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**INTERNATIONAL SCHOOL
ON NUCLEAR POWER
MIĘDZYNARODOWA SZKOŁA
ENERGETYKI JĄDROWEJ**

November 14-17, 2017
Warsaw - Swierk - Rozan

SCHEDULE

14 th November Tuesday	15 th November Wednesday	16 th November Thursday	17 th November Friday
WORKSHOPS <ul style="list-style-type: none"> • National Centre for Nuclear Research & Radioactive Waste Management Plant in Swierk • National Radioactive Waste Repository in Rozan 	Main Session LECTURES	Main Session LECTURES	WORKSHOPS <ul style="list-style-type: none"> • VINCO Technical Meeting • National Centre for Nuclear Research & Radioactive Waste Management Plant in Swierk • National Radioactive Waste Repository in Rozan
Organizer: National Centre for Nuclear Research	Organizers: Ministry of Energy National Centre for Nuclear Research		Organizer: National Centre for Nuclear Research

MAIN SESSION - LECTURES

► 15th November – Wednesday

Place: CENT III Building, Campus Ochota, University of Warsaw, Żwirki i Wigury St. 101

After every lecture 5 minutes are provided for questions and discussion

08:00-09:00	<i>Registration</i>
09:00-09:15	School opening Dr. J. Sobolewski, Director of Nuclear Energy Department, Ministry of Energy, Poland Prof. dr. K. Kurek, Director of National Centre for Nuclear Research, Poland Prof. dr. D. Wasik, Dean of the Faculty of Physics, University of Warsaw, Poland
POLISH NUCLEAR ENERGY PROGRAM Session leader: Prof. dr. M. Dąbrowski, National Centre for Nuclear Research, Poland	
09:15-09:35	Status of Polish Nuclear Energy Program Dr. J. Sobolewski, Director, Nuclear Energy Department, Ministry of Energy, Poland
09:40-10:00	Program of first nuclear power plant construction in Poland Mr. K. Sadłowski, President of PGE EJ 1, Poland
10:05-10:35	How to integrate a nuclear power plant into the Polish power system Mr. Z. Uszyński, PSE S.A., Poland
10:40-11:10	<i>Coffee break</i>
ATOMS FOR THE FUTURE Session leader: Dr. J. Sobolewski, Director of Nuclear Energy Department, Ministry of Energy, Poland	
11:10-11:50	Nuclear power needed for sustainable development Dr. H-Holger Rogner, International Institute for Applied Systems Analysis, Austria
11:55-12:35	Financing on nuclear projects in Europe Mr. A. Goicea, FORATOM, Belgium

12:40-13:00 **HTR reactors within Polish strategy of nuclear energy development**
Prof. dr. G. Wrochna, National Centre for Nuclear Research, Poland

13:00-13:45 *Lunch break*

FUEL CYCLE

Session leader: Mr. A. Chwas, Nuclear Energy Department, Ministry of Energy, Poland

13:45-14:25 **An update of the nuclear fuel supply industry**
Mr. M. Mori, Manager Marketing & Sales, URENCO, UK/Germany/Netherland

14:30-14:55 **Recycling of nuclear fuel – reasons and perspectives**
Prof. dr. A. Strupczewski, National Centre for Nuclear Research, Poland

15:00-15:20 *Coffee break*

150TH ANNIVERSARY OF MARIA SKŁODOWSKA-CURIE'S BIRTH

Session leader: Dr. A. Korgul, Faculty of Physics, University of Warsaw, Poland

15:20-16:00 **The great scientist - Maria Skłodowska-Curie**
Prof. dr. A.K. Wróblewski, Faculty of Physics, University of Warsaw, Poland

RADIATION PROTECTION

Session leader: Dr. P. Krajewski, Director of Central Laboratory for Radiological Protection, Poland

16:05-16:45 **Has it been necessary to evacuate population around Chernobyl and Fukushima?
What changes are needed in radiation protection regulations?**
Dr. M. Doss, Scientists for Accurate Radiation Information S.A.R.I., USA

16:50-17:20 **Safety of population around radioactive waste repository**
Ms. A. Korczyc, Division of Radioactive Waste Disposal, Poland

17:20 *The end of session*

► 16th November – Thursday

Place: CENT III Building, Campus Ochota, University of Warsaw, Żwirki i Wigury St. 101

