



# Nuclear 2013

The 6<sup>th</sup> Annual  
International Conference  
on Sustainable Development  
through Nuclear Research  
and Education

May 22-24, 2013

**Pitești**

România



# CONFERENCE PROGRAM

## SCIENTIFIC COMMITTEE

**CSP I Ilie TURCU – President**

*ICN Pitești - Romania*

**Prof. univ. dr. Șerban Constantin VALECA**

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*EAEA - Egypt*

**Dr. Olena GRITZAY**

*KINR - Ukraine*

**Dr. Teodor CHIRICA**

*AMEC UK*

## CONFERENCE TOPICS

**I.1 Nuclear Technology and Materials**

**I.2 Nuclear Safety and Severe Accidents**

**I.3 Nuclear Reactors and Gen IV**

**II.1 Radioactive Waste Management**

**II.2 Radioprotection**

**II.3 Air, Water, Soil Protection**

**III.1 Policies and Strategies in Nuclear Research**

**III.2 International Partnership for a Sustainable Development**

**III.3 Education, Continuous Formation and Knowledge Transfer**

		<b>Room A</b> Conference Hall	<b>Room B</b> S I	<b>Room C</b> S III	<b>Room D</b> Red Room
<b>May 22</b>	08:30 – 09:15	Registration	<b>Poster Session 1</b>		
	09:15 – 10:00	Opening Ceremony			
	10:00 – 11:30	Plenary Session			
	11:30 – 11:45	Coffee break			
	11:45 – 13:15	Plenary Session			
	13:15 – 14:30	Lunch			
	14:30 – 16:50		Radioactive Waste Management	Nuclear Technology and Materials	Radioprotection & Air, Water, Soil Protection
	16:50 – 17:00	Coffee break	<b>Poster Session 2</b>		
17:00 – 18:00	Round Table 1: Education and Training in Nuclear Energy – a Continuous Challenge for the Universities			Round Table 2: Nuclear Power in the 3 <sup>rd</sup> Millennium	
20:00	Conference Dinner				

		<b>Room A</b> Conference Hall	<b>Room B</b> S I	<b>Room C</b> S III	<b>Room D</b> Red Room
<b>May 23</b>	09:00 – 11:00	Plenary Session	<b>Poster Session 3</b>		
	11:00 – 11:30	Coffee break			
	11:30 – 13:30	Plenary Session			
	13:30 – 14:30	Lunch			
	14:30 – 16:50		Nuclear Reactors and Gen IV	Nuclear Technology and Materials	Nuclear Safety and Severe Accidents
	16:50 – 17:00	Coffee break			
17:00 – 18:00	Round Table 3: New Projects in the Nuclear Field – Opportunities for the Young Specialists				

<b>May 24</b>	9:00 – 12:00	<b>Technical visits:</b> TRIGA Reactor, Hot Cells Facility, RadWaste Treatment Plant
	12:00	Depart to Bucharest

**08:30 – 09:15 Registration**

**09:15 – 10:00 Opening Ceremony**

## PLENARY SESSION I

Room A

**Chairman : Prof.dr. Serban Constantin Valeca**

**Co-chairman: Dr. Ionel Bucur**

10:00 – 10:30	Serban Constantin Valeca, Ilie Turcu <i>ICN- Romania</i>	Main Achievements and Future Objectives in Romanian Nuclear Energy Research
10:30 – 11:00	Jerry Hopwood, <u>John Saroudis</u> <i>CANDU Energy Inc. Canada</i>	CANDU6: Versatile and Practical Fuel Technology
11:00 – 11:30	Nicolae Victor Zamfir <i>IFIN-HH Romania</i>	Eli-NP: Extreme light Infrastructure - Nuclear Physics
11:30 – 11:45	<i>Coffee break</i>	
11:45 – 12:15	Dragos Popescu <i>ENERGONUCLEAR, Romania</i>	Safety fundamental elements characterizing new build Cernavoda NPP Units 3&4
12:15 – 12:45	Elisabeth Keim <i>AREVA Germany</i>	Investigations of Structural Integrity at AREVA
12:45 – 13:15	Andrei Roth <i>Babes-Bolyai University, Cluj-Napoca, Romania</i>	Sustainable Development and Energy in the European Union
13:15 – 14:30	Lunch	

