RAD 4

FOURTH INTERNATIONAL CONFERENCE ON RADIATION AND APPLICATIONS IN VARIOUS FIELDS OF RESEARCH

May 23 - 27, 2016 | Niš | Serbia | rad-conference.org

CONFERENCE PROGRAMME

CEI
CENTRAL EUROPEAN INITIATIVE

CONFERENCE PROGRAMME

	Sunday, May 22	
18:00 - 20:00	**Registration**	**Lobby**
	Monday, May 23	
08:00 - 10:00	**Registration**	**Lobby**
10:00	**Official Opening**	**Amphitheater A**
10:00 - 18:30	**Registration**	**Lobby**
10:30 - 11:00	**Refreshments**	
	Plenary Session **Invited lectures** Chairperson: **Ines Krajcar Bronić**	**Room A**
11:00	Luisa Torsi, **Organic electronic biosensors for label-free femtomolar protein detection**	
11:30	István Bikit, **Low level nuclear spectroscopy in environmental protection**	
12:00 - 13:30	**Lunch**	
	Oral Session **Biomaterials, Radiation Effects, Biotechnology** Chairperson: **Luisa Torsi**	**Room A**
13:30	R. C. Popescu, E. Andronescu, A. M. Grumezescu, I. Petcu, D. Savu, **Low dose radiotherapy improvement using functionalized magnetite nanoparticles**	
13:45	M. Nesic et al., **Photoacoustic characterization of thin polylactide samples of different crystallinity**	
14:00	E. Savchenko et al., **Modification of solid nitrogen by an electron beam**	
14:15	Lj. Korugic-Karasz, M. Tonga, P. Taylor, E. Wilusz, P. Lahti, F. Karasz, **The thermoelectric energy harvesting systems iodine-doped MEH-PPV with carbon nanotubes**	
14:30	L. Basiricò, A. Ciavatti, T. Cramer, P. Cosseddu, A. Bonfiglio, B. Fraboni, **Flexible organic X-ray detectors**	
14:45	N. Kamanina, **Refractive properties of bio- and nano-structured materials as indicators of the model matrix macro parameter modification**	

17:00 - 18:30	Poster Sessions	Lobby
	Radiation protection Chairpersons: **Kiril Krezhov**	
RP1	M. Malek Mohammadi, S. M. Hosseini Pooya, B. Firoozi, **Performance characteristics of a home-made TLD reader; preliminary results**	
RP2	N. Todorović, N. Golubovac, J. Nikolov, M. Krmar, **Structural shielding design for radiographic room by scattered radiation measurement**	
RP3	N. Todorović, S. Lučić, D. Marić, D. Golubović, J. Nikolov, M. Krmar, **Radiation exposure of nuclear medicine staff working with radionuclides 99mTc and ^{131}I**	
RP4	N. Todorović et al., **Different methods for ^{90}Sr determination in water**	
RP5	J. Ziliukas et al., **Regional East European and Central Asian ALARA Network (RECAN): networking for improving the occupational radiation protection**	
RP6	G. Rosca Fartat, C. Popescu, C. Stanescu, **The horizontal fuel channel in the CANDU 6 nuclear reactor - Part IV: Dismantling main steps with the decommissioning device**	
	Biotechnology Chairperson: **Natalia Kamanina**	
BT1	B. Cekova, V. Bezhovska, I. Limani, F. Jovanovski, **Microbiological composition of dehydrated agricultural products from the Republic of Macedonia**	
BT2	B. Cekova, F. Jovanovski, V. Bezhovska, **The role of microorganisms in the preservation of some gardening products**	
BT3	P. Petrov, V. Markoska, B. Mitrovski, **The influence of foliar fertilizing on some chemical parameters of the broccoli (Brassica oleracea L. var. botrytis)**	
BT4	S. Petrović, S. Savić, J. Zvezdanović, D. Cvetković, D. Marković, **A lipid microenvironment impact on liposomes with incorporated pigments**	
BT5	S. Savić, S. Petrović, Z. Petronijević, **Immobilization of horseradish peroxidase on hydrophobic carriers**	
	Biomaterials Chairperson: **Natalia Kamanina**	
BM1	G. Ciobanu, O. Ciobanu, **Radio-opaque materials based on hydroxyapatite and bismuth**	
BM2	H. Saito et al., **Gelation of DNA and bovine serum albumin (DNA-BSA gel) by gamma irradiation as bio-absorbent for acridine orange**	
BM3	K. Jusufi et al., **Potential application of apple peels as bio sorbents in the removal of organic molecules from wastewater**	
BM4	K. Jusufi et al., **Removal of dyes from wastewater using plant-based biosorbent derivate from potato peels**	
BM5	J. Halili, A. Berisha, A. Halili, V. Mehmeti, K. Jusufi, T. Demelezi, **Direct (in situ) electrochemical determination of supercritical CO_2 extracted ascorbic acid from aqueous solutions onto Pt electrodes**	
	Radiation Effects Chairpersons: **Natalia Kamanina, Natalia Koltovaya**	
RF1	A.-I. Cadis, L. E. Muresan, I. Perhaita, L. Barbu-Tudoran, E. Indrea, **Studies on ZnS:Mn2+ prepared by microwave-assisted solvothermal decomposition of single-source molecular precursors**	
RF2	J. Budinski-Simendić et al., **The performance assessment of gamma irradiated elastomeric nanocomposites**	
RF3	G. Marković et al., **The high energy irradiation ageing of reinforced elastomers based on rubber blends**	