After every lecture 5 minutes are provided for questions and discussion

SAFETY OF NUCLEAR POWER PLANTS

Session leader: Mr. W. Kielbasa, PGE EJ 1 Sp. z o.o., Poland

09:00-09:35 **How has China National Nuclear Corporation achieved efficient and fast
construction of III generation reactors?**
China General Nuclear Power Corporation, China

09:40-10:15 **Negative power reactivity coefficient in EPR – influence on primary system break
(LOCA) and steam line break (SLB) accidents**
EDF, France

10:20-10:55	Experiences from the UK safety case assessment of the ABWR and relevance for Poland GE Hitachi, USA/Japan
11:00-11:25	<i>Coffee break</i>
11:25-12:00	How is the safety of APR-1400 in case of core melt accidents assured in NPPs being built in Korea and in the United Arab Emirates Korea Hydro & Nuclear Power, South Korea
12:05-12:40	CANDU safety basis: limiting & compensating for positive reactivity insertion Dr. A. Lee, Manager, Physics, Licensing and Safety, SNC-Lavalin, Canada
12:45-13:20	How is integrity of AP1000 containment assured over 60 years of reactor lifetime? Westinghouse, UK
13:25-14:05	<i>Lunch break</i>
FUKUSHIMA IMPACTS Session leader: Prof. dr. L. Dobrzyński, National Centre for Nuclear Research, Poland	
14:05-14:45	Actions after Fukushima accident and the IAEA evaluation of the effects of that accident Dr. G. Rzentkowski, Director, Division of Nuclear Installation Safety, International Atomic Energy Agency, Austria
COMPETITIVENESS OF NUCLEAR POWER Session leader: Mr. Ł. Koszuc, National Centre for Nuclear Research, Poland	
14:50-15:15	Are offshore wind farms competitive to nuclear? Prof. dr. A. Strupczewski, National Centre for Nuclear Research, Poland
15:20-15:40	<i>Coffee break</i>
DESTINATION: MARS Session leader: Mr. Ł. Koszuc, National Centre for Nuclear Research, Poland	
15:40-16:20	Nuclear reactors for space Ms. Z. Hodgson, National Nuclear Laboratory, UK
16:25-17:05	Space radiation protection Dr. U. H. Straube, M.D., Medical Operations & Space Medicine, European Astronaut Centre Department, European Space Agency
17:05-17:30	Discussion
17:30	<i>The end of session</i>

WORKSHOPS

WORKSHOP N – Świerk Nuclear Centre

National Centre for Nuclear Research & Division of Radioactive Waste Disposal

► **14th November 2017 – Tuesday**

► **17th November 2017 – Friday**

(only in Polish)

DESCRIPTION

(1) **MARIA research reactor**, including Control Room, reactor pool within the containment and the reactor spent fuel pool with high activity fuel assemblies (90min)

(2) **Division of Radioactive Waste Disposal** (90 min)

(3) **Education and training division** (20 min)

The goal and activity of the Division consist in propagation of nuclear science among the broadly understood society. The education is based on many demonstrations and experimental facilities. Laboratory of Atomic and Nuclear Physics is open inter alia for high-school students, and forms quite unique educational unit. The Division is visited annually by about 7000 visitors. We shall present our laboratory equipment (more than 30 experiments), model of HTR applications, educational environment of the MARIA reactor, as well as the exhibition of the nuclear waste treatment displaying many exhibits.

(4) **Radiation Protection Measurements Laboratory** (100 min)

A. Internal exposure monitoring – Whole Body Counter

The Whole Body Counter is a special equipment for the measurement of human body internal contamination with gamma emitters. It is used for internal exposure monitoring and allows to identify and assess the activity of all radionuclides in the human body. An example measurement will be performed during the exercise.

B. Internal exposure monitoring – Thyroid Counter

The Thyroid Counter is a special equipment for the activity measurement of radioactive iodine gathered in thyroid. It is used for internal exposure monitoring of people working with iodine unsealed sources. During the exercise is performed the calibration and sample measurement. monitoring and allows to identify and assess the activity of all radionuclides in the human body, in. A calibration and an example measurement will be performed during the exercise.

C. External exposure monitoring

The dosimetric equipment used for the monitoring of external exposure for gamma radiation (ambient dose equivalent) will be presented during the exercise. An example measurement and methods of calibration will be performed.

