

NUTECH-2020

CONFERENCE SESSIONS

SUNDAY, 4th October 2020

OPENING SESSION

14:00 -15:00* – hybrid session

<i>Presenting author</i>	<i>Title</i>	<i>Participation</i>
	Opening of the conference	
Andrzej G. Chmielewski <i>Institute of Nuclear Chemistry and Technology, Poland</i>	Opening of the conference and short review of main topics to be presented (10 min)	In-person
Marek Lankosz <i>AGH University of Science and Technology, Poland</i>	Nuclear techniques at AGH UST-current status and future developments (10 min)	On-line
Representatives of the conference honorary patrons		
Grzegorz Wrochna Undersecretary of State Ministry of Science and Higher Education, Poland		
Łukasz Młynarkiewicz President National Atomic Energy Agency (PAA), Poland		
Tomasz Nowacki Director of Nuclear Energy Department Ministry of Climate, Poland		

* all session times are in Central European Summer Time (CEST)

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15:00 -17:00 – hybrid session

Session: PLENARY SESSION

Chair: A. G. Chmielewski/ P. Ulański

Presenting author	Title	Participation
Piotr Ulański <i>Lodz University of Technology, Poland Invited Speaker</i>	Radiation crosslinking of polymers – facing new paradigms, creating new opportunities (30 min)	In person
Jerzy Majcher <i>Nuclear energy expert, Poland, Invited Speaker</i>	Electricity market and power system conditions for financing the construction of a nuclear power plant in Poland (20 min)	In-person
Suresh Pillai <i>Texas A&M University, USA Invited Speaker</i>	The next frontier for understanding how microorganisms respond to ionizing technologies (20 min)	On-line
Mohamad AL-Sheikhly <i>University of Maryland, USA Invited Speaker</i>	Electron Beam Synthesis of Novel Fabrics for Extraction of Uranium from Seawater (20 min)	On-line
Bumsoo Han <i>International Atomic Energy Agency, Austria Invited Speaker</i>	Radiation Technology for Sustainable Development (20 min)	On-line
Patrick Brisset/ Gerardo Maghella-Seminario <i>International Atomic Energy Agency, Austria Invited Speaker</i>	IAEA Programs in the field of RT, NCS and NDT(20 min)	On-line
	Discussion	

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Monday, 5th October 2020

9:00 -10:30 – hybrid session

Session I: NUCLEAR ENERGY

Chair: ***M. Dąbrowski/ G. Zakrzewska-Kołodziej***

Presenting author	Title	Participation
Ziemowit Iwański <i>Ziemowit Iwański Power Systems, Poland Invited Speaker</i>	Modern Power Generation Technologies and Strategy to Achieve Optimal Energy Mix. (30 min)	On-line
Wacław Gudowski <i>KTH, Sweden Invited Speaker</i>	High Temperature Gas Cooled Reactors – good choice for Poland to enter nuclear energy deployment (30 min)	On-line
Piotr Darnowski <i>Warsaw University of Technology, Poland</i>	Severe Accident Analyses for Demonstration of the SAMG Decision-Making Tool (15 min)	In-person
Wojciech Kubiński <i>Warsaw University of Technology, Poland</i>	Optimization of the Loading Pattern of the PWR Reactor Core Using Genetic Algorithms and Multi-Purpose Fitness Function (15 min)	In-person

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11:00 -12:45 – hybrid session