## PARALLEL SESSIONS

### Session I.I

Room C

**Chairman: Elisabeth Keim**

**Co-chairman: Maria Roth**

#### Nuclear Technology and Materials

14:30 – 14:50	<u>Florea Scarlet</u> , A.Scarisoreanu, E. Badita, N.Verga	INFLPR, Romania	Potential Parameters for Laser – Driven Therapy Hadrons Beam
14:50 – 15:10	Constantin Bubulinca, X.Balandraud, M.Grediac, S.Stanciu, M.Abrudeanu	University from Pitesti, Romania	A new method to determinate phase transformation in shape memory alloys: Infrared thermography
15:10 – 15:30	Alice Dinu, I. Chicinas, M.Abrudeanu, L.Velciu, D. Ionescu, M. Stanciulescu	ICN Pitesti,, Romania	Stress Corrosion Cracking Initiation of Oxided Incoloy 800 in Caustic Environment
15:30 – 15:50	Maria Deaconu, T. Meleg, A.Dinu, M. Mihalache	ICN Pitesti, Romania	Experimental Study on Uranium Alloys for Hydrogen Storage
15:50 – 16:10	Lucian Velciu, T. Meleg, L.Popa, D. Diniasi, A. Nitu	ICN Pitesti, Romania	The Thermal Transient Effect on some Nickel-Based Alloys
16:10 – 16:30	Manuela Fulger, M. Mihalache, L. Velciu, I. Vitelaru	ICN Pitesti CNE Cernavoda, Romania	Corrosion Mechanisms of Tubes from the CANDU High Pressure Feed Water Heaters

Wednesday, May 22

Wednesday, May 22

Wednesday, May 22

**Session II.1****Room B****Chairman:** Jacques Delay**Co-chairman:** Daniela Diaconu**Radioactive Waste Management**

14:30 – 14:50	<i>Alain Genty</i>	CEA France	Radionuclide Transport Simulation in Deep Geological Radioactive Waste Repository Using the Alliances Platform
14:50 – 15:10	<i>Antonius Sorescu, D.Slavoaca, O.Nicluae</i>	AN&DR Romania	Challenges Regarding Safe Management of SNF and RW in Romania
15:10 – 15:30	<i>D.Slavoaca</i>	AN&DR Romania	Geological conditions of geological repository host rocks in Romania
15:30 – 15:50	<i>Constantin Iorgulis, Daniela Diaconu, D. Gugiu, C.Roth</i>	ICN Pitesti, Romania	Isotopes Accumulation in the Thermal Column of TRIGA Reactor
15:50 – 16:10	<i>Carmen Arsene</i>	ICN Pitesti, Romania	Recovery Determination of Co, Ni, Sr, Eu and Cs from Graphite
16:10 – 16:30	<i>Nicoleta Deneanu, M. Dulama, C. Diaconescu</i>	ICN Pitesti, Romania	A Thermal Analysis Study on Proprietary Quick-Setting Mixed Binder System
16:30 – 16:50	<i>Raluca Fako, F. Sociu, R. Nicolae, G. Barariu</i>	CITON, Romania	Conceptual Design and Cost Inputs Associated with Co-Disposal of the Spent Fuel and Long Lived Radioactive Wastes in the Deep Geologic Disposal Facility

Wednesday, May 22

**Session II.2 & II.3****Room D****Chairman:** Dietrich Averbeck**Co-chairman:** Alexandru Toma**Radioprotection & Air, Water and Soil Protection**

