

RAD 7



**BOOK OF
ABSTRACTS**

SEVENTH
INTERNATIONAL
CONFERENCE
ON RADIATION
IN VARIOUS FIELDS
OF RESEARCH

June 10-14, 2019
Herceg Novi
Montenegro



TABLE OF CONTENTS

A INVITED TALKS

Marina Frontasyeva	Atmospheric deposition of radionuclides – Assessment based on passive moss biomonitoring	2
Sebastien Incerti, Ivan Petrovic, Aleksandra Ristic-Fira	Monte Carlo simulation of early biological damage induced by ionizing radiation at the DNA scale: Overview of the Geant4-DNA project	3
Eiliv Steinnes	Radioecological studies in Norway related to the fallout from the Chernobyl accident	4
Kristina Gopcevic	Matrix metalloproteinases: From structure to function	5
Beata Brzozowska-Wardecka, Alice Sollazzo, Lei Cheng, Maciej Gałeczki, Adrianna Tartas, Lovisa Lundholm, Andrzej Wójcik	Studies on DNA damage and repair in cells exposed to mixed beams of different ionising radiation qualities	6
Igor Belyaev, Leonardo Makinistian	Towards ELF magnetic fields for the treatment of cancer	7

B PLENARY TALK

Jelena Ajtić, Vladimir Djurdjevic, Darko Sarvan, Erika Brattich, Miguel-Angel Hernández-Ceballos, Benjamin Zorko, Dragana Todorović	Temporal and spatial distribution of the beryllium-7 activity concentration in the surface air in Europe	9
---	---	---

01 BIOCHEMISTRY

Šaćira Mandal, Adlija Čaušević, Sabina Semiz	Free fatty acids and hepatic activity in Type 2 diabetes	11
Sanja Petrovic, Jelena Zvezdanovic, Sasa Savic, Dragan Cvetkovic, Aleksandar Lazarevic, Dejan Markovic	UVB irradiation impact on chlorophyll degradation in methanol/water solutions monitored by UHPLC/DAD-ESIMS analysis	12

Nataša Avramović, Lidija Izrael-Zivković, Ivanka Karadžić	Influence of different heavy metal ions on bacterial strain <i>P. aeruginosa san-ai</i> and correlation with produced exopolysaccharide biosurfactants	13
Nataša Avramović, Lidija Izrael-Zivković, Ivanka Karadžić	Combined effects of heavy metal ions and antibiotics on bacterial strain <i>P. aeruginosa san-ai</i>	14
Sasa Savic, Sanja Petrovic, Zivomir Petronijevic	Identification of degradation products of quercetin in reaction with horseradish peroxidase by UHPLC-DAD-HESI-MS/MS method	15

02 BIOINFORMATICS

Silviya Nikolova, Diana Toneva, Andrey Gizdov, Stanislav Harizanov, Ivan Georgiev	Cross-sectional automatic assessment of the degree of sagittal suture closure on μCT volumetric images of dry skulls applying artificial neural network and machine learning techniques	17
Diana Toneva, Silviya Nikolova, Gennady Agre, Ivan Georgiev, Nikolai Lazarov	Excavation of the most distinctive characteristics in the metopic skull configuration by applying data mining techniques	18
Joanna Czub	“Matrix” – A robot control program to determine the ion beam profile	19
Joanna Czub	“Stolik” – A computer program to control the irradiation of biological material in HIL	20

03 BIOMATERIALS

Katarzyna Roszek, Paulina Bolibok, Monika Bal, Artur Terzyk, Marek Wiśniewski	Modern nanomaterials for cell protection from UV-initiated damage	22
Paulina Bolibok, Katarzyna Roszek, Marek Wiśniewski	Skin UV protection – new application of graphene oxide	23
Jasna Vujin, Weixin Huang, Sylwia Ptasinska, Radmila Panajotovic	Effects of water on thin films consisting of biomolecules and 2D-materials	24
Jasna Vujin, Martina Gilić, Radmila Panajotović	Application of 2D-materials in building biomolecular heterostructures	25