	RF4	S. Jovanović, G. Marković, S. Samaržija-Jovanović, M. Marinović-Cincović, V. Jovanović, J. Budinski-Simendić, **The influence of gamma-irradiation on mechanical properties of nano-silica reinforced ternary NR/BR/SBR rubber blend**
	RF5	A. Barabashov, E. Savchenko, I. Khyzhniy, **Electron-stimulated desorption of excited atoms from solid nitrogen**
→	RF6	E. Pereira et al., **Impact of gamma irradiation on the cytotoxic properties and phenolic composition of Thymus vulgaris L. and Menta x piperita L**
	RF7	B. N. Van, Q. M. Tran, D. T. Bang, S. H. Dang, T. H. Phuong, T. N. Thi, **Low molecular weight xanthan prepared by gamma irradiation and its effects on seedlings**
→	RF8	Å. Fernandes, A. L. Antonio, M. B. P.P. Oliveira, A. Martins, I. C.F.R. Ferreira, **Gamma radiation preserves chemical and bioactive properties of Boletus edulis wild mushrooms**
	RF9	J. Reszczyńska, L. Dobrzyński, K. Fornalski, Y. Socol, **Low dose radiation response: from life span studies to mathematical models**
		Radiobiology Chairperson: **Natalia Koltovaya**
	RB1	S. Belkina, **Optimizing the efficiency of the sequential thermoradiation therapy in oncology**
	RB2	A. Ylli, I. Stamo, L. Binxhija, **Influence of mutagens on decorative plants**
	RB3	A. Ylli, M. Karcini, L. Binxhija, **Induced mutagenesis applied in bean seeds**
	RB4	L. Binxhija, A. Ylli, **Medical plants in different soils with heavy metals**
	RB5	M. Vujović, D. Maksin, M. Vujisić, **Microdosimetric simulations for testing cell radiosensitivity**
		Biopharmaceuticals Chairperson: **Natalia Koltovaya**
	BL1	A. Stankov, S. Gateva, G. Jovtchev, F. Gregan, **The investigation of the antigenotoxic potential of *Papaver Rhoeas l.* and *Salvia Officinalis l.* extracts against an oxidative stress inducer**
20:30 - 23:30		**Conference Cocktail**