D. Radiochemistry – in vitro and environmental monitoring

The exercise includes the discussion of rules for determining the activity of alpha and beta emitters in urine samples. Such measurements are performed in order to assess doses from internal contamination with radionuclides. The rules of environmental samples (e.g. water, sewage, mules, soil, grass) sampling and preparation and measuring the activity of various radioactive isotopes in these samples.

(5) **Identification and analysis of ionizing radiation using germanium detector technology** (40 min)

Workshop prepared by IRTech

SCHEDULE

07:50	Departure from Warsaw to National Centre of Nuclear Research Świerk Bus departure from Defilad Place near Science and Culture Palace at 08:00 Planned arrival to Nuclear Research Centre Świerk 08:40		
GROUP 1		GROUP 2	
09:00-10:30	(1) MARIA reactor	09:00-10:30	(2) Division of Radioactive Waste Disposal
10:40-12:10	(2) Division of Radioactive Waste Disposal	10:40-12:10	(1) MARIA reactor
12:20-13:00	<i>Lunch break</i>		
13:05-13:25	(3) Education and training division		
13:30-15:10	(4) Radiation Protection Measurements Laboratory	13:30-14:10	(4) Radiation Protection Measurements Laboratory
15:10-15:50	(5) Identification and analysis of ionizing radiation using germanium detector technology	14:10-15:50	(5) Identification and analysis of ionizing radiation using germanium detector technology
<i>App. 15:50 Departure from National Centre for Nuclear Research</i>			

WORKSHOP R – National Radioactive Waste Repository in Rozan

- ▶ 14th November 2017 – Tuesday
- ▶ 17th November 2017 – Friday

(only in Polish)

DESCRIPTION

The storage of waste and transporting of waste to the storage facility is dealt with by a specialised institution, called the Radioactive Waste Management Plant (RWMP [ZUOP]), a State-owned public benefit corporation. RWMP is responsible for proper handling of radioactive waste since the moment the waste is taken over from the producer. RWMP is also the operator and user of the National Radioactive Waste Repository (NRWP). NRWP is situated in the locality of Różan on the Narew River, approx. 90 km off Warsaw, within a former military fort site, occupying an area of 3.045 ha. In operation since 1961, the NRWP is a surface storage facility, according to the IAEA classification.

SCHEDULE

07:50	Departure from Warsaw to National Radioactive Waste Repository in Rozan Bus departure from Defilad Place near Science and Culture Palace at 08:00 Planned arrival to Nuclear Research Centre Świerk 09:20		
09:30-12:30	Technical visit in National Radioactive Waste Repository		
13:00-14:00	<i>Lunch break</i>		
<i>App. 14:00 Departure to Warsaw</i>			

WORKSHOP V – VINCO TECHNICAL MEETING



► 17th November 2017 – Friday

(only in English)

DESCRIPTION

VINCO project represents the next stage of capacity building in nuclear technologies in Central European countries. Participating countries defined already their specializations: helium technology in Czech Republic, design and safety analyses in Slovakia, fuel studies in Hungary and material research in Poland. Having such expertise, the joint development of Gen IV nuclear technologies with the special emphasis on gas-cooled reactors is fully possible.

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After every lecture 5 minutes are provided for questions and discussion

VISEGRAD INITIATIVE FOR NUCLEAR COOPERATION	
09:00-09:25	Visegrad Initiative for Nuclear Cooperation - VINCO project Prof. dr. J. Jagielski, National Centre for Nuclear Research, Poland
09:25-10:00	HTGR development in Japan and present status Dr. T. Shibata, JAEA, Japan
10:05-10:35	High Temperature corrosion and material testing in hot helium Dr. J. Kalivodova, CVR, Czechia
10:40-11:10	<i>Coffee break</i>
11:15-11:45	Applicability of different fuel types in the ALLEGRO reactor Dr. E. Slonszki, MTAEK, Hungary
11:50-12:20	ALLEGRO Project: UJV Group Activities in He-related Technologies TBD, UJV, Czechia
12:25-12:55	ALLEGRO evolution and evaluation at VUJE Dr. T. Chrebet, VUJE, Slovakia
12:55-14:30	<i>Lunch break</i>
14:30-15:00	The ALLEGRO Design and Safety Roadmap and related studies Dr. A. Vasile, CEA, France
15:05-15:35	<i>Coffee break</i>
15:40-16:10	Analytical methods for studies of irradiated materials Prof. A. Turos, National Centre for Nuclear Research, Poland
16:15-16:45	Nanoindentation testing of materials at high temperatures Dr. Ł. Kurpaska, National Centre for Nuclear Research, Poland
17:00	<i>The end of session</i>