04 BIOMEDICAL ENGINEERING

Remon Pop-Iliev, Pedram Karimipour Fard, Ghaus Rizvi	Design of 3D polymeric bone tissue scaffolds for optimal degradation	27
Dragos Manea, Mihaela Antonina Calin, Sorin Viorel Parasca, Andrei Museteanu	Classification of the hyperspectral image of a basal cell carcinoma using artificial intelligence	28

Mihaela Antonina Calin, Sorin Viorel Parasca, Ileana Carmen Boiangiu, Dragos Manea, Roxana Savastru	Hyperspectral imaging for real-time detection and visualization of lip cancer: A pilot study	29
---	---	----

05 BIOMEDICINE

Vladimir Jurišić	Cell isolation with the help of immunomagnetic beads and labeling with monoclonal antibodies depending on the magnetic field strength	31
Ekaterina Filippova	Peripheral blood mononuclear cell application in the induced bullous keratopathy	32
Olga Pechanova, Radoslava Rehakova, Michaela Kosutova, Martina Cebova	Effects of statin and sesame oil therapy in experimental metabolic syndrome	33
Stanislav Pavelka	Radiometric studies of relations between leptin and thyroid hormones metabolism in white adipose tissue	34
Stanislav Pavelka	The influence of supplemental n-3 PUFA in diet and altered thyroid status of rats on their lipid metabolism	35
Olga Molchan, Polina Shabunya, Svetlana Fatychava	Effects of UV and green LED light on the photosynthesis, redox state and indole alkaloids biosynthesis in medicinal plants and <i>in vitro</i> cultures	36
Fedor Jagla, Olga Pechanova	Sensorimotor integration – Experimentally unkept expression of brain integration functions	37
Anna A. Oleshkevich	Threshold of safety of influence of continuous ultrasound on animal leukocytes	38
Marta Poplawska, Olga Brzezinska, Grzegorz Galita, Joanna Makowska, Tomasz Poplawski	Oxidative DNA damage and repair in rheumatoid arthritis – A correlation with the key BER genes polymorphisms	39
Marta Poplawska, Olga Brzezinska, Grzegorz Galita, Joanna Makowska, Tomasz Poplawski	Deficiency of the NHEJ and BER proteins is correlated with inefficient DNA repair in rheumatoid arthritis	40
Edina Bilić-Komarica	Risk factors and their impact on diabetes mellitus in elderly people	41
Valeriy Zaporozhan, Andrey Ponomarenko	Possible mechanism of immune response utilizing molecular probing of antigens by protein-miRNA complexes	42

Marijana Stanojevic-Pirkovic, Marija Andjelkovic, Ivanka Zelen, Marina Mitrovic, Ivana Nikolic, Milan Zaric, Petar Canovic, Vladimir Jurisic, Olgica Mihaljevic, Dragan Milovanovic	The importance of determining mineral bone density and vitamin D in schizophrenic patients treated with antipsychotics	43
---	---	----

06 BIOPHARMACEUTICALS

Anna Antsiferova, Marina Kopaeva, Vyacheslav Kochkin, Pavel Kashkarov, Mikhail Kovalchuk	Influence of chronic low-dose administrations of silver nanoparticles on cognitive functions of mammals and identification of the effect reasons	45
---	---	----

07 BIOPHYSICS

Nadezda Sergeenko	Influence of near earth electromagnetic resonances on human cerebrovascular system in time of heliogeophysical disturbances	47
Yaroslav Bobitski, Iryna Yaremchuk, Tetiana Bulavinets	Spectral characteristics of laser-irradiated micro and nanostructures on the base of nanoshells under plasmon resonance conditions	48
Liliya Batyuk, Natalya Kizilova, Vladimir Berest, Oksana Muraveinik	Hydration changes of the red blood cell membranes of gastric cancer patients evoked by radiation therapy	49
Nadezhda Kudryasheva, Rosa Alieva, Tatiana Rozhko, Alena Olada, Ekaterina Kovel, Anna Sachkova	Chemical and radiation toxicity via luminescent assay systems of different complexity: Bacterial cells, enzyme reactions, and fluorescent proteins	50
Ekaterina Kovel, Nadezhda Kudryasheva, Anna Sachkova	Biological activity of carbonic nano-structures of natural and artificial origin	51
Roza Alieva, Nadezhda Kudryasheva	Coelenteramide-containing fluorescent proteins as perspective bioassays for toxicity monitoring	52
Anna A. Oleshkevich	Co-directed influence of mitagenes and modulated ultrasound on cells of various origin	53
Anna A. Oleshkevich, Svetlana A. Komarova, Anna V. Novikova	Possibilities of mathematical non-linear-dynamics- method application in laboratory biophysical expertise	54
Anna Sachkova, Ekaterina Kovel, Olga Nefedova, Nadezhda Kudryasheva	Bioluminescent assays as sensitive sensors for evaluating the biological activity of humic substances	55
Werner Hofmann, Renate Winkler-Heil, Herbert Lettner, Alexander Hubmer	Simulation of radon transfer from thermal water through the skin in radon therapy	56

08 BIOTECHNOLOGY

Violeta Jakovljevic, Natasa Djordjevic, Zana Dolicanin, Miroslav Vrvic	The effect of a synthetic detergent on the production of some biotechnological useful metabolites by <i>Mucor racemosus</i>	58
Sang Hoon Kim, Yeong Deuk Jo, Jin-Baek Kim, Si-Yong Kang	Optimal condition of gamma-rays, 45, and 100 MeV proton ions for mutation induction in <i>Cymbidium</i> hybrid, RBo03	59
Sang Hoon Kim, Yeong Deuk Jo, Jin-Baek Kim, Si-Yong Kang	Mutation frequency and spectrum of the <i>Cymbidium</i> hybrid, RBo03, according to diverse gamma-ray treatments	60
Violeta Jakovljevic, Natasa Djordjevic, Zana Dolocanin, Miroslav Vrvic	Synergistic effect of <i>Penicillium verrucosum</i> and <i>Geotrichum candidum</i> on enhanced protease production by submerged fermentation	61

09 CANCER RESEARCH

Radostina Alexandrova, Lora Dyakova, Tanya Zhivkova, Zdravka Petrova, Milena Glavcheva, Boyka Andonova-Lilova, Abudulkadir Abudalleh, Rossen Spasov, Gabriela Marinescu, Daniela-Cristina Culita, Luminita Patron	3D cancer cell colonies as reliable model systems in the search for new antitumor agents	63
Elena Gershtein, Irina Goryatcheva, Denis Naberezhnov, Nikolay Kushlinskii	Soluble forms of the immune check-point receptor PD-1 and its ligand PD-L1 in peripheral blood of patients with various tumors: Clinical and pathologic correlations and prospect	64
Kamila Butowska, Witold Kozak, Janusz Rak, Jacek Piosik	Synthesis and characterization of conjugated doxorubicin for drug delivery	65
Edina Bilić-Komarica	Causes of hepatocellular cancer in same number of women and man who have chronic hepatitis B and C etiology	66
Radostina Alexandrova, Zdravka Petrova, Desislav Dinev, Boyka Andonova-Lilova, Rossen Spasov, Gabriela Marinescu, Daniela-Cristina Culita, Luminita Patron	Ru(III) complexes with schiff bases effectively inhibit 2D and 3D growth of cultured human and animal tumor cells	67
Svetlana Vasilievna Chulkova, Evgeny Vyacheslavovich Glukhov, Lyudmila Yuryevna Gritsova, Elena Nikolaevna Sholokhova, Nikolay Nikolayevich Tupitsyn	Humoral immunity in patients with gastric cancer: The role of B-1 lymphocytes in the antitumor immunity	68

Svetlana Vasilievna Chulkova,
Natalya Vasilyevna Lepkova,
Angelina Vladimirovna Egorova

Clinical and biological factors forecast metachronous breast cancer

69

10 ENVIRONMENTAL CHEMISTRY

Yulia Vosel, Sergey Vosel, Irina Makarova, Mikhail Melgunov

Geochemistry of 234 , 238 U isotopes in modern carbonate sediments of small lakes (Baikal Region)

71

Ivan Pozdnyakov, Yuliya Tyutereva, Ekaterina Mordvinova, Victoria Salomatova, Petr Sherin, Marina Parkhats, Yong Chen, Zizheng Liu

Photodegradation of selected micropollutants stimulated by photolysis of natural humic substances: A mechanistic study

72

Jong-Myoung Lim, Ji-Young Park, Hyuncheol Kim, Mee Jang, Won-Young Kim, Wan-Ro Lee

Rapid analysis of uranium and plutonium isotopes in environmental samples using inductively coupled plasma mass spectrometry

73

Inga Zinicovscaia, Rodica Sturza, Irina Gurmeza, Konstantin Vergel, Svetlana Gundorina, Marina Frontasyeva

Study of metal accumulation in the soil–leaf–fruit system using neutron activation analysis

74

Dmitrii Grozdov, Inga Zinicovscaia, Liliana Cepoi, Tatiana Chiriac, Tatiana Mitina

Silver removal from batch systems using *Arthrospira (spirulina) platensis* biomass

75

Tatjana Trtić-Petrović, Otilia Ana Culicov, Roman Balvanović, Andjelka Petković

Instrumental neutron activation for analysis of spatial distribution of heavy metals in surface sediments of the Danube River

76

Branka Petković, Larisa Ilijin, Dajana Todorović, Marija Mrdaković, Milena Vlahović, Anja Grčić, Vesna Perić-Mataruga

Motor behaviour and energy metabolism of *Blaptica dubia* in artificial magnetic fields

77

Marija Šljivić-Ivanović, Mihajlo Jović, Slavko Dimović, Ivana Smičiklas

Optimization of Sr-ion extraction from the contaminated soil using Box-Benken design

78

Juan F. Facetti–Masulli, Peter Kump, Mirna Delgado

Trace and minor elements in bottom sediments of selected rivers and brooks from Eastern Paraguay by X-ray fluoresce

79

Otilia Culicov, Marina Frontasyeva, Inga Zinicovscaia

Some applications of neutron activation analysis: An updated review of investigations at IBR-2 reactor

80

Grzegorz Boczkaj, Michał Gałgól, Elvana Cako, Kirill Fedorov

Sonocavitation and hydrodynamic cavitation based advanced oxidation processes (AOPs) for water and wastewater treatment

81

<p>Evgeny Gerber, Anna Romanchuk, Ivan Pidchenko, Christoph Hennig, Alexander Trigub, Stephan Weiss, Andreas Scheinost, Andre Rossberg, Stepan Kalmykov, Kristina Kvashnina</p>	<p>Probing plutonium dioxide nanoparticles with various synchrotron methods</p>	<p>82</p>
<p>Kseniya Mezina, Yulia Vosel, Mikhail Melgunov, Dmitrii Belyanin, Boris Shcherbov, Inna Zhurkova, Maksim Rubanov</p>	<p>^7Be, ^{210}Pb and ^{137}Cs in the biogeocenosis components of the Arctic and southern zones of Western Siberia</p>	<p>83</p>
<p>Yulia Vosel, Sergey Vosel, Irina Makarova, Mikhail Melgunov</p>	<p>Geochemistry of ^{234}U, ^{238}U isotopes in modern carbonate sediments of small lakes (Baikal Region)</p>	<p>84</p>
<p>Nikolai Alov, Pavel Sharanov</p>	<p>Total reflection X-ray fluorescence analysis of copper and copper-zinc ores from South Ural mountains</p>	<p>85</p>
<p>Nikolai Alov, Pavel Sharanov</p>	<p>Using totally reflected X-ray radiation for environmental monitoring of Moscow small river waters</p>	<p>86</p>
<p>Anna Goi</p>	<p>Removal of natural radioactivity from groundwater used as a drinking water source</p>	<p>87</p>

11 ENVIRONMENTAL PHYSICS

<p>Aleksandra Mihailović, Ivana Lončarević, Nebojša M. Ralević, Selena Samardžić, Ljuba Budinski-Petković, Jordana Ninkov, Ljubo Nedović</p>	<p>Correlation of available and total lead content in urban soil</p>	<p>89</p>
<p>Biljana Vuckovic, Natasa Todorovic, Jovana Nikolov, Jelena Zivkovic Radovanovic, Ljiljana Gulan</p>	<p>Radon measurement in water from public fountains in rural areas in northern part of Kosovo and Metohija</p>	<p>90</p>
<p>Olga Maltseva</p>	<p>The total electron content of the ionosphere as the witness and object of space weather influence</p>	<p>91</p>
<p>Slavica Brkić, Blanka Tuka</p>	<p>Empirical model for estimating solar radiation based on air temperature for Sarajevo area, Bosnia and Herzegovina</p>	<p>92</p>
<p>Blagorodka Veleva, Elena Hristova, Lyuben Dobrev, Stefan Georgiev, Nastya Vankova</p>	<p>Recent results of atmospheric radioactivity measurements in Bulgaria based on NIMH activity</p>	<p>93</p>
<p>Selena Samaradžić, Uranija Kozmidis Luburić, Milan Cvijanović, Robert Lakatoš, Aleksandra Mihailović, Tomas Nemeš, Milka Veselinović</p>	<p>Analysis of the measured noise values in different types of industrial processes and the potential risk of NIHL</p>	<p>94</p>

Gordana Žauhar, Marija Čargonja, Darko Mekterović, Paula Žurga, Jagoda Ravlić Gulan	Application of X-ray fluorescence technique (XRF) for determination of heavy metal concentrations in hair of workers at metal workshop	95
Dora Krezhova, Kalinka Velichkova	Hyperspectral leaf reflectance and red edge position as indicators of diseases in plants	96
12 ENVIRONMENTAL POLLUTION		
Maja Turk Sekulić, Maja Brborić, Borivoje Stepanov, Sabolč Pap, Jelena Radonić	Supporting climate change vulnerability and adaptation assessments at the Danube River: DDT impact	98
Maja Turk Sekulic, Olivera Paunovic, Sabolc Pap, Sanja Radovic	Functionalisation of biochar derived from lignocellulosic biomass using microwave technology for application in wastewater treatment	99
13 MATERIALS SCIENCE		
Ivana Lončarević, Ljuba Budinski-Petković, Aleksandra Mihailović, Zorica Jakšić, Slobodan Vrhovac	Reversible random sequential adsorption of polydisperse mixtures on a triangular lattice	101
R. Lok, U. Gurer, O. Yilmaz, A. Varol, H. Karacali, A. Aktağ, E. Yilmaz	Smart mask designs and electrical properties of platinum temperature sensors	102
R. Lok, H. Karacali, A. Aktağ, E. Yilmaz	Examination of Pt/Al₂O₃/p-Si/Al MOS capacitors under different temperatures	103
14 MEDICAL DEVICES		
Ekaterina Filippova	Structural changes of the cornea after the intrastromal implantation of plasma modified PET track-etched membrane	105
Evgeniya Gorbunova, Ekaterina Filippova	Morphological features of the musculoskeletal stump eye formation using titanium nickelide construction	106
Yongseok Lee, Shiva Abbaszadeh	Translating high spatial resolution detector based on cadmium zinc telluride to clinical positron emission tomography	107
Anatoliy Korobov, Vsevolod Korobov, Oksana Shevchenko, Yulia Ivanova, Andrey Mandryka	A. Korobov – V. Korobov phototherapeutic device “BARVA-SDS” for treatment and prevention of diabetic foot	108
Yuriy Kovalenko, Sergei Miroshnychenko, Andrei Nevhasymy	A digital basic X-ray system with tomosynthesis – New possibilities of the X-ray machine of the World Health Organization	109

Irina M. Yeshchina, Irina N. Kodinec, Dinara J. Nurbaeva	Specific changes of ultrasound scan of organs and blood biochemical indicators in vinyl chloride production workers: Dose-dependent interrelationship	110
--	--	-----

15 MEDICAL IMAGING

Holger Stephan	Development of nuclear and optical dual-labelled agents for cancer imaging	112
Milica Jeremic Knezevic, Aleksandar Knezevic, Daniela Djurovic Koprivica, Bojana Milekic, Dubravka Markovic, Tatjana Puskar, Jasmina Boban	Magnetic resonance evaluation of the temporomandibular joint disc shape	113
Yuriy Kovalenko	Improvement of primary level X-ray diagnostics for the purpose of raising primary care efficiency	114
Dora Zlatareva, Diana Toneva, Silvia Nikolova, Vasil Hadjidekov	Application of medical CT imaging for investigation of sex differences in facial soft tissue thicknesses	115
Dora Zlatareva, Violeta Groudeva	Brain, head and neck vascular malformations diagnosed by magnetic resonance and computed tomography angiography	116
Boyana Deneva, Katja Roemer, Guntram Pausch, Andreas Wagner, Wolfgang Enghardt, Toni Koegler	Single Plane Compton Imaging	117
Olena Sharmazanova, Hanna Kirik	Diaphyseal fracture of the X-ray scoring healing of the tibia	118
Olena Sharmazanova, Yuriy Kovalenko, Larisa Urina	Application of digital tomosynthesis in lung pathology	119
Aleksandar Pavlović, Vladimir Ostojić, Vladimir Petrović	Image based estimation of absorbed patient dose in radiography	120
Z. Idiri, K. Boukefoussa, M. Belaabed, S. Bitam	Simulation and optimization of a first generation gamma transmission computed tomography using MCNP5 code	121

16 MEDICAL PHYSICS

Irena Muçollari, Rejnardo Tafaj, Bledar Cullhaj, Blerina Myzeqari, Valbona Bali	Isocentric accuracy with Winston–Lutz test for LINAC-based stereotactic radiosurgery treatments	123
Liudmyla Aslamova, Ielyzaveta Kulich, Nadiia Melenevska	Reasons and basis for implementation of medical physicists certification in Ukraine	124

Liudmyla Aslamova, Ielyzaveta Kulich, Nadiia Melenevska	Safety culture in syllabus on medical physics in Ukraine	125
Taylan Tuğrul, Osman Eroğul	Determination of initial electron parameters by means of Monte Carlo simulations for the siemens artiste Linac 6 MV photon beam	126
Vladimir Panteleev, Anatoly Barzakh, Leonid Batist, Dmitry Fedorov, Victor Ivanov, Pavel Molkanov, Stanislav Orlov, Maxim Seliverstov, Yuri Volkov	A new method for production of radionuclide-generator $^{212}\text{Pb}/^{212}\text{Bi}$	127
Giuseppe Palma, Laura Cella	A new formalism of dose-surface histograms for robust modeling of skin toxicity in radiation therapy	128
Sohyun Ahn, Min-Joo Kim, Sanghyuk Song, Inyoung Wang, Junetaek Sin	Measurement of output factor for small radiation field using solid water phantom	129
Sohyun Ahn, Sanghyuk Song, Inyoung Wang, Junetaek Sin	Monte Carlo simulation and measurement for improving dose uniformity of total skin electron beam therapy with three ports	130
Ana Diklić, Doris Šegota, Slaven Jurković	Investigation of dose indicators for breast cancer CT localization procedures in radiation therapy in Croatia	131
Marina Troshina, Sergey Dyuzhenko, Ekaterina Koryakina, Vladimir Potetnya, Olga Golovanova, Sergey Koryakin, Stepan Ulyanenko	Treatment plan verification in proton therapy using the FBX chemical dosimeter	132
Yaroslav Bobitski, Adriana Barylyak, Igor Demkovich	Theoretical substantiation of the protocol of laser thermal disinfection of the root canal system of the tooth	133
Vladimir Klimanov, Maria Kolyvanova, Janneta Galjautdinova	Small fields and non-equilibrium condition for 6 and 18 MV photon beam dosimetry	134
Sergei Akulinichev, Ivan Yakovlev, Dmitry Kokoncev, Arkadiy Yuris, Anton Nikitenkov	Advantages of ytterbium sources for HDR brachytherapy	135
Doris Segota, Ana Diklic, Maja Karic, Slaven Jurkovic	Assessment of radiation doses to neonates from chest radiography at University Hospital Rijeka	136
Kerem Duruer, Durmuş Etiz, Haluk Yücel	Investigation of EBT3 radiochromic film behaviour in high dose range of 6 MV photon and 6 MeV electron beams by employing the most suitable scanning channel of three-color flatbed scanner	137

17 MEDICINAL CHEMISTRY

Anife Ahmedova, Boyan Todorov	Radiopharmaceuticals for theranostic applications	139
Miroslava Stankovic, Igor Stojanovic, Ivana Zlatanovic, Vesna Milovanovic, Gordana Stojanovic	An overview of the effect of <i>Hypogimnia physodes</i>, <i>Hypogimnia tubulosa</i>, <i>Umbilicaria crustulosa</i> and <i>Umbilicaria cylindrica</i> acetone extracts on frequencies and distribution of micronucleus in human lymphocytes	140
Safija Herenda, Edhem Hasković, Denis Hasković	Determination of the redox potential of drugs for cardiovascular diseases	141
M. Cvijović, Z. Nedić, P. Đurđević, V. di Marco	ATR–FTIR spectroscopy in chlorpyrifos residue investigation	142
Galya K. Toncheva, Nikolina P. Milcheva, Siana K. Chobanova, Mariela G. Kalendarska, Kiril B. Gavazov	Complex formation in a low toxic organic solvent-based liquid-liquid extraction-chromogenic system for vanadium(V), nickel(II) and copper(II)	143

18 MICROWAVE, LASER, RF, UV AND SOLAR RADIATIONS

Natalya Chueshova, Frantishek Vismont, Igor Cheshik	Reproductive system of male rats at the post-natal stage of development under the influence of electromagnetic radiation from a mobile phone (1745 MHz)	145
Marek Wiśniewski, Paulina Bolibok, Monika Bal, Wojciech Zięba, Katarzyna Roszek	Mechanistic aspects of GO sandwich formation due to UV radiation	146
Michel Israel, Petya Ivanova, Tsvetelina Shalamanova, Mihaela Ivanova, Victoria Zaryabova	Exposure and risk assessment connected to the health and safety of workers in the production of electricity	147
Victoria Zaryabova, Tsvetelina Shalamanova, Michel Israel, Hristina Petkova	Public concern of electromagnetic exposure in Bulgaria – A case study of overexposure	148
Mihaela Ivanova, Michel Israel, Mariyana Stoynovska	Measurement, exposure and risk assessment of sources of optical radiation in working environment	149
Jelena Jovanovic, Borivoj Adnadjevic	A rapid and efficient microwave method to prepare graphene foam	150
Borivoj Adnadjevic, Jelena Jovanovic	Novel microwave assisted synthesis of fullerene	151
Paula Corte-Leon, Aleksandra Allue, Koldo Gondra, Valentina Zhukova, Mihail Ipatov, Juan Maria Blanco, Arkady Zhukov	Smart composites with embedded magnetic microwire inclusions allowing non-contact stresses and temperature monitoring	152

Arcady Zhukov, Mihail Ipatov, Paula Corte-Leon, Juan Maria Blanco, Valentina Zhukova	Giant magnetoimpedance effect at GHz frequencies in amorphous microwires	153
Nurhan Türker Tokan, Sultan Aldirmaz Çolak, Muhammet Donmez	Complete analysis of Vivaldi antennas	154
Fikret Tokan, Mücahit Alçep	Perforated narrow-band dielectric lens antenna design	155
Petr Skorobogatov, Konstantin Epifantsev, Alexander Shemohaev, Vitalij Telets	Method and mean of IC's testing under multiple electrical overstresses	156
Zorica Podrascanin, Zoran Mijatovic, Ana Firanj Sremac	Comparison of ground-based and OMI satellite UVI measurements in Novi Sad	157
Andriy Kovalskiy, Maria White, Joshua Allen, Justin Oelgoetz, Roman Golovchak, Oleh Shpotyuk, Karel Palka, Stanislav Slang, Miroslav Vlcek	Transient optical effects in spin-coated chalcogenide glass thin films induced by UV radiation	158
B. Gustavino, V. Maselli, L. Salvi, G. Paoluzzi, E. Santovetti, S. Filippi, R. Meschini	DNA-damage induced in human lymphocytes by exposure to 915 MHz mobile-phone radiation: Does smoking habit modulate its genotoxicity?	159
Bianca Gustavino, Federica Maruccia, Gabriele Gentile	Induction of DNA damage by UVB radiation in erythrocytes of scaly reptiles and protective role of skin pigmentation	160

19 NEUTRON AND HEAVY ION RADIATIONS

Roberto Bedogni, Katia Alikaniotis, Marco Costa, Valeria Monti, Elisabetta Durisi, Oriol Sans-Planell, Jose-Maria Gomez-Ros	Radiation resistant compact sensors for multipurpose neutron diagnostics	162
Adrian Florinel Bucsa	Neutron activation analysis – ko standardization applied on Gen IV nuclear materials	163
Renat Ibragimov, Ilia Urupa, Evgeny Tyurin, Elena Ryabeva	Spectrometry of fast neutrons with energy value of around 14 MeV produced in the d-t reaction in a gas filled neutron tube by using a radiation diamond detector	164
Sergey Kulikov, Maksim Bulavin	The irradiation facility at the IBR-2 research reactor	165
Kiril Krezhov	Neutron diffraction study of $\text{La}_{0.6}\text{Ca}_{0.4}\text{CoO}_{3-d}$ as a promising zinc-air rechargeable battery material	166

Kiril Krezhov, Tatyana Koutzarova, Svetoslav Kolev, Petya Peneva	Structure and magnetic properties of nanosized Al-substituted barium hexaferrite powders	167
20 NUCLEAR MEDICINE		
Turan Şahmaran, Salih Sinan Gültekin	Compliance and reproducibility of radioiodine I-131 uptake test measurements	169
Oleg Kochnov, Natalia Zorina	Production of medical radionuclide Mo-99 from low-enriched uranium	170
Turan Şahmaran, Mehmet Bayburt	Determination of the radiation dose received by the patient during positron emission tomography – computed tomography (PET – CT) procedures	171
Michael Zhukovsky, Hesham M.H. Zakaly, Mostafa Y. A. Mostafa, Darya Deryabina	A possible use of ¹⁷⁷Lu based radiopharmaceuticals for palliative therapy of bone metastases	172
Esra Arslan, Tamer Aksoy	Quantitative 18 FDG PET CT metabolic parameters and overall survival in small cell lung cancer (SCLC)	173
Esra Arslan, Tamer Aksoy	Is there any benefit to screening prone position versus supine breast 18 FDG PET CT?	174
Tamer Aksoy, Ozlem Erez, Cihan Gundogan	Impact of different vendors on SPECT-CT dosimetry for hepatic transarterial radioembolization	175
Tamer Aksoy, Esra Arslan	PET/CT findings of a soft tissue tumor elastofibroma dorsi	176
Vojislav Antic, Mirjana Petrovic, Zivorad Savic	Software evaluation of possible incidents and nearmisses in nuclear medicine	177
Silvija Lučić, Andrea Peter, Dolores Srbovan, Milena Spirovski	Lutetium DOTATATE dual time post therapy scintigraphy	178
21 PHARMACEUTICAL SCIENCES		
Marina Filimonova, Lyudmila Shevchenko, Alina Samsonova, Tatiana