Tuesday, May 24

08:00 - 18:00	**Registration**	**Lobby**
→	**Oral Session** **Radiobiology, Radiation Effects** Chairperson: **Nataša Anastasov**	**Room A**
08:30	N. Koltovaya, N. Zhuchkina, N. Shvaneva, **Proton induction of gene mutations**	
08:45	S. Vasilyev et al., **Effects of spontaneous γH$_2$AX level on gene expression in human somatic cells**	
09:00	G. Woloschak, S. Raha, T. Paunesku, **Native regulation of micro RNA mmu-miR1195 is necessary for radiation resistance in mouse thymic lymphoma cell lines**	
09:15	T. Paunesku, B. Haley, G. Woloschak, **The dose rate effectiveness factor calculations using animal archive data**	
→ 09:30	J. Pinela et al., **From the field to the table: Ionizing radiation as a feasible postharvest treatment for fresh and dried plant foods**	
09:45	V. Demin, A. Antsiferova, V. Demin, Y. Buzulukov, P. Kashkarov, **Selenium biokinetics study both by terms of nuclear-physical method and numerical modeling**	

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BOOK OF ABSTRACTS

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18 RADIATION EFFECTS

FROM THE FIELD TO THE TABLE: IONIZING RADIATION AS A FEASIBLE POSTHARVEST TREATMENT FOR FRESH AND DRIED PLANT FOODS

José Pinela[1], Amilcar L. Antonio[2], Lillian Barros[2], Sandra Cabo Verde[3], Ana Maria Carvalho[2], M. Beatriz P.P. Oliveira[4], Isabel C.F.R. Ferreira[2]

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Food irradiation is a treatment that involves subjecting in-bulk or packaged food to a controlled dose of ionizing radiation, with a clearly defined goal. It has been used for disinfestation and sanitization of food commodities and to retard postharvest ripening and senescence processes, being a sustainable alternative to chemical agents 1 . Doses up to 10 kGy are approved by several international authorities for not offering negative effects to food from a nutrition and toxicology point of view 2 . However, the adoption of this technology for food applications has been a slow process due to some misunderstandings by the consumer who often chooses non-irradiated foods. In this study, the effects of the ionizing radiation treatment on physical, chemical and bioactive properties of dried herbs and its suitability for preserving quality attributes of fresh vegetables during cold storage were evaluated.

The studied herbs, perennial spotted rockrose (*Tuberaria lignosa* (Sweet) Samp.) and common mallow (*Malva neglecta* Wallr.) were freeze-dried and then irradiated up to 10 kGy in a Cobalt-60 chamber. The selected vegetables, watercress (*Nasturtium officinale* R. Br.) and buckler sorrel (*Rumex induratus* Boiss. Reut.) were rinsed in tap water, packaged in polyethylene bags, submitted to irradiation doses up to 6 kGy and then were stored at 4 C for a period of up to 12 days. Physical, chemical and bioactive parameters of irradiated and non-irradiated samples were evaluated using different methodologies the colour was measured with a colorimeter, individual chemical compounds were analyzed by chromatographic techniques, antioxidant properties were evaluated using *in vitro* assays based on different reaction mechanisms, and other quality analyses were performed following official methods of analysis.

The irradiation treatment did not significantly affect the colour of the perennial spotted rockrose samples, or its phenolic composition and antioxidant activity 3 . Medium doses preserved the colour of common mallow and a low dose did not induce any adverse effect in the organic acids profile. The green colour of the irradiated vegetables was maintained during cold storage but the treatment had pros and cons in other quality attributes. The 2 kGy dose preserved free sugars and favoured polyunsaturated fatty acids (PUFA) while the 5 kGy dose favoured tocopherols and preserved the antioxidant properties in watercress samples. The 6 kGy dose was a suitable option for preserving PUFA and the ω-6 ω-3 fatty acids ratio in buckler sorrel samples. This comprehensive experimental work allowed selecting appropriate processing doses for the studied plant foods in order to preserve its quality attributes and edibility.

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References

1 J. Pinela, I.C.F.R. Ferreira, Critical Reviews in Food Science and Nutrition, 2015, In press

2 WHO Technical Report Series 890, World Health Organization, Geneva, Switzerland, 1999

3 J. Pinela, A.L. Antonio, L. Barros, J.C.M. Barreira, A.M. Carvalho, M.B.P.P. Oliveira, C. Santos-Buelga, I.C.F.R. Ferreira. RSC Advances, 2015, 5, 14756-14767