



RATEN
ICN PITEȘTI
INSTITUTUL DE CERCETĂRI NUCLEARE



Nuclear 2022

18-20 May

Pitești,
ROMANIA

The **14th**

**Annual International Conference
on Sustainable Development
through Nuclear Research
and Education**

organized by RATEN ICN Pitesti
under the auspices of the Romanian Academy
in cooperation with University from Pitesti,
the Academy of Romanian Scientists
and the Technical Scientist Academy of Romania

conference
pr◌ogram

CONFERENCE TOPICS

I. Nuclear Energy

- Advanced Nuclear Systems and SMRs
- Nuclear Technologies and Materials
- Nuclear Safety
- Nuclear Reactors and nuclear fuels

II. Environmental Protection

- Radioprotection
- Air, Water and Soil Protection
- Radioactive Waste Management

III. Sustainable Development

- Education, Training and Knowledge Transfer



18-20 May, 2022
Pitesti, ROMANIA

CONFERENCE PROGRAMME

Nuclear 2022

**Eastern
European Time**

Day 1 Wednesday, May 18

10:00 - 11:00 Welcome

11:00 - 14:00 Opening Session - Day 1

14:00 - 17:40 Advanced Nuclear Systems and SMRs

Day 2 Thursday, May 19

10:00 - 10:30 Opening Session - Day 2

10:30 - 14:00 Nuclear Technologies & Materials

PARALLEL SESSIONS

14:00 - 17:00	Nuclear Safety, Nuclear Reactors and Nuclear Fuels	Radioprotection & Air, Water and Soil Protection
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Day 3 Friday, May 20

09:00 - 13:00 Radioactive waste management

13:00 - 13:40 Education, Training and Knowledge Transfer

13:40 - 14:00 *Nuclear 2022 Student Awards Ceremony*

14:00 - 14:20 *Nuclear 2022 Awards Ceremony*

14:20 - 14:30 Closing Remarks

- **Please, REGISTER ONLINE to get the access link to the conference!**
- **All times in the Programme are reported to the Eastern European Summer Time (Bucharest time)**
- **Poster contributions will be available online throughout the Conference for all registered participants**

Day 1 - May 18

Transfer from Pitesti to ICN Mioveni

**9:15 - from Muntenia Hotel/ Arges Hotel parking
9:20 - from Ramada Hotel**

Wednesday, May 18

10:00 - 10:10

Welcome by:
Prof. Dr. Ing. Șerban Valeca – President of Scientific Council, RATEN ICN
Constantin Păunoiu – Director, RATEN ICN
Marian-Cătălin Ducu – General Director, RATEN

10:10 – 11:00

Key Notes
William Magwood – Director General NEA

Representatives of:

- Ministry of Energy
- Ministry of Research, Innovation and Digitalisation
- Local authorities
- CNCAN
- SNN
- ANDR
-

Opening Session

Chairman: Șerban Constantin Valeca

Co-chairman: Marian-Cătălin Ducu

11:00 - 11:25

Latest views and perspectives of EU Energy/ Climate/ Euratom Nuclear Research and Innovation programmes

Roger GARBIL
 European Commission, Belgium

11:25 - 11:50

New perspectives for cooperation on SMR/AMR in Europe: opportunities for FALCON Consortium to accelerate the ALFRED program

Roberto ADINOLFI
 ANSALDO NUCLEARE Italy

11:50- 12:10

Coffee break

12:10 – 12:35

Safety Operation of Cernavoda NPP

Sorin Valerian GHELBEREU
 SNN, Romania

12:35– 13:00

RATEN perspectives on Gen IV and SMRs in Romania. R&D priorities on medium and long term

Marian-Cătălin DUCU
 RATEN, Romania

13:00 – 14:00

Lunch

Advanced Nuclear Systems and SMRs

Room 1

Chair: Michele Frignani

Co-chair: Ilie Turcu

14:00 - 14:20	<i>Alessandro ALEMBERTI</i> ANSALDO NUCLEARE Italy	Status of Generation-IV Lead Fast Reactor Activities
14:20 – 14:40	<i>Maria OPRISESCU, Madalina Coca</i> CNCAN Romania	Romanian Regulatory Framework for Small and Modular Reactors
14:40 - 15:00	<i>Andrei Radulescu</i> SNN Romania	The role & contribution of SMRs in shaping the nuclear future and sustainable development
15:00 - 15:20	<i>Michele FRIGNANI</i> ANSALDO NUCLEARE Italy	ALFRED: opportunities as Advanced Modular Reactor in future hybrid energy systems
15:20 – 15:40	<i>John SAROUDIS</i> Laurentis Energy Partners and Canadian Nuclear Partners SA, Romania	The future of Nuclear in Canada: the SMR revolution
15:40 – 15:50	<i>Discussions</i>	
15:50 – 16:10	<i>Coffee break</i>	