14:30 – 14:45	<i>Fernando P. Carvalho, J.M. Oliveira, M. Malta</i>	Technical Univ. of Lisbon, Portugal	Environmental Radioactivity and Radiation Protection around Former Uranium Mines in Portugal
14:45 – 15:00	<i>Fawzi A. Ikraiam</i>	Univ. of Omar Al-Mukhtar, El-Beida, Libya	An Analysis of Radiation Effects on Electronics and SOI-MOS Devices as an Alternative
15:00 – 15:15	<i>Liubov Coretchi, I. Bahnarel, S. Virlan, I. Apostol, I. Ursulean, A. Rosca, T. Streil</i>	National Centre of Public Health, Chisinau, Republic of Moldova	Assessment of Radon Concentration in the Republic of Moldova
15:15 – 15:30	<i>Claudia Nicolici, I. Prisecaru, S. Nicolici, A. Musa</i>	Univ. Politehnica of București, Romania	Atmospheric Dispersion of Radionuclides during a NPP Accident. Gaussian Puff vs. CFD Lagrange Particle Tracking
15:45 – 16:00	<i>Laurentiu Dinu, S. Dulugeac, A.M. Ivan, G. Androne, C. Lazar, M. Tatarascu, D. Ilinca</i>	ICN Pitesti, Romania	Time Evolution for the Activity of Radioactive Waste Associated to Mo-99 Production using LEU Targets Irradiated in INR Pitesti TRIGA-SSR
16:00 – 16:15	<i>Cristian Dulama, I.I.Popescu, Al. Toma, R. Dobrin, C. Ciocirlan, S. Stoica, M. Valeca</i>	ICN Pitesti CNE Cernavoda, Romania	Characterization of Radioactive Contaminated Materials by Combined Radiometric and Spectrometric Methods
16:15 - 16:30	<i>Relu Dobrin, C. Dulama, C. Ciocirlan, Al. Toma, S. Stoica, M. Valeca</i>	ICN Pitesti, Romania	Alpha Activity Measurement with LSC

May 22  
17:00-18:00**Round Table 1****Room A****Round Table 2****Room D****Moderator:** Dumitru Chirlesan**Moderator:** George Darie*Education and Training in Nuclear Energy – a Continuous Challenge for the Universities**Nuclear Power in the 3rd Millennium*

20:00

Conference Dinner (Ramada Hotel)

Thursday, May 23

**PLENARY SESSION II****Room A****Chairman: Gerard Cognet****Co-Chairman: Ilie Turcu**

09:00 – 09:30	Jacques Delay <i>ANDRA, France</i>	The Implementing Geological Disposal of Radioactive Waste Technology Platform - A Tool for European RD&D Cooperation
09:30 – 10:00	Dietrich Averbeck <i>IRSN/CEA, France</i>	Update of the Activities of the MELODI Association
10:00 – 10:30	Gregory Willetts <i>AMEC Consultancy, UK</i>	The Organization of Nuclear Research Development in UK
10:30 – 11:00	Gerard Cognet <i>CEA France</i>	Nuclear Energy Development in French Energy Policy
<b>11:00 – 11:30 Coffee break</b>		
11:30 – 12:00	Rodin Traicu <i>Romanian Parliament</i>	Nuclear Power and Current Requirements of Romanian Society
12:00 – 12:30	Peter Ernst <i>COG Canada</i>	CANDU Owners Group Inc – Research & Development Program
12:30 – 13:00	Giacomo Grasso <i>ENEA Italy</i>	Intrinsic safety through the ALFRED core design
13:00 – 13:30	Daniela Diaconu <i>ICN Romania</i>	NEWLANCER: Identifying and implementing solutions for an enlarged NMS' involvement in Euratom Programmes
<b>13:30 – 14:30 Lunch</b>		

**PARALLEL SESSIONS**

Thursday, May 23

**Session I.1****Room C****Chairman: Vasile Stanciu****Co-chairman: Vasile Radu****Nuclear Technology and Materials**

14:30 – 14:50	<i>G. Zakrzewska-Trznadel, Katarzyna Kiegiel, A. Abramowska, B. Zielinska, P. Bieluszka, L. Steczek, E. Chajduk, S. Wolkowicz</i>	Institute of Nuclear Chemistry and Technology, <b>Poland</b>	Recovery of Uranium from Post-Leaching Solutions by Solvent Extraction: State of the Art and New Technological Possibilities
14:50 – 15:10	<i>Ana Bailescu, A. Barbu, F. Din, Gh. Dinuta, I. Dumitru, A. Musetoiu, G. Serban, A. Tomescu</i>	Nuclear Fuel Plant Pitesti, <b>Romania</b>	Performance of CANDU-6 Fuel Bundles Manufactured in Nuclear Fuel Plant Pitesti
15:10 – 15:30	<i>Vasile Radu</i>	ICN Pitesti, <b>Romania</b>	INR Contribution in STYLE Project on Probabilistic Approaches
15:30 – 15:50	<i>Iulia Dumitrescu, D. Ohai</i>	ICN Pitesti, <b>Romania</b>	Self-Disintegration of Fuel Pellets in Steam-Air Atmosphere
15:50 – 16:10	<i>Viorel Ionescu, M. Dierckx, V Cojocaru</i>	ICN Pitesti, <b>Romania</b>	Ultrasonic Attenuation Measurements in Liquid Lead-Bismuth Eutectic
16:10 – 16:30	<i>Maria Mihalache, A. Dinu, M. Fulger, Z. Zhou, M. Mihalache</i>	ICN Pitesti, <b>Romania</b>	Assessment and Comparison of Oxides Grown on 304L ODS Steel and 304L SS in Water Environment in Supercritical Conditions

