<b>S</b>		Wagner, Reinhard	14, 28
<b>N</b>		Sabol, Jozef	28, 30, 40	Walther, Clemens	33
Nagy, Szilvia	36	Salah Ibrahim, Hassan	34	Weber, Rudolf	28-29
Necz, Péter Pál	42	Salomaa, Sisko I.	4, 34, 35	Wersényi, György	32
Nikolényi, István Róbert	41	Săpoi, Ruxandra Cristina	33	Wiedner, Hannah	41
Nuccetelli, Cristina	43	Sato, Yuki	43	Wilson, Allan	28
<b>O</b>		Schneider, Thierry	39	Wojcik, Andrzej	30, 42
O'Hagan, John	37	Schütte, Charlotte	14, 34	Wong, Guang Yee	31
Okyar, Burcin	4, 26	Sefl, Martin	14, 29	Wouters, Silke C.	30, 43
Olagbaju, Peter Oluwadamilare	43	Seo, Hee	40	<b>Z</b>	
Olaru, Claudia	27	Shin, Seung Hun	34, 42	Zadehraf, Mastaneh	41
Onuseit, Volkher	28	Shishkina, Elena	37	Zagyvai, Péter	19, 27, 28
Osváth, Szabolcs	4, 41	Silkin, Stanislav S.	37	Zorko, Benjamin	4, 27, 28
Otero, André Gomes Lamas	27	Simonucci, Caroline	29	Zradziński, Patryk	40