Wednesday, May 18

Chair: Marco Caramello

Co-chair: Marin Constantin

16:10 - 16:30	<i>Janne WALLENIOUS</i> LeadCold, Stockholm, KTH Royal Institute of Technology, Sweden	The SEALER Programme to Commercialize LFRs in Sweden
16:30 - 16:50	<i>Marco CARAMELLO</i> ANSALDO NUCLEARE Italy	Advances in validation of ALFRED innovative self-regulated decay heat removal system
16:50 - 17:10	<i>Manuela PROFIR, V. Moreau</i> CRS4, Italy	CIRCE-THETIS Facility CFD simulation: Steady State and Transient Compliance
17:10 – 17:30	<i>Ana Maria IVAN, D.E. Gugiu</i> RATEN ICN Romania	Review of the Experimental Studies on the Behavior of Volatile Elements from Lead and LBE
17:30 – 17:40	<i>Discussions</i>	

17:45 - Departure to Pitesti

19:00 - Conference dinner at RAMADA Hotel, Pitesti

End of the 1st day

Day 2 – Thursday, May 19

Transfer from Pitesti to ICN Mioveni

**9:15 - from Muntenia Hotel/ Arges Hotel parking
9:20 - from Ramada Hotel**

Opening Session – Day 2

Room 1

Chairman: Șerban Constantin Valeca

Co-chairman: Daniela Diaconu

10:00 - 10:20	<i>The role of international collaborations in the development of economical reliable and sustainable reactors</i>	Alessandro DODARO ENEA, Italy
10:20 – 10:40	<i>IAEA NPTDS Activities on Non-Electric Applications of Nuclear Energy</i>	Alina CONSTANTIN IAEA, Vienna

Nuclear Technology and Materials

Room 1

Chair: Alexandru Toma

Co-chair: Vasile Radu

Thursday, May 19

10:40 - 11:00	<i>Mariano TARANTINO</i> ENEA Italy	Structural Materials and Coating for LFR
11:00 - 11:20	<i>Livia STOICA, V. Radu, V. Ionescu, A. Nițu, A. Jinga, D. Toma, M. Matei, V. Olaru</i> RATEN ICN Romania	The Microstructural Investigations of the Liquid Metal Embrittlement Phenomenon on 316L Specimens Tested in the Liquid Lead Environment
11:20 - 11:40	<i>ADRIEN VUILLAUME, P. Peres, S. Choi, C. Defouillo, L. Renaud, N. Touzalin</i> CAMECA Gennevilliers, France	ACTINIS: Shielded SIMS for Analysis of Highly Radioactive Samples
11:40 – 11:50	<i>Discussions</i>	
11:50 - 12:10	<i>Coffee break</i>	
12:10 – 12:30	<i>Vasile RADU, L. Stoica, A. Jinga, A. Nițu, V. Ionescu, D.Toma, V. Olaru</i> RATEN ICN Romania	Multilayer Feedforward Neural Network Modeling of the Fracture Mechanics Parameters for the Zr-2.5%Nb Pressure Tube
12:30 – 12:50	<i>Elena MATEI, A.C. Răduț, D.F. Oproiu, D.V. Ionescu, I. Neacșu</i> RATEN ICN Romania	Fatigue Behaviour of Zy-4 Cladding under Cyclic Loads Using Finite Element Modelling
12:50 – 13:10	<i>Mariea DEACONU, I. Sturzeanu, I. Dumitrescu, M. Florea, E. Badulescu</i> RATEN ICN Romania	Experimental Investigation on Hydrogen Absorption Properties of as-cast Zirconium rich U-Zr Alloy, for Use in Hydrogen Storage Applications
13:10 – 13:20	<i>Discussions</i>	
13:20 – 14:00	Lunch	

PARALLEL SESSIONS

Nuclear Safety, Nuclear Reactors and Nuclear Fuels Room 1

Chair: Dumitru Barbos

Co-chair : Mirea Mladin

Thursday, May 19

14:00 - 14:20	<i>Viorel VASILACHE</i> CNE Cernavoda Romania	Cernavoda NPP Unit 1 refurbishment project
14:20 - 14:40	<i>Nicolae TRANTEA</i> CNE Cernavoda Romania	Cernavoda Tritium Removal Facility Project Status and Objectives
14:40 - 15:00	<i>Gheorghe IONITA, Ciprian Bucur, Amalia Soare and Ionut Spiridon</i> ICSI Rm.Valcea Romania	New Solutions for Improving of Mixed Catalytic Packing for Heavy Water Detritiation
15:00 - 15:10	<i>Discussions</i>	
15:10 - 15:20	<i>Coffee break</i>	
15:20 - 15:40	<i>Cristina.A. MĂRGEANU</i> RATEN ICN Romania	Evaluation of Spent Fuel Inventory and Radioactivity for CANDU type Fuel Bundles with Increased Number of Elements and U-based Fuels
15:40 - 16:00	<i>Iosif PRODEA</i> RATEN ICN Romania	Reactor Physics Study for Advanced Fuel Cycle Options to be used in CANDU Reactors
16:00 - 16:20	<i>Laurențiu DINU, M. Constantin, C.A. Mărgeanu</i> RATEN ICN Romania	Study of a Loss-of- Cooling Accident at the Spent Fuel Pool of a CANDU NPP containing Natural Uranium or SEU Spent Fuel
16:20 - 16:40	<i>Teodora RETEGAN</i> Chalmers University Sweden	Studies of FPs-coolant-cladding interactions in LBE/Pb systems at Chalmers University, Sweden
16:40 - 17:00	<i>Discussions</i>	

Radioprotection & Air, Water and Soil Protection Room 2

Chair: Alexandru Toma

Co-chair: Cristian Dulama

Thursday, May 19

14:00 - 14:20	<i>Dorel Florin ALBU</i> Cernavoda NPP Romania	Individual Dosimetry Program at Cernavoda NPP – Good Practices in the Dosimetry Lab
14:20 - 14:40	<i>M. MITWALLI, C. Dulama, G. Saleh, A. H. El-Farrash, M. Sallah</i> Faculty of Science, Mansoura University, Egypt	Exposure Evaluation within Um-Safi Mine (Egypt) due to Radionuclides determined by High-Resolution Gamma-ray Spectrometry
14:40 - 15:00	<i>M. KADHEM, M. Mitwalli, H. M. Yousef, A. H. El-Farrash, M. Sallah</i> Faculty of Science, Mansoura University, Egypt	Assessment of Radiation Dosimetry and Excess Cancer Risk due to Terrestrial Radionuclides for Al-Zubair Petroleum Station (Iraq)
15:00 - 15:10	<i>Discussions</i>	
15:10 - 15:30	<i>Coffee break</i>	
15:30 - 15:50	<i>Ioan ZAHARIE, M. Golosie</i> POLITEHNICA Univ. Timisoara, Romania	On Radioactivity in Timis
15:50 - 16:10	<i>Radu VASILACHE</i> Canberra Romania	Radiation Protection and Climate Change: How Do the Dose Response Models Influence the Choices of Solutions to Mitigate Climate Problems
16:10 - 16:30	<i>Valentina NECULAE, C. Dulama, I. Prisecaru</i> RATEN ICN Romania	Improving analytical performance through proficiency testing activities
16:30 - 16:40	<i>Discussions</i>	

17:05 - Departure to Pitesti

End of the 2nd day

Day 3 – Friday, May 20

Transfer from Pitesti to ICN Mioveni

**8:15 - from Muntenia Hotel/ Arges Hotel parking
8:20 - from Ramada Hotel**

Radioactive Waste Management

Room 1

Chair: Louise Theodon

Co-chair: Crina Bucur

Friday, May 20

9:00 - 9:20	<i>Louise THEODON</i> ANDRA FRANCE	EURAD: A step change in European joint collaboration towards safe radioactive waste management
9:20 - 9:40	<i>Alice DIMA</i> ANDR Romania	Near surface disposal in Romania: Status of DFDSMA project
9:40 - 10:00	<i>Ion POPESCU, Dorin Dumitrescu</i> Cernavoda NPP Romania	The Management of Intermediate Level Radioactive Waste Generated During Cernavoda Unit 1 Retubing Project
10:00 - 10:20	<i>Daniela DIACONU</i> RATEN ICN Romania	Impact of loess consolidation solutions on the radionuclide transport
10:20 - 10:40	<i>Min Ji KIM, Hee Reyoung Kim</i> Ulsan Nat. Inst. of Science and Techn., Ulsan, South Korea	Radiological Safety Evaluation of Recycling Facility for the Dismantled Concrete Waste
10:40 - 11:00	<i>Coffee break</i>	
11:00 – 11:20	<i>Daniela GURĂU</i> IFIN HH Romania	Uncertainty quantification applied to the radiological characterization of radioactive waste
11:20 - 11:40	<i>Ionuț FLOREA</i> RATEN ICN Romania	Modelling of cement hydration by PREEQC code modelling
11:40 – 12:00	<i>Camelia ICHIM, Crina BUCUR, Mirela OLTEANU</i> RATEN ICN Romania	Effect of organics and cement degradation on Ni solubility in cement pore water
12:00 – 12:20	<i>Crina BUCUR, C. Manolescu, I. Florea, C. Ichim</i> RATEN ICN Romania	Optimization of geopolymers based on blast furnace slag for liquid organic waste incorporation
12:20 – 12:40	<i>Discussions</i>	
12:40 – 13:00	<i>Coffee break</i>	

Friday, May 20	Education, Training and Knowledge Transfer		Room 1	
		Chair: Serban Constantin Valeca	Co-chair: Dumitru Chirlesan	
	13:00 - 13:20	ENEN ++ European opportunities for E&T	<i>Gabriel PAVEL, Roberta Cirillo</i> ENEN, Belgium	
13:20 - 13:40	Nuclear Education and Training – a challenge of the 21 th century	<i>Dumitru CHIRLEȘAN</i> UPIT, Romania		

Friday, May 20	13:40 - 14:00	Nuclear Student Award Ceremony (Serban Valeca) Student 1 Student 2 Student 3
	14:00 - 14:20	NUCLEAR 2021 Awards Ceremony (Daniela Diaconu) Young scientist 1 Young scientist 2 Young scientist 3
	14:20 - 14:30	Closing Remarks

14:35 - Departure to Pitesti

End of the Conference



Poster Session

Advanced Nuclear Systems and SMRs

S1-P1	Mirela Matei, L. Stoica, A. Nițu, V. Olaru, V. Radu RATEN ICN, Romania	Development of a Conceptual System for the Chemical Cleaning of Residual Lead from the Structural Materials Used in LFR Reactors
S1-P2	Nita Iulian Pavel, Pancef Rodica RATEN CITON, Romania	Conceptual Design and Layout of Air-Cooling Condensers (ACC) Required as Heat Sink for ALFRED LFR Demonstrator Reactor

Nuclear Technology and Materials

S2-P1	Dumitra Lucan, M. Fulger, V. Roșu, Gh. Jinescu RATEN ICN, Romania	The Usefulness of International Collaboration Focused on the Systematic Ageing Management for Nuclear Power Plants
S2-P2	Viorel Ionescu, V. Radu, A. Nițu, D. Toma, L. Stoica, A. Jinga, V. Olaru, L. Popescu, M. Matei RATEN ICN, Romania	Study of Mechanical Fatigue on the Zr-2.5%Nb Pressure Tube Specimens
S2-P3	Dobrin Ionuț, Dima Denis-Gabriel, Popescu Mircea Dafin RATEN ICN, Romania	Fuelling Machine Head Testing Loop – ADAM Control and Data Acquisition System
S2-P4	Popescu Mircea Dafin, Dima Denis-Gabriel, Dobrin Ionuț RATEN ICN, Romania	Fuelling Machine Head Testing Loop – Control Room Safety Increase Through Equipment Upgrading
S2-P5	N. Anghel, R. Năstase RATEN ICN, Romania	Spectral Analysis of Acoustic Signals Occurring at a Cracked Pipe Crossed by a Pressure Fluid
S2-P6	M. Media, T. Tudorache, A. Amzoi RATEN ICN, Romania	Induction Heating Process Modeling of Nuclear Fuel Rod
S2-P7	Cristian Costea, Mihai Arva RATEN ICN, Romania	Embedded Web Server for Industrial Automation Using Programmable Logic Controller
S2-P8	Mihai Arva, Cristian Costea, Cosmin Ivan RATEN ICN, Romania	Design of a Manufacturing Execution System (MES) Used for LEU Type Nuclear Fuel Manufacturing Process
S2-P9	N. Anghel, R. Năstase, A.N. Avram RATEN ICN, Romania	Location of an Acoustic Signal Source in the Two-Dimensional Plane by the Estimated Delay Time Method
S2-P10	C. Ivan, A. Florea, I. Pirvu, M. Arva RATEN ICN, Romania	Embedded System using Microcontroller for Gamma Radiation Detection
S2-P11	Bogdan Corbescu, Dumitru Puiu RATEN ICN, Romania	CFD Model for the Double Ice Plugging Process of a Dn 200 Pipe
S2-P12	Aurelia Elena Tudose, Alexandru Anghel, Alexandru Cristian Matei, Valentina Cristina Rosu RATEN ICN, Romania	Corrosion Susceptibility Assessment of Chromium Nitride Thin Layers Applied on Stainless Steels
S2-P13	A.F.Florea, C.Ivan, I.Pirvu RATEN ICN, Romania	Oxygen control system using gas phase in molten lead corrosion test facility
S2-P14	Oana Rusu, V. Ion RATEN ICN, Romania	Plasma Electrolytic Oxidation of Titanium and its Surface Chemistry Investigation
S2-P15	M. Patrascu, Oana Rusu RATEN ICN, Romania	The Influence of Electrolyte Composition and Current Regime on the Micro-Discharges of Plasma Electrolytic Oxidation on Zr-2.5Nb and Titanium Alloys
S2-P16	Oana Rusu, M. Pătrașcu RATEN ICN, Romania	The Pulse Current Mode and Current Density Influences on Plasma Electrolytic Oxidation of Zr-2.5Nb and Ti Alloys

Nuclear Reactors, Nuclear Fuels

S3-P1	<p>Roxana G. Bezdedeanu, C.A. Mârgeanu RATEN ICN, Romania</p>	<p>Nuclear safety aspects associated with increasing U235 enrichment of CANDU standard bundles with SEU and RU fuel</p>
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Nuclear Safety & Severe Accidents

S4-P1	<p>Elena D. Morlova, D. Mladin RATEN ICN, Romania</p>	<p>Evaluation of the Unavailability of the Primary Circuit of TRIGA SSR Reactor, Importance Factors, Risk Criteria</p>
S4-P2	<p>Iulia Jianu, Maria Oprisescu, Madalina Coca CNCAN, Romania</p>	<p>Enhancement of Nuclear Safety and Security in Romania – Improvement of Disaster Resilience and Preparedness for Radiological and Nuclear Events</p>
S4-P3	<p>Madalina Ionita CNCAN, Romania</p>	<p>Romanian Regulatory Development Relevant to Nuclear Safety</p>

Radioactive Waste Management

S5-P1	<p>Cristina Diaconescu, I. Florea, I. Prisecaru RATEN ICN, Romania</p>	<p>Assessment of Gamma Dose Rate for Waste Packages with Radioactive Concentrate using MicroShield Software</p>
S5-P2	<p>Simona Laliu, Crina Bucur, Camelia Ichim, Daniela Rotaru RATEN ICN, Romania</p>	<p>Site selection criteria for the deep geological repository in Romania</p>
S5-P3	<p>M.Filip, R. Fako, M. Rosca RATEN CITON, Romania</p>	<p>Approach On The Development Of Engineering Solutions For The Geological Disposal Of Spent Fuel In Romania Based On International Experience</p>

Radioprotection & Air, Water and Soil Protection

S6-P1	<p>Cornelia Guță, M. Arva RATEN ICN, Romania</p>	<p>Management System Regarding the Release of Gaseous Effluents in Nuclear Installations</p>
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Education, Training and Knowledge Transfer

E-P1	<p>European Nuclear Education Network (ENEN), Belgium</p>	<p>Augmented cooperation in education and training in nuclear and radiochemistry</p>
E-P2	<p>European Nuclear Education Network (ENEN), Belgium</p>	<p>Towards Optimized Use of Research Reactors in Europe</p>
E-P3	<p>Raluca A. Nedelcu, CNE Cernavoda, Romania</p>	<p>Training in COVID -19 Pandemic Context– Challenges and Opportunities</p>
E-P4	<p>Elena Olaru, Șerban Constantin Valeca, Gabriela Gheorghe, Ion Man UPIT, Romania</p>	<p>Nondestructive Examination Techniques on CANDU Fuel Elements</p>
E-P5	<p>Mădălin Domnișanu, Constantin Robea, Șerban Constantin Valeca UPIT, Romania</p>	<p>Determination of the Functional Parameters of the Hot Thermomechanical Loop during the Injection of Water into the Fuel Channel</p>
E-P6	<p>Natalia Arsene, Șerban Constantin Valeca, Dumitru Puiu UPIT, Romania</p>	<p>Evaluation Technique for Power Cable Ageing</p>
E-P7	<p>Denisa Manea, Monica Valeca, Livia Stoica UPIT, Romania</p>	<p>Characterization of the Ramberg-Osgood Constitutive Equation for 316L Stainless Steel in Liquid Lead at 400 °C</p>

E-P8	<i>Andreea F. Alexandru, Elena Stoica, Șerban Constantin Valeca</i> UPIT, Romania	Study of Pressure Tube Behavior in Case of Flow Blockage in a CANDU Fuel Channel
E-P9	<i>Teodora Furtună, Monica Valeca, Daniela Stanciu</i> UPIT, Romania	Fluorimetric Method Applied to Determination of Uranium Content in Aqueous Samples
E-P10	<i>Simona-Andreea Stoica, Șerban Constantin Valeca, Iosif Prodea</i> UPIT, Romania	Evaluation of Uranium Utilization for Some Advanced Nuclear Fuels Suitable to be Used in a CANDU Reactor
E-P11	<i>Andrei Cana, Șerban Constantin Valeca, Viorel Ionescu</i> UPIT, Romania	Study of the Elastic Anisotropy of CANDU Pressure Tube by Ultrasonic Methods
E-P12	<i>Gabriel Despa, Monica Valeca, Emil Mugurel Ana</i> UPIT, Romania	Factors Influencing the TRIGA Steady State Reactor Core Reactivity
E-P13	<i>Sergiu-Mihail Voiculescu, Adrian Arjoca, Șerban Constantin Valeca</i> UPIT, Romania	Calibration and Regulation of Pressure Drops on Water Distribution Routes to Comply with MID Test Conditions
E-P14	<i>Lazăr Bogdan-Alexandru, Șerban Constantin Valeca, Adrian Amzoi</i> UPIT, Romania	Vacuum Induction Melting - VIM
E-P15	<i>Lavinia Eremia, Monica Valeca, Șerban Miloiu</i> UPIT, Romania	Recovery of Uranium from Secondary Products Obtained in the Manufacture of LEU Experimental Nuclear Fuel
E-P16	<i>Valentin Timonea, Dumitru Chirleşan, Andrei Vilcu</i> UPIT, Romania	Study on the Measurement of Oxygen Concentration in Molten Lead
E-P17	<i>Ionela Sotan, Alexandru F.Florea, Dumitru Chirleşan</i> UPIT, Romania	Methods of Acquiring Oxygen from the Molten Lead Medium
E-P18	<i>Moga Liviu, Monica Valeca, Adrian Florinel Bucșă</i> UPIT, Romania	Using NAA Method to Determine the Concentration of Retained Elements in the Air Filters of the Ventilation Installation from the TRIGA Reactor
E-P19	<i>Georgiana Nicolae, Florina Cristina Constantinescu, Monica Valeca</i> UPIT, Romania	Probabilistic Safety Assessment - an Important Tool for the Maintenance Activity Optimization
E-P20	<i>Alexandra Georgiana Vasilescu, Monica Valeca, Camelia Ichim</i> UPIT, Romania	Short Term Irradiated Graphite Leaching Test
E-P21	<i>Tiberiu N. Ciobanu, Șerban Constantin Valeca, Mariana Postelnicu</i> UPIT, Romania	Obtaining U-Zr-Er Alloys by Applying the Powder Metallurgy Method
E-P22	<i>Nicolae Georgescu, Dumitru Chirleşan, Valentina Neculae</i> UPIT, Romania	Determination of Peak Efficiency for an HPGe Detector Used in Gamma Spectrometry of Environmental Samples
E-P23	<i>Cătălin Bănuță, Valentina Neculae, Dumitru Chirleşan</i> UPIT, Romania	Calibration in Energy and Efficiency of the Gaseous Effluent Monitoring System
E-P24	<i>Diana Ureche, Carmen Manolescu, Șerban Constantin Valeca</i> UPIT, Romania	Geopolymers Matrices for Radioactive Waste Conditioning
E-P25	<i>Dana Maria Crețulescu, Monica Valeca, Olteanu Mirela</i> UPIT, Romania	Analysis of Natural Uranium in Liquid Radioactive Waste
E-P26	<i>Mihai Pavel, Monica Valeca, Cristina Diaconescu</i> UPIT, Romania	Determination of HPGe Detector Efficiency Calibration Curve for Liquid Radioactive Waste Measurements

Background

- 1970** A mission of IAEA experts in Romania favorably advises the necessity to establish the Institute.
- 1971** **Institute for Nuclear Technologies (ITN)** is founded, with the main purpose to provide scientific and technological support for the Romanian Nuclear Program.
- 1977** Research laboratories are commissioned on the new premises in Mioveni-Colibasi, at 130 km NW from Bucharest. The Institute assignments are enlarged by involvement in design activities of nuclear system components. Its name is now changed into the **Institute for Nuclear Power Reactors (IRNE)**.
- 1978** Quality Assurance Requirements were settled for the reactor operation. The first QA manual was accepted by the Nuclear Authority. Today the Quality Management System is extended to all activities which take place in the Institute: research, design, manufacturing and exploitation in the nuclear field;
- 1979** November 18: first criticality is attained at the TRIGA Materials Testing Reactor, built within the Institute.
- 1980** Commissioning of the Pilot-scale plant for the fabrication of CANDU-type fuel elements;
- 1983** Commissioning of the Post-Irradiation Examination Laboratory (LEPI).
- 1984** Commissioning of the Endurance Test Rig for fuel bundles at the Out-of-Pile Testing Department.
- 1984** Commissioning of the Radioactive Waste Treatment Plant.
- 1985** Starting of CANDU fuel bundles fabrication in SPEC (Unit for Fuel Elements Production).
- 1989** With the arrival of the Fuelling Machine (F/M) Heads #4 and #5 intended for Cernavoda NPP-Unit 2, the F/M head test stand is commissioned.
- 1990** Incorporated in the National Authority for Electric Power (RENEL), IRNE becomes the **Institute for Nuclear Research (ICN)**.
- 1992** The Department for Fuel Elements Production separates from the Institute and becomes a distinct unit within RENEL, under the name of Nuclear Fuel Factory (FCN).
- 1992** Beginning of the fuel conversion process at the TRIGA Reactor.
- 1994** ICN specialists significantly contribute to the commissioning of Cernavoda NPP - Unit 1.
- 1995** Commissioning at Cernavoda NPP-Unit 1 of the Failed Fuel Location System (SLCD), equipment entirely designed and manufactured by the Institute.
- 1996** April 16: first criticality is attained at Cernavoda NPP-Unit 1, directly involving ICN specialists.
- 1998** ICN becomes **SCN**, a subsidiary of the Romanian Authority for Nuclear Activities (RAAN), as an affiliate branch.
- 1999** Return of spent fuel to the country of origin (USA).
- 2003 - 2005** Testing and delivery of two Fuelling Machine Heads at Cernavoda NPP – Unit 2.
- 2004** 25th anniversary of the TRIGA Reactor commissioning.
- 2006** Completion of the TRIGA-SSR conversion from HEU (High Enriched Uranium) to LEU (Low Enriched Uranium) fuel.
- 2007, May** First criticality of Cernavoda NPP-Unit 2 reactor; October, commercial operation; ICN main contribution: F/M heads testing, Failed Fuel Location System.
- 2009** HEU fuel returns to Russia under a US DOE contract.
- 2010** Completion of the main refurbishing of TRIGA Reactor.
- 2011** ICN nomination as national leader for GIV development
- 2012** Launch of the extended research programme to GIV: LFR-ALFRED in ICN.
- 2013** ICN becomes subsidiary of the new created State Owned Company Technologies for Nuclear Energy (RATEN). ICN, ANSALDO NUCLEARE and ENEA signed the FALCON International Consortium aiming to bring the LFR technology to industrial maturity
- 2016** Inauguration Ceremony of the Cooperation Center IAEA Vienna - ICN Romania, Pitesti, in the presence of Yukiya Amano, the IAEA Director General".
- 2020** IAEA designated RATEN ICN as International Centre based on Research Reactors (ICERR) in the fields of Education and Training and Joint Research and Development (R&D) Projects nomination

CONFERENCE SPONSORS:



NANOTEAM

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Institute for Nuclear Research Pitesti

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