PROGRAMME COMMITTEE

- Prof. dr. Andrzej Strupczewski, National Centre for Nuclear Research - Chairman
- Prof. dr. Stefan Chwaszczewski, National Centre for Nuclear Research

ORGANIZING COMMITTEE

- Mr. Łukasz Koszuk, National Centre for Nuclear Research - Chairman
- Ms. Aneta Korczyc, Division of Radioactive Waste Disposal
- Dr. Agnieszka Korgul, Faculty of Physics, University of Warsaw
- Ms. Gabriela Kosicka, National Centre for Nuclear Research
- Ms. Agnieszka Negadowska, Ministry of Energy
- Ms. Ewa Szlichcińska, National Centre for Nuclear Research

ORGANIZERS:



MINISTRY OF ENERGY



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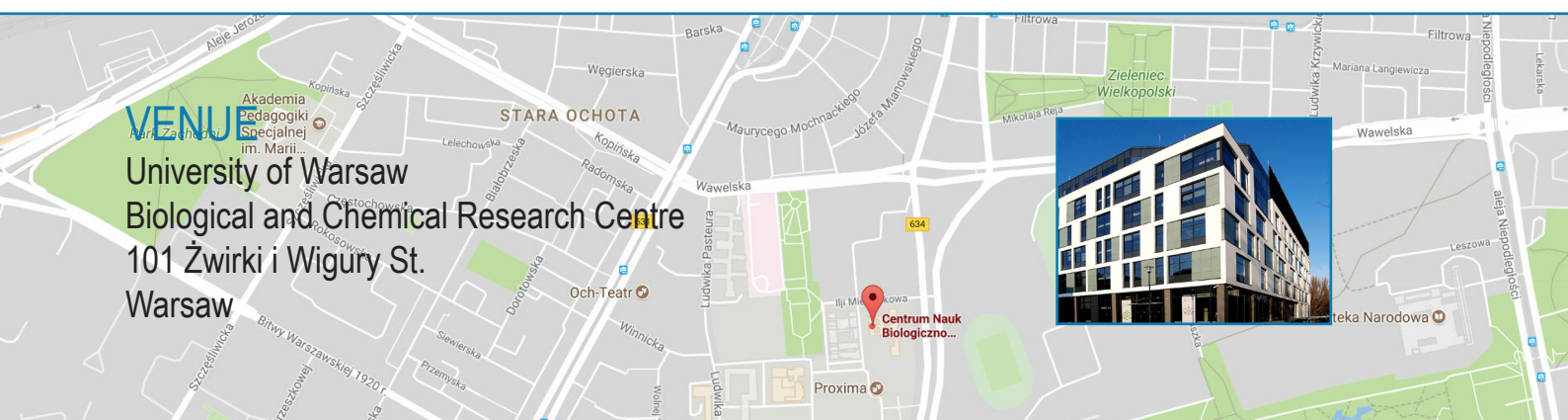
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The University of Warsaw Biological and Chemical Research Centre is located in Warsaw, in 101 Żwirki i Wigury Street, one of the main transportation arteries of the Ochota District. Detailed location is shown on the map below. Access for cars is from 2b Banacha Street. The CNBCh UW building lies in direct proximity of the Faculty of Biology (at 1 Miecznikowa Street), both buildings are connected via skybridge.

How to get there

There are bus stops of the lines: 136, 157, 167, 175, 187, 188, 191, 382, 504, 512, 521, 523 and tram stop of the lines: 1, 7, 9, 14, 25, 35 in the vicinity of the CNBCh UW. Thanks to them, the Centre is conveniently connected to transportation hubs of:

- Central Railway Station: accessible by buses 175, 512 and trams 7, 9, 25
- Western Railway and Bus Station: accessible by buses 187, 382, 523
- Warsaw Chopin Airport: accessible by buses 175 and 188