# Floorplan





# CONGRESS VENUE

BUDAPEST CONGRESS CENTRE

## Y-SPONSOR

**11** Radosys

## X-SPONSORS

**A** Radchem Kft.

**9** LANDAUER

## EXHIBITORS

**A** Berthold Technologies GmbH

**B** Southern Scientific + Tracero

**3** Bertin

**4** Gemini Technology

**5** NMHH

**6** Izotoptech

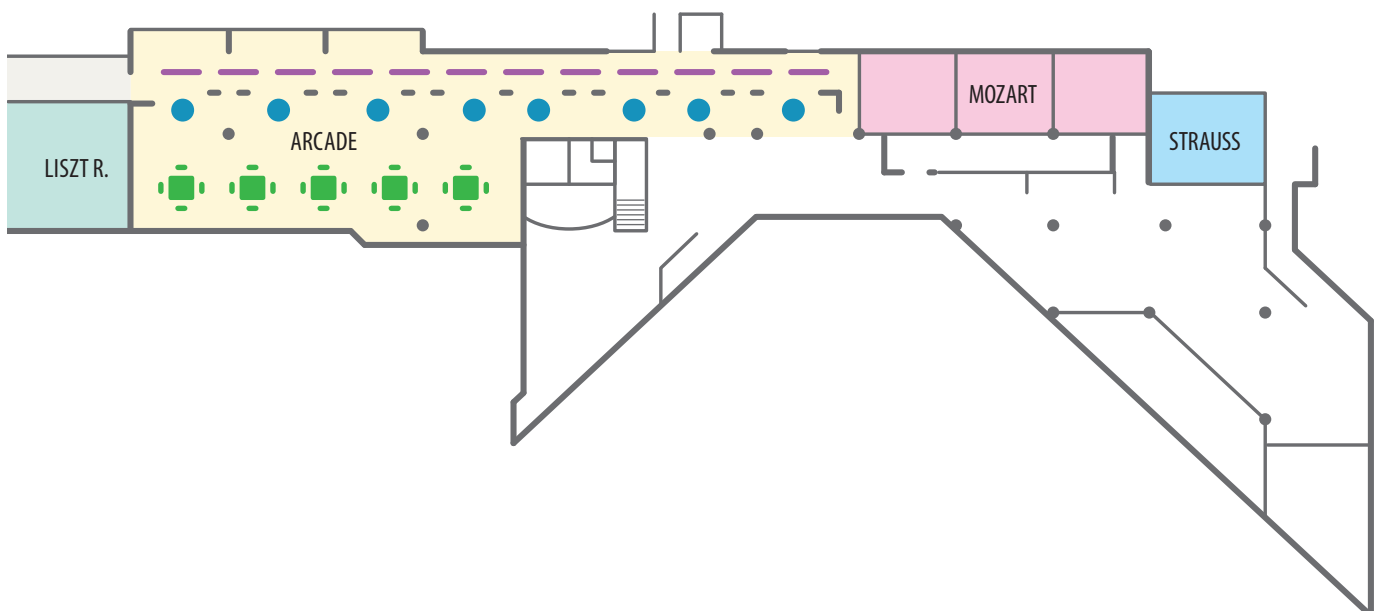
**7** Eckert & Ziegler

**8** SARAD GmbH

**10** GIHMM GmbH (Austria)

**18** Programozd a jövőd!

**19** GAMMA Technical Corporation



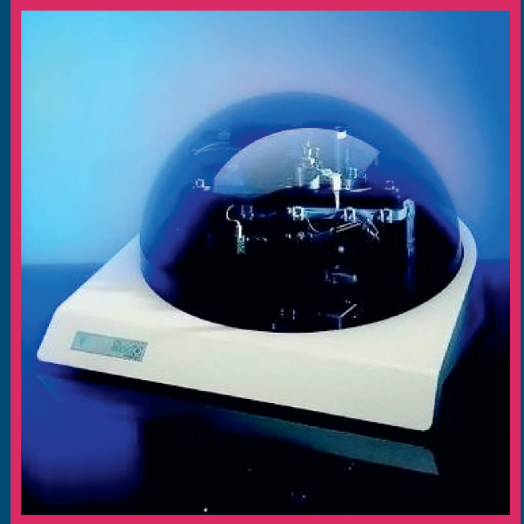
The final layout may differ from that draft on the floorplan, the organizers reserve the right to change.

# Notes

---



# The global radon test system supplier



## ACCREDITATION FRIENDLY SYSTEM



### Traceability

Calibration factor is traced back to BfS and national calibration laboratories



### Synchronization

Reference detector set concept to synchronize user system and the factory reference system



### Turnkey solution

Including calibration and variety of detectors in ready made format



### QC support system

For user labs including watchdog monitor program, which operates locally on the user's system



### Accreditation

Growing number of 17025 accredited users labs



### 10-stage production QC

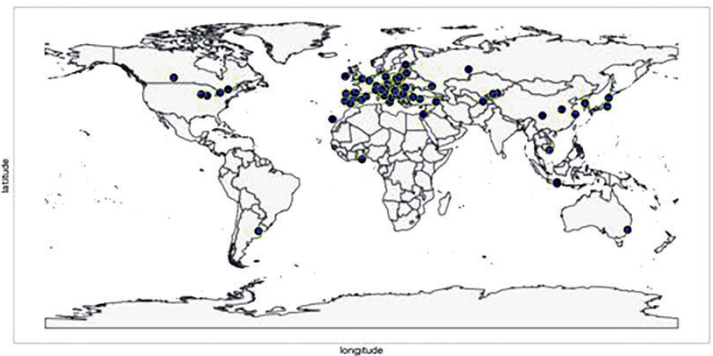
Multi-layer production QC at CR39 sensor material and detector production



### Consultancy

on radon metrology, Including optional cloud based data exchange system

## THE PROFESSIONAL SOURCE for independent radon laboratories



STATISTICS

40

COUNTRIES

5

CONTINENTS

2 million

DETECTORS

in 22 years

0.5 million

DETECTORS

in national or regional surveys



Budapest  
Lisbon  
New York



Radosys Kft. [www.radosys.com](http://www.radosys.com),  
Vegyész utca 17-25. H-1116 Budapest, Hungary  
Tel.: +36 1 203-0878; Fax: +36 1 203-0879;  
E-mail: [sales@radosys.com](mailto:sales@radosys.com)



## ORGANIZERS