Session II: NUCLEAR ENERGY

Chair: M. Dąbrowski/ G. Zakrzewska-Kołodziej

Presenting author	Title	Participation
Mirco Grosse <i>Karlsruhe Institute of Technology, Germany Invited Speaker</i>	Thermal Limits of Promising Candidate Materials for Accident Tolerant Fuel Claddings (20 min)	In-person
Bożena SARTOWSKA <i>Institute of Nuclear Chemistry and Technology, Poland</i>	Protective multielemental coatings on Zircalloy-2: INCT studies (15 min)	In-person
Leon Fuks <i>Institute of Nuclear Chemistry and Technology, Poland</i>	Sorption of Selected Radionuclides from Liquid Radioactive Wastes by Sorbents of the Biological Origin (15 min)	In-person
Wojciech Żurkowski <i>Warsaw University of Technology, Poland</i>	Application of genetic algorithms in optimization of the SFR reactor design (15 min)	In-person
Elina Pajuste <i>University of Latvia</i>	Thermal properties and oxidation processes of nuclear fusion reactor metallic materials in accidental operational conditions (15 min)	On-line
Zuzanna Krajewska <i>National Centre for Nuclear Research, Poland</i>	Raman spectroscopy as a tool of TRISO particle fuel defects examination (15 min)	In-person
	Discussion	

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14:00 -16:30 – hybrid session

Session III: HTR

Chair: W. Gudowski/ G. Zakrzewska-Kołodziej

Presenting author	Title	Participation
Heinz Nabelek <i>Consultant, Austria, Invited Speaker</i>	TRISO particle nuclear fuel at the heart of the High Temperature Reactor (30 min)	On-line
Mariusz Dąbrowski/ Agnieszka Boettcher <i>National Centre for Nuclear Research, Poland Invited Speaker</i>	Polish GOSPOSTRATEG HTR project - what has been done and what to do next? (20 min)	On-line / On-line
Janusz Malesa <i>National Centre for Nuclear Research, Poland</i>	A brief overview of achievements of the European project GEMINI+ (20 min)	On-line
Marcin Brykała <i>Institute of Nuclear Chemistry and Technology, Poland</i>	GOSPOSTRATEG: Research and analysis of selected chemical aspect of the production and use of TRISO fuel in the HTR nuclear reactor (10 min)	In-person
Wojciech Starosta <i>Institute of Nuclear Chemistry and Technology, Poland</i>	Silver migration in TRISO coated particles - computational studies (10 min)	In-person
Mikolaj Oettingen <i>AGH University of Science and Technology, Poland</i>	Numerical modelling of Modular High-Temperature Gas-Cooled Reactor with thorium fuel (10 min)	On-line
Ewelina Chajduk <i>Institute of Nuclear Chemistry and Technology, Poland</i>	Development of analytical procedures for chemical characterization of substrates for the production of TRISO coated particles as nuclear fuel in high temperature gas-cooled reactors (10 min)	In-person
Katarzyna Kiegiel <i>Institute of Nuclear Chemistry and Technology, Poland</i>	Spent fuel and radioactive waste management in the HTGR fuel cycle (10 min)	In-person
Anna Talarowska <i>National Centre for Nuclear Research, Poland</i>	Preliminary computational and experimental design studies of the ISHTAR thermostatic rig for the High-Temperature Reactors materials irradiation (10 min)	On-line
Discussion		

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17:00 -18:00 – hybrid session

NUCLEAR ENERGY–Poster session 40 min

	Presenting author	Title
1	Piotr Darnowski <i>Warsaw University of Technology, Poland</i>	Demonstration of the Multiple-Path Event Tree PSA Based Approach Dedicated for E-BEPU for PWR Reactor (in-person)
2	Wojciech Starosta <i>Institute of Nuclear Chemistry and Technology, Poland</i>	Studies on sorption properties of UiO-66 type Metal Organic Framework sorbents for selected radionuclides removal from water solution. (in-person)
3	Katarzyna Kiegiel <i>Institute of Nuclear Chemistry and Technology, Poland</i>	The studies on uranium recovery from U-bearing Radonów dump (in-person)
4	Marcin Rogowski <i>Institute of Nuclear Chemistry and Technology, Poland</i>	Encapsulation of graphite-uranium compacts as surrogate of spent High Temperature Reactor fuel (in- person)
5	Bożena Sartowska <i>Institute of Nuclear Chemistry and Technology, Poland</i>	Proposed Accident Tolerant Materials (ATM) with increased oxidation resistance; studies in the frame of ACTOF CRP IAEA project (in-person)
6	Irena Herdzik-Koniecko <i>Institute of Nuclear Chemistry and Technology, Poland</i>	Optimizing the separation of fission product technetium in the process of recycling actinides from spent nuclear fuel (in-person)
7	Dagmara Chmielewska- Śmietanko <i>Institute of Nuclear Chemistry and Technology, Poland</i>	Application of SiAE-KniFe sorbent for radiocesium removal in three different process configuration: batch, fixed-bed and hybrid membrane process (in-person)
		Discussion