Thursday, May 23

**Session I.2****Room D****Chairman:** Dumitru Dina**Co-chairman:** Cantemir Ciurea - Ercau**Nuclear Safety and Severe Accidents**

14:30 – 14:50	<u>Manuela Profir</u> , V. Moreau, G. Kennedy	CRS4, Centre for Advanced Studies, R&D in Sardinia, <b>Italy</b>	COMPLIT Test Section Outlet CFD Optimization (pre - test and dimensioning)
14:50 – 15:10	<u>Gholamreza Jahanfarnia</u> , E.Zarifi, , F.Veysi	Islamic Azad University, Tehran, <b>Iran</b>	Thermal-Hydraulic Modeling of Nanofluids as Coolant in VVER-1000 Reactor Core by the Porous Media Approach
15:10 – 15:30	<i>Cantemir Ciurea-Ercau</i>	CNCAN, <b>Romania</b>	Regulatory Actions Post - Fukushima
15:30 – 15:50	<i>Marin Constantin</i>	ICN Pitesti, <b>Romania</b>	Source Term Calculation for an Accident Initiated by End Fitting Failure
15:50 – 16:10	<u>Madalina Tronea</u> , C. Ciurea-Ercau	CNCAN, <b>Romania</b>	Nuclear Safety and Security Culture - An Integrated Approach to Regulatory Oversight
16:10 – 16:30	<i>Mirela Nitoi</i>	ICN Pitesti, <b>Romania</b>	Operating Experience Insights Supporting Ageing Assessments
16:30 – 16:50	<u>Alexandru Catana</u> , E. Pauna, M. Ioan, M. Serbanel	ICN Pitesti, <b>Romania</b>	Computational Fluid Dynamics Analysis for Flow Accelerated Corrosion in CANDU6 Feeder Pipes

Thursday, May 23

**Session I.3****Room B****Chairman:** Georgios Glinatsis**Co-chairman:** Andrei Rizoiu**Nuclear Reactors and Generation IV**

14:30 – 14:50	<u>Georgios Glinatsis</u> , D. Gugiu	ENEA, <b>Italy</b>	Coolant Void Effect Investigation. Case of a Na-Cooled Fast Reactor
14:50 – 15:10	<u>Mohammed Sallah</u>	Mansoura University, <b>Egypt</b>	Comparative Statistical Study for Neutron Transport in Finite Slab Stochastic Media
15:10 – 15:30	<u>Iuliana Visan</u> , G. Giubega, A. Tudora	ICN Pitesti, <b>Romania</b>	Parameterization of Total Excitation Energy Partition between Fully Accelerated Fission Fragments based on Theoretical Calculations
15:30 – 15:50	<u>Cristina Alice Marqeanu</u>	ICN Pitesti, <b>Romania</b>	Preliminary Analyses for Estimation of Thorium-based Fuels Radioactivity after Irradiation in CANDU Reactors
15:50 – 16:10	<u>Andrei Rizoiu</u> , C. Aioanei, Gh. Olteanu	ICN Pitesti, <b>Romania</b>	Reactor Physics View on using Thorium-based Fuel Bundles in CANDU Reactors
16:10 – 16:30	<u>Csaba Roth</u> , D. Gugiu, D. Barbos, A. Detcu, L. Aioanei, D. Dobrea, I. Visan, A. Bucsa, A. Ghinescu	ICN Pitesti, <b>Romania</b>	Large Sample Neutron Activation Analysis Experimental Facility and Methodology
16:30 – 16:50	<u>Iosif Prodea</u> , A. Rizoiu	ICN Pitesti, <b>Romania</b>	CANDU Lattice and Core Calculations using Thorium-based Fuels

