



## INTERNATIONAL ATOMIC ENERGY AGENCY

### RTC "RADIATION PROCESSING FOR ADVANCED POLYMERIC MATERIALS"

In the frame of Technical Cooperation Project RER1019

"Enhancing Standardized Radiation Technologies and Quality Control Procedures for Human Health, Safety, Cleaner Environment and Advanced Materials"

at Institute of Nuclear Chemistry and Technology, IAEA Collaborating Centre, Warsaw, Poland

October, 15-19 2018

Supported by EU Horizon 2020 ARIES  "Accelerator Research and Innovation for European Science and Society" Project – WP3

Institute of Nuclear Chemistry and Technology in cooperation with the International Atomic Energy Agency (IAEA) organizes workshop as part of the RER1019 regional project "Enhancing Standardized Radiation Technologies and Quality Control Procedures for Human Health, Safety, Cleaner and Advanced materials ". The topic of the meeting will be devoted to the use of radiation technologies for synthesis and modification of advanced polymer materials. The workshop will be attended by representatives of the IAEA Member States from Azerbaijan, Croatia, Hungary, Portugal, Romania, Russia, Serbia and Macedonia, PhD students and INCT employees. Lectures will be given by IAEA experts and scientists working at INCT. During the workshop practical exercises will take place at the Laboratory of Radiation Modified Polymers and Radiation Sterilization Plant.

### PROGRAMME

<i>Monday, 15 October 2018</i>		
<i>9.00-9.40</i>		<i>Registration</i>
<i>9.40-9.50</i>	<i>Prof. Andrzej Chmielewski</i>	<i>Welcome (INCT Director)</i>
<i>9.50-10.10</i>	<i>All</i>	<i>Introduction of the participants</i>
<i>10.10-10.40</i>	<i>Dr Zbigniew Zimek</i>	<i>Electron accelerators for radiation treatment of polymers</i>
<i>10.40-11.20</i>	<i>Prof. Clelia Dispenza</i> University of Palermo, Italy	<i>Fundamentals of ionising radiation interaction with polymers</i>
<i>11.20-11.50 Coffee break</i>		

11.50-12.20	<i>Prof. Andrzej G. Chmielewski</i>	<i>Comparison of gamma, electron beam and X-ray treatment</i>
12.20- 12.50	<i>Prof. Grażyna Przybytniak</i>	<i>Overview of radiation technologies in polymer processing</i>
<i>12.50-14.00 Lunch</i>		
14.00-14.40	<i>Prof. Clelia Dispenza</i> University of Palermo, Italy	<i>Radiation induced polymerisation</i>
14.40-15.10	<i>Prof. Grażyna Przybytniak</i>	<i>Cross-linking of electric cables and wires</i>
<i>15.10-15.40 Coffee break</i>		
15.40-16.10	<i>Dr Andrzej Rafalski</i>	<i>Fundamental aspects of radiation dosimetry: basic principles and methods</i>
16.10-16.40	<i>Dr Wojciech Głuszewski</i>	<i>Radiation treatment of foams, tires and pipes</i>
<i>Tuesday, 16 October 2018</i>		
9.30-11.00	<i>Presentation of participants</i>	
<i>11.00-11.30 Coffee break</i>		
11:30-12.30	<i>Presentation of participants</i>	
12.30-13.00	<i>Dr Jarosław Sadło</i>	<i>Radiation curing of polymers. Self-repairing composites.</i>
<i>13.00-14.00 Lunch</i>		
14.00-14.40	<i>Prof. Clelia Dispenza</i> University of Palermo, Italy	<i>Radiation processing of polymers in aqueous media</i>
14.40-15.10	<i>Prof. Grażyna Przybytniak</i>	<i>Heat shrinkable tapes and tubing</i>
<i>15.10-15.40 Coffee break</i>		
15.40-16.10	<i>Mrs Dagmara Śmietanko</i>	<i>Radiation methods in nanotechnology</i>
18.00-20.00	<i>All</i>	<i>Dinner, Dom Smaków</i>
<i>Wednesday, 17 October 2108</i>		
9.30-11.00	<i>Dr Zbigniew Zimek</i>	<i>Presentation of INCT facilities: electron accelerators</i>

		<i>and gamma chambers</i>
<i>11.00-11.30 Coffee break</i>		
<i>11.30-13.00</i>		<i>Visit to Centre of Radiochemistry and Nuclear Chemistry</i>
<i>13.00-14.00 Lunch</i>		
<i>14.00-14.30</i>	<i>Dr Marta Walo</i>	<i>Modification of polymeric surfaces by grafting</i>
<i>14.30-15.00</i>	<i>Mrs Urszula Gryczka</i>	<i>Radiation degradation of cellulose</i>
<i>15.00-15.30 Coffee break</i>		
<i>15.30-16.00</i>	<i>Prof. Andrzej Chmielewski</i>	<i>Recent developments in ARIES project WP3 "Industrial and Societal Applications-</i>
<i>16.00-16.30</i>	<i>Dr Jarosław Sadło</i>	<i>Introduction to practical exercises: EPR in radiation chemistry and dosimetry</i>
<i>Thursday, 18 October 2018</i>		
<i>9.30-13.00</i>	<i>Dr Jarosław Sadło Dr Marta Walo Mr Norbert Wróbel</i>	<i>Practical exercises: characterization of polymeric materials: Radiation-induced radicals: Electron Paramagnetic Resonance Spectroscopy Modification of rheological properties: apparent viscosity measurements Mechanical tests</i>
<i>13.00 – 14.00 Lunch</i>		
<i>14.00-17.00</i>	<i>Dr Andrzej Rafalski Mrs Anna Korzeniowska-Sobczuk</i>	<i>Practical exercises: dosimetry Calorimetry PVC B3 CTA</i>
<i>Friday, 19 October 2018</i>		
<i>9.30-10.00</i>	<i>Prof. Krystyna Cieśla</i>	<i>Natural polymers modified by ionizing radiation</i>
<i>10.00-10.30</i>	<i>Dr Zbigniew Zimek</i>	<i>Economic aspects of radiation technologies</i>
<i>10.30-11.00 Coffee break</i>		

11.00-12.00	All	Final remarks, granting certificates, closing
12.00 – 13.00 Lunch		

*Textbook for a RTC “Applications of ionizing radiation in materials processing” edited by Yongxia Sun and Andrzej G. Chmielewski, Institute of Nuclear Chemistry and Technology Warszawa , 2017, [http://www.ichtj.waw.pl/ichtj/publ/monogr/m2017\\_1.htm](http://www.ichtj.waw.pl/ichtj/publ/monogr/m2017_1.htm)*