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Tuesday, 6th October 2020

9:00 -11:00 – hybrid session

Session ARIES: ACCELERATOR RESEARCH AND INNOVATION
FOR EUROPEAN SCIENCE AND SOCIETY (ARIES)



Chair: A. G. Chmielewski/U. Gryczka

Presenting author	Title	Participation
Rob Edgecock University of Huddersfield, United Kingdom	Plans for future electron beam activities in Horizon 2020 (15 min)	On-line
Andrzej G. Chmielewski Institute of Nuclear Chemistry and Technology, Poland	New Developments in Environmental Radiation Technology Applications (15 min)	In-person
Aleksandr Bryazgin Budker Institute of Nuclear Physics, Russia	ILU Electron Accelerators for E-beam and X- ray Treatment (15 min)	On-line
Yongxia Sun Institute of Nuclear Chemistry and Technology, Poland	Organic pollutant removal from marine diesel engine off-gases under electron beam (EB) and EB hybrid wet scrubber process (15 min)	In-person
Malgorzata Siwek University of Huddersfield, United Kingdom	Application of Electron Beam treatment for microplastics removal from sewage sludge (15 min)	On-line
Simone Schopf Fraunhofer Institut FEP, Germany	Effect of Low Energy Electron Beam Irradiation on Bacteria and Viruses in Liquids (15 min)	On-line

Poster session – 5 min presentations

	Presenting author	Title
1	Andrzej Pawelec Institute of Nuclear Chemistry and Technology, Poland	Plasma technology to remove NOx from off-gases (in- person)
2	Marcin Sudlitz Institute of Nuclear Chemistry and Technology, Poland	A method of hygienisation and disintegration of sewage sludges using ionising radiation (in-person)
3	Anna Bojanowska Institute of Nuclear Chemistry and Technology, Poland	Degradation of diclofenac in sewage sludge from municipal wastewater treatment plant using ionizing radiation (in-person)
		Discussion

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11:30 -13:15 – hybrid session

Session IV: RADIOISOTOPES / MEDICAL APPLICATIONS

Chair: **H. Lewandowska**

Presenting author	Title	Participation
Hanna Lewandowska <i>Institute of Nuclear Chemistry and Technology, Poland</i>	The influence of irradiation on the physicochemical properties of collagen scaffolds (15 min)	In-person
Anna Mastroberardino <i>Dipartimento di Fisica, Università della Calabria, Italy</i>	Development and characterization of novel silicon sensors for neutron detection (15 min)	On-line
Ewelina Chajduk <i>Institute of Nuclear Chemistry and Technology, Poland</i>	Activity of INCT in the domain of nuclear forensic (15 min)	In-person
Leon Fuks <i>Institute of Nuclear Chemistry and Technology, Poland</i>	Interlaboratory comparison on the determination of radionuclides in water, food and soil conducted by the National Atomic Energy Agency (NAEA), Poland (15 min)	In-person
Tatyana Baptista <i>Nuclear and Energy Research Institute – IPEN, Brazil</i>	Assurancy quality system in iodine-125 seeds souces production (15 min)	On-line
Monika Łyczko <i>Institute of Nuclear Chemistry and Technology, Poland</i>	Synthesis of multimodal radiobioconjugate Octreotide-PEG-198AuNPs-PEG-DOX (15 min)	In-person
Discussion		

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14:15 -15:15 – hybrid session