May 23

**Round Table 3****Room A****Moderator:** Lavinia RIZEA

17:00 – 18:00

*New Projects in the Nuclear Field – Opportunities for the Young Specialists*

<b>May 24</b>	<b>9:00 – 12:00</b>	<b>Technical visit: TRIGA Reactor, Hot Cell Laboratory and RadWaste Treatment Plant</b>
	<b>12:00 – 14:00</b>	<b>Transfer to Bucharest</b>



## Round Table 1

May 22, 2013, 16:45 – 18:00  
Institute for Nuclear Reserach Pitesti, Conference Hall

### Education and Training in Nuclear Energy – a Continuous Challenge for the Universities

**Moderator:**

Conf. Univ. Dr. Dumitru CHIRLESAN – University from Pitesti

**Topics:**

1. The current situation of higher education for training specialists in the nuclear field
2. Trends and perspectives of the labor market in nuclear field
3. Undergraduate education: facts, trends, impact on higher education and on specialists training
4. Professional associations: support in promoting and development of national actions

## Round Table 2

May 22, 2013, 16:45 – 18:00  
Institute for Nuclear Reserach Pitesti, Red Room

### Nuclear Power in the 3 rd Millennium

**Moderator:**

Prof. Univ. Dr. ing. George DARIE – Academy of Romanian Scientists  
Rector of University "Politehnica" Bucharest

**Topics:**

1. The sustainable development of energy sector
2. The nuclear energy in solving the energy and climate crises
3. The future of nuclear energy
4. The structural infrastructure and nuclear field

## Round Table 3

May 23, 2013, 16:45 – 18:00  
Institute for Nuclear Reserach Pitesti, Conference Hall

### New Projects in the Nuclear Field – Opportunities for the Young Specialists

**Moderator :**

Lavinia Rizea – SN Nuclearelectrica SA, AREN-YG President

**Topics :**

1. ALFRED, generation IV reactor and opportunities for young nuclear specialists,  
*Marian Constantin, SCN Pitesti*
2. ELI-NP project : General presentation and Human Resources Policy,  
*Ioan Ursu, IFIN-HH*
3. Other projects under development and the need for qualified human resources
4. Adaptation of the educational curricula to meet the demands of the new nuclear projects,  
*Gabriel Pavel, UPB*

## Poster Session 1 (9:00 – 14:30)

### Nuclear Technology and Materials

Wednesday, May 22

<b>S1-P1</b>	A. Barbu <i>Nuclear Fuel Plant Pitesti, Romania</i>	The Behavior of UO <sub>2</sub> Powders in the Temperatures Range of 100°C - 900°C
<b>S1-P2</b>	M. Minca, G. Oncioiu, E. Coaca, O. Rusu, S. Florea, V. Andrei <i>ICN Pitesti, Romania</i>	Characterisation by ESCA of Iron Compounds Formed on the Nuclear Steels by Surface Engineering
<b>S1-P3</b>	E. Coaca, O. Rusu, M. Minca, M. Tacica, S. Florea, G. Oncioiu, V. Andrei <i>ICN Pitesti, Romania</i>	Application of Electrochemical Plasma Techniques in Surface Engineering of Iron based Structural Materials
<b>S1-P4</b>	C. Gondac, C. Truta <i>ICN Pitesti, Romania</i>	Cast-to-Cast Variation in End-Plug Welds for TRIGA Fuel Elements
<b>S1-P5</b>	M. Tăcică, V. Andrei, O. Rusu, E. Coacă, M. Mincă, S. Florea, G. Oncioiu <i>ICN Pitesti, Romania</i>	An Electrochemical Engineering Technique to Improve the Corrosion Resistance of Some Structural Materials in Lead-Alloy Coolants
<b>S1-P6</b>	M.Tunaru, L. Velciu, L. Popa, M. Stancu <i>ICN Pitesti, Romania</i>	The Behaviour of Zy-4 Tubes in Microbial Media
<b>S1-P7</b>	L. Popa, M. Tunaru, L. Velciu <i>ICN Pitesti, Romania</i>	Testing of some Organic Inhibitors for the Protection of Grade 5 Titanium Alloys in Chloride Solutions
<b>S1-P8</b>	G. Gheorghe, I. Man <i>ICN Pitesti, Romania</i>	Nondestructive Post-Irradiation Examination Techniques on CANDU Fuel Elements
<b>S1-P9</b>	T. Gyongyosi, S. C. Valeca, V. N. Panaiteacu, I. Prisecaru <i>ICN Pitesti, Romania</i>	Plugging of Drinking Water Flow into Horizontal High Diameter Pipeline with Artificial Ice Plug
<b>S1-P10</b>	T. Gyongyosi, I. Prisecaru, V. N. Panaiteacu <i>ICN, Romania</i>	The Experimental Installation of the First Plug (M1-M.E. Version) Using an Unconventional Plastic Deformation Technique
<b>S1-P11</b>	S.C. Valeca, C. Doca, C. Iorga <i>ICN Pitesti, Romania</i>	Romanian Experience on CANDU 600 Fuelling Machine Testing
<b>S1-P12</b>	N. Marinescu, D. Predescu, S.C. Valeca <i>ICN Pitesti, Romania</i>	Simulator for CANDU600 Fuel Handling System. The Experimental Model
<b>S1-P13</b>	M. Stanculescu, A. Dinu, I. Furtuna <i>ICN Pitesti, Romania</i>	A Study on U-Zr-Er Metallic Alloy
<b>S1-P14</b>	S. Mogosan, D. Lucan, D. Stefanescu, M. Fulger <i>ICN Pitesti, Romania</i>	Water Chemistry in Secondary Side of CANDU NPP Steam Generators and their related Degradation Processes
<b>S1-P15</b>	D. Stefanescu, M. Mihalache, S. Mogosan <i>ICN Pitesti, Romania</i>	Laboratory Study of Reinforcement Protection with Corrosion Inhibitors
<b>S1-P16</b>	V. Cojocaru, Gh. Dinuta <i>ICN Pitesti, Romania</i>	Equipment for Detach the Fuel Elements of the Irradiated CANDU Fuel Bundle
<b>S1-P17</b>	C. Doca, C. Păunoiu, L. Doca <i>ICN Pitesti, Romania</i>	An Intuitive Method to Automatically Detect the Common and Not Common Frequencies for Two or More Time-Varying Signals
<b>S1-P18</b>	I.Spiridon, S.Gherghinescu, Gh.Popescu <i>National R &amp; D Institute for Cryogenics and Isotopic Technologies, Romania</i>	Deflector Design for Gaseous Distribution in Liquid Heavy Water for the Isotopic Exchange Column Humidifier Unit
<b>S1-P19</b>	S.Gherghinescu, Gh.Popescu, I.Spiridon, <i>National R &amp; D Institute for Cryogenics and Isotopic Technologies, Romania</i>	Control of Heavy Water Vapor Condensation in the Isotopic Exchange Process of Hydrogen Isotopes
<b>S1-P20</b>	B.Monea, E.Ionete, I.Spiridon <i>National R &amp; D Institute for Cryogenics and Isotopic Technologies, Romania</i>	Experiments and CFD Simulation of Deuterium Storage on a Titanium Sponge Bed
<b>S1-P21</b>	S.Vulpe, D.Ohai, M.Abrudeanu, O.Gradin <i>University from Pitesti, Romania</i>	Thermal Cycling Influence on Microstructural Characterization of Alloys with High Nickel Content

## Poster Session 2 (14:30 – 17:50)

### Radioactive Waste Management

S2-P1	M. Olteanu, A. Vasile, V. Nistor, R. Voiculescu <i>ICN Pitesti, Romania</i>	Enhanced Thermal Testing of Type B Radioactive Material Packages
S2-P2	L.Bujoreanu, C. Ichim, C. Diaconescu <i>ICN Pitesti, Romania</i>	Implementing Methods for $^3\text{H}$ and $^{14}\text{C}$ Measurement in Organic Waste Samples
S2-P3	M. Olteanu, M. Iordache, C. Bucur <i>ICN Pitesti, Romania</i>	$^{94}\text{Nb}$ Separation on Ion Exchange Resins
S2-P4	M. Dulama, M. Iordache, N. Deneanu <i>ICN Pitesti, Romania</i>	Treatment of Uranium Contaminated Wastewater – A Review
S2-P5	M. Dianu <i>ICN Pitesti, Romania</i>	Experimental Tests for $^{36}\text{Cl}$ Removal from Aqueous Solution
S2-P6	C. Diaconescu, L. Bujoreanu, C. Ichim, I. Florea <i>ICN Pitesti, Romania</i>	Comparative Study of the Gamma Spectrometry Method Performance in Different Measurement Geometries

### Radioprotection & Air, Water and Soil Protection

S2-P7	L.Coretchi <i>National Centre of Public Health, Republic of Moldova</i>	Bioremediation of Land Contaminated by Radioactive Material
S2-P8	G. Florescu, D. Pantazi <i>CITON, Romania</i>	Application of ALARA Principle for High Energy Particle Generators
S2-P9	T. Ivana, V. Olaru, A. Constantinescu <i>Nuclear Fuel Plant Pitesti, Romania</i>	Environmental Protection at Nuclear Fuel Plant Pitesti, Romania
S2-P10	R.M. Voiculescu, M. Olteanu, V. Nistor <i>ICN Pitesti, Romania</i>	Design and Operation of an Interlaboratory Comparison Scheme
S2-P11	S. Stoica, C. Dulama, M. Valeca, A.Toma, C. Ciocirlan, R. Dobrin <i>ICN Pitesti, Romania</i>	Purification and Separation of U, Pu and Am in Soil Samples by Extraction Chromatography for Alpha-Spectrometry Analyses
S2-P12	C. Ciocirlan, C. Dulama, M. Valeca, A.Toma, S. Stoica, R. Dobrin <i>ICN Pitesti, Romania</i>	Determination of Uranium Content in Aerosols Filters by Alpha-Spectrometry
S2-P13	F.Bucura, C. Sandru, M. Constantinescu <i>National R&amp;D Institute for Cryogenics and Isotope Technology, Romania</i>	Energy Willow – A Sustainable Alternative, Economic and Friendly with the Environment
S2-P14	C.Sandru, E.David, F.Bucura, M.Constantinescu <i>National R&amp;D Institute for Cryogenics and Isotope Technology, Romania</i>	Analysis of the Level of Polluants Concentration from Wastewater from Textile Industry
S2-P15	C.Varlam, I.Faurescu, I.Vagner, D.Faurescu <i>National R&amp;D Institute for Cryogenics and Isotope Technology, Romania</i>	Determination of Quench Factor for Tritium Concentration Measurement in Aqueous Samples
S2-P16	M.Vladu, G.Bulubasa, N. Bidica, A.Miu <i>National R&amp;D Institute for Cryogenics and Isotope Technology, Romania</i>	Study of Environmental Radioactivity in Water Samples around the Pilot Plant for Tritium and Deuterium Separation ICSI Rm. Vâlcea

### International Partnership for a Sustainable Development

S2-P17	M. Apostol, M. Constantin, D. Diaconu <i>ICN Pitesti, Romania</i>	Strengths, Weaknesses, Opportunities and Threats – SWOT Analysis Regarding the Romanian Participation in Euratom Programmes on Nuclear Safety Topic
S2-P18	V. Deaconu, I. Ionita, T. Meleg, M. Deaconu, C. Truta, G. Oncioiu <i>ICN Pitesti, Romania</i>	Eleven Years of NeT Network Research Activity- INR Contributions

### Education, Continuous Formation and Knowledge Transfer

S2-P19	I.Cretu, M. Ionila, E.Gyongyosi, E.Dragan, M.Petra <i>ICN Pitesti, Romania</i>	INR Training Programme in Nuclear Research
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## Poster Session 3 (9:00 – 14:30)

### Nuclear Safety and Severe Accidents

S3-P1	G. Jahanfarnia, Kaveh Karimi <i>Islamic Azad University, Iran</i>	Human Contribution to the Nuclear Power Plants Risk: TMI versus Fukushima
S3-P2	R. Pancef, N. Anghel, I. P. Nita <i>CITON, Romania</i>	Thermal-Hydraulic Analyses of the Recirculated Cooling Water from Cernavoda NPP Unit 1
S3-P3	V. Olaru, T. Ivana <i>Nuclear Fuel Plant Pitesti, Romania</i>	IAEA Mission - Safety Evaluation During Operation at the Nuclear Fuel Plant Pitesti, Romania
S3-P4	M.Farcasiu, M. Nitoi <i>ICN Pitesti,, Romania</i>	Assessment of the Factors with Significant Influence on Safety Culture
S3-P5	E. Pauna, Gh. Olteanu, Al. Catana <i>ICN Pitesti,, Romania</i>	Single-Phase Coolant Flow CFD Simulations inside the CANDU Channel for 37 and 43 Elements Fuel Bundles
S3-P6	A. Catana, M. Ioan, M. Serbanel <i>ICN Pitesti,, Romania</i>	Preliminary CFD Analysis Methodology for Flow a LFR Fuel Assembly
S3-P7	B. Venescu, D. Zevedei, M. Jurian, R. Venescu <i>ICN Pitesti,, Romania</i>	Intelligent Control System for a CANDU 600 Type Reactor Process
S3-P8	B. Venescu, D. Zevedei, M. Jurian <i>ICN Pitesti,, Romania</i>	3D Simulation of CANDU Reactor Regulating System
S3-P9	B. Venescu, D. Zevedei, M. Jurian <i>ICN Pitesti,, Romania</i>	Power Distribution Control of CANDU Reactors Based on Modal Representation of Reactor Kinetics

### Nuclear Reactors and Generation IV

S3-P10	S. Tashakor, A. A. Salehi, G. Jahanfarnia, A. A.T. Fard <i>Islamic Azad University, Iran</i>	Neutronic Analysis of HPLWR Fuel Assembly Cluster
S3-P11	I. Ionita, N.C. Popa <i>ICN Pitesti,, Romania</i>	New Rietveld Program Suited for Processing Patterns Recorded with an Inverse-Space Focusing Neutron Diffractometer equipped with Position Sensitive Detector
S3-P12	A. Iordache, M. Ancuta, L. Gruia, A. Pulpa, E. Salistean, G. Gulescu <i>ICN Pitesti,, Romania</i>	The Upgraded Control and Instrumentation System of C5 Irradiation Device
S3-P13	S. Dulugeac, M. Mladin, G. Budriman <i>ICN Pitesti,, Romania</i>	Neutronic Analysis for the Fission Mo99 Production by Irradiation of LEU Targets in TRIGA 14 MW Reactor
S3-P14	G. Budriman, M. Mladin, Cs. Roth, S. Dulugeac <i>ICN Pitesti,, Romania</i>	Calculations for TRIGA ACPR with MCNPX Code
S3-P15	D. Ionescu, C. Gentea, G. Horhoianu, Gh. Olteanu, A. Paraschiv, M. R. Roman <i>ICN Pitesti,, Romania</i>	Modelling of an Experimental Fuel Element with (Th, U)O <sub>2</sub> Pellets, using an Improved Version of the ROFEM Code
S3-P16	D. Nastase, Gh. Olteanu, M. Ioan, E. Pauna <i>ICN Pitesti,, Romania</i>	Conceptual Design of Experimental LFR Fuel Element for Testing in TRIGA Reactor, ACPR Zone
S3-P17	M. Ioan, M. Hororoi <i>ICN Pitesti,, Romania</i>	LECOTELO - Conceptual Design, Testings and Realisation of the Main Vessel
S3-P18	M. Ioan <i>ICN Pitesti,, Romania</i>	Conceptual Design for Irradiation Device used to Irradiate Experimental LFR Fuel Element in TRIGA Reactor, ACPR Zone
S3-P19	M. Ioan, M. Hororoi, Al. Gutue, A. Tudor, D.Nistor, V.Lebu, Al.Catana, G. Ghita, E.Pauna, V. Cojocar, V. Tencu <i>ICN Pitesti,, Romania</i>	LECOTELO - Conceptual Design, Testings and Realisation
S3-P20	M. Ioan, Al. Gutue <i>ICN Pitesti,, Romania</i>	LECOTELO - Conceptual Design, Testings and Realisation of a Centrifugal Pump
S3-P21	V.Florescu <i>ICN Pitesti, Romania</i>	Stepper Motor Control with Variable Speed
S3-P22	V.Florescu <i>ICN Pitesti, Romania</i>	About Design of Sensorless Permanent Magnet Synchronous Motor Control System

Thursday, May 23



# 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 **ICN Pitesti, (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** – 25<sup>th</sup> anniversary of the TRIGA Reactor commissioning.
- 2006** – Completion of the TRIGA-SSR conversion from HEU to LEU fuel.
- 2007** – First criticality of Cernavoda NPP-Unit 2 Reactor with participation of ICN specialists other ICN contributions: 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 was nominated as national leader for GIV
- 2012** – An extended Research Program dedicated to LFR was developed under ICN coordination



## CONFERENCE SPONSORS:



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