Session: RADIATION TECHNOLOGIES AND APPLICATIONS ISTR: TRACERS AND RADIOTRACERS APPLICATIONS (ISTRA)



Chair: T. Smoliński/ C. Nobis

Presenting author	Title	Participation
Christos Tsabaris Hellenic Center for Marine Research, Greece	Progress in radionuclide characterisation in beach sands of Lesbos Island using an underwater gamma-ray spectrometer in 2 π geometry (15 min)	On-line
Thorsten Jentsch Helmholtz-Zentrum Dresden-Rossendorf, Germany	ISO proposal: Measurement of Fluid Flow Rate in Closed Conduits – Radioactive Tracer Methods (15 min)	In-person

Poster session – 5 min poster presentation

	Presenting author	Title
1	Jovan Thereska/ Cezary Nobis Institute of Nuclear Chemistry and Technology, Poland	ISO proposal on leak testing in pressured vessels and underground pipelines using radioactive tracer methods (In-person)
2	Ferenc Ditrói Institute for Nuclear Research, Hungary	Visualization of tracer distribution in irradiated samples and traced objects by using Positron Emission Tomography (PET) On-line
3	Miroslav Pavlović Scientific Institution Institute of Chemistry, Technology and Metallurgy, National Institute, Serbia	Optimization of Injected Radiotracer Volume for Flow Meter Calibration in Closed Conduits On-line
		Discussion

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15:45 -17:30 – hybrid session

Session V: RADIATION TECHNOLOGIES AND APPLICATIONS

Chair: P. Ulański/X. Coqueret

Presenting author	Title	Participation
Nikolay Kuksanov <i>Budker Institute of Nuclear Physics, Russia</i> Invited Speaker	Modification of the high power DC electron ELV accelerators for research and industrial application (15 min)	On-line
Colombani Juliette <i>IRSN, France</i>	IRSN irradiation facilities (15 min)	On-line
Mark Driscoll <i>State University of New York College of Environmental Science and Forestry, USA</i>	Electron Beam Degradation of Microcystin LR (15 min)	On-line
Uliana Pinaeva <i>Université de Reims Champagne Ardenne, France</i>	Radiolytic synthesis of HEMA-based hydrogel composites including gold nanoparticles: potentialities for the design of functional 3D-printed materials (15 min)	In-person
Amilcar Antonio <i>Instituto Politecnico de Braganca, Portugal</i>	Food irradiation: Where is the Limit? (15 min)	On-line
Urszula Gryczka <i>Institute of Nuclear Chemistry and Technology, Poland</i>	Application of low energy electron beam for microbial decontamination of food products (15 min)	In-person
Ivana Sandeva <i>Ss. Cyril and Methodius University in Skopje, Macedonia</i>	Interlaboratory comparison for detection of irradiated food by luminescence methods (15 min)	On-line
	Discussion	

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Wednesday, 7th October 2020

9:00 -10:30 –on-line

Session: POSTER SESSION I (5 min presentation for each poster)

Chair: D.Śmietanko/U.Gryczka/M.Walo

IRRADIATION FACILITIES, DOSIMETRY AND PROCESS CONTROLL – 45 min

Lp.	Presenting author	Title
1	Zbigniew Zimek <i>Institute of Nuclear Chemistry and Technology, Poland</i>	Characteristics of output systems used in high power electron accelerators equipped with titanium window (in-person)
2	Ivica Vujcic <i>Vinca Institute of Nuclear Sciences, Serbia</i>	Dose Mapping of Products with Different Density Irradiated with Co-60 Irradiator (on-line)
3	Urszula Gryczka <i>Institute of Nuclear Chemistry and Technology, Poland</i>	Dose measurements in liquid flow systems (in-person)
4	Zaur Khalilov <i>National Nuclear Research Center CJSC, Azerbaijan</i>	Comparison of the measured and calculated dose maps in gamma facility in Azerbaijan. (on-line)
5	Vyacheslav Uvarov <i>Kharkiv Institute of Physics and Technology, Ukraine</i>	On-Line Monitoring System of Processing Regime at an Industrial Electron Accelerator (on-line)
6	Renata Majgier <i>Jan Długosz University in Czestochowa, Poland</i>	Radiation induced OSL of potassium sulfate (on-line)
		Discussion

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RADIOISOTOPES AND MEDICAL APPLICATIONS– 45 min

	Presenting author	Title
1	Kamil Wawrowicz <i>Institute of Nuclear Chemistry and Technology, Poland</i>	Radiobioconjugates of gold nanoparticles with ^{193m/195m} Pt conjugated with Trastuzumab to targeted Auger therapy (in-person)
2	Ulmas Mirsaidov <i>Nuclear and Radiation Safety Agency, Tajikistan</i>	Nuclear technology applications in the Republic of Tajikistan (on-line)
3	Patrycja Sliż <i>AGH University of Science and Technology, Poland</i>	Sub-cellular Elemental Imaging of Human Muscle Tissues Affected by Neuromuscular Diseases (on-line)
4	Małgorzata Żółtowska <i>Radioisotope Centre POLATOM, National Centre for Nuclear Research, Poland</i>	Studies on new method for accelerator production of ⁹⁹ Mo, (on-line)
5	Marian Virgolici <i>Horia Hulubei National Institute for R&D in Physics and Nuclear Engineering (IFIN-HH), Romania</i>	Validation of the chemical protocol for the determination of lanthanides elemental impurities in uranium oxides (on-line)
6	Magdalena Dobrzyńska <i>National Centre for Nuclear Research, Poland</i>	Software for DQE calculation in digital mammography (on-line)
7	Adam Cichoński <i>National Centre for Nuclear Research, Poland</i>	Monte Carlo evaluation of ArcCHECK® detector accuracy to reproduce dose distribution from Ir-192 brachytherapy source (in-person)
8	Wojciech Grabowski <i>National Centre for Nuclear Research, Poland</i>	Beam Dynamic calculations for modified accelerator systems in the Early Neutron Source project (on-line)
		Discussion

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11:00 -13:30 – on-line

Session: POSTER SESSION II (5 min presentation for each poster)

MATERIALS MODIFICATION – 80 min

	Presenting author	Title
1	Beata P. Rurarz <i>Lodz University of Technology, Poland</i>	Radiation synthesis of poly(acrylic acid) nanogels for drug delivery applications - post-synthesis product stability (<i>in-person</i>)
2	Katsiaryna Dziarabina <i>Lodz University of Technology, Poland</i>	Synthesis and EB-induced modification of poly(hydroxyethyl methacrylate)-based hydrogels (<i>in-person</i>)
3	Wojciech Głuszewski <i>Institute of Nuclear Chemistry and Technology, Poland</i>	Radiation stability of high test peroxide (HTP) (<i>in-person</i>)
4	Magdalena Rzepna <i>Institute of Nuclear Chemistry and Technology, Poland</i>	Impact of electron beam treatment on copolymers of polylactide and poly(trimethylene carbonate) in an air atmosphere (<i>in-person</i>)
5	Marta Walo <i>Institute of Nuclear Chemistry and Technology, Poland</i>	EPR study of gamma irradiated membranes dedicated for gas separation applications (<i>in-person</i>)
6	Krystyna Cieśla <i>Institute of Nuclear Chemistry and Technology, Poland</i>	The effect of nanocellulose addition and radiation treatment on the properties of starch-PVA films (<i>in-person</i>)
7	Katarina Marusic <i>Ruđer Bošković Institute, Croatia</i>	Influence of the number of double bonds in fatty acids crosslinked on copper on its corrosion inhibition in atmospheric conditions (<i>on-line</i>)
8	Tanja Jurkin <i>Ruđer Bošković Institute, Croatia</i>	Rheological, microstructural and thermal properties of magnetic poly(ethylene oxide)/iron oxide nanocomposite hydrogels synthesized using one-step gamma-irradiation method (<i>on-line</i>)
9	Ivan Marić <i>Ruđer Bošković Institute, Croatia</i>	A controllable method for the synthesis of magnetic iron oxide and iron oxide/Au nanostructures using γ -irradiation (<i>on-line</i>)
10	Wojciech Głuszewski <i>Institute of Nuclear Chemistry and Technology, Poland</i>	The use of GC and DRS to study postradiation phenomena of polypropylene oxidation (<i>in-person</i>)

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11	Krystyna Cieřła <i>Institute of Nuclear Chemistry and Technology, Poland</i>	Modification of the properties of the films formed in the starch:PVA:nanocellulose system by addition of thymol and ionising radiation (in-person)
12	Katarina Marusic <i>Ruđer Bořković Institute, Croatia</i>	Radiation treatment of book covers made from leather (on-line)
13	Silvana Vasilca <i>Horia Hulubei National Institute for R&D in Physics and Nuclear Engineering, Romania</i>	Investigating Cultural Heritage modern materials after gamma irradiation (on-line)
		Discussion

ENVIRONMENTAL APPLICATIONS – 30 min

	Presenting author	Title
1	Marko Fulop <i>ABRS Ltd, Slovakia</i>	Combination of methods of thermal and radiation treatment of sediments associated with PCBs – the Delor type (on-line)
2	Andrea Sagatova <i>Slovak University of Technology in Bratislava, Slovakia</i>	Improvement of radiation degradation of PCBs in sediments (on-line)
3	Tomasz Smoliński <i>Institute of Nuclear Chemistry and Technology, Poland</i>	Ballast water treatment technology for floating “green dock” (in-person)
4	Dagmara Chmielewska-Śmietanko <i>Institute of Nuclear Chemistry and Technology, Poland</i>	Inactivation of invasive marine species and harmful bacteria in the process of irradiation of ballast water with electron beam (in-person)
		Discussion

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RADIATION TECHNOLOGIES APPLICATION – FOOD IRRADIATION– 20 min

	Presenting author	Title
1	Slobodan Masic <i>Vinca Institute of Nuclear Sciences, Serbia</i>	Effect of gamma irradiation on microbiological and nutritional properties of the freeze-dried berries (on-line)
2	Magdalena Miłkowska <i>Institute of Nuclear Chemistry and Technology, Poland</i>	Detection of radiation treated vegetal extracts by thermoluminescence method (in-person)
3	Grażyna Liśkiewicz, Urszula Gryczka <i>Institute of Nuclear Chemistry and Technology, Poland</i>	Applicability of thermoluminescence for detection of irradiated food treated with low energy electron beam (in-person)
		Discussion

13:30 -14:00 – on-line session

Session: Closing of the Conference

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14:00 -18:00 –on-line session

Session CEI : Accompanying event (CEI and IAEA RER 1021) Closing of the Conference (free and open for all, separate registration for the event required)



Special session under EU Central European Initiative project "Dissemination of the Knowledge on Application of Ionising Radiation for Sterilization of Medical Equipment, Personal Protection Equipment and the other Microbiologically Infected Objects" and under the IAEA technical cooperation project RER1021 "Enhancing the Use of Radiation Technologies in Industry and Environment".

<i>Presenting author</i>	<i>Title</i>
Zbigniew Zimek <i>Institute of Nuclear Chemistry and Technology, Poland</i>	Ionizing radiation sources used in the process of radiation sterilization
Sylwester Sommer <i>Institute of Nuclear Chemistry and Technology, Poland</i>	Microbiological aspects of the process of radiation sterilization with the emphasis of virus sterilization possibility
Krystyna Cieśla <i>Institute of Nuclear Chemistry and Technology, Poland</i>	Ionising radiation influence on the physico-chemical and functional properties of the materials
Andrzej Rafalski <i>Institute of Nuclear Chemistry and Technology, Poland</i>	Radiation sterilization of medical equipment, personal protection equipment, and the other microbiologically infected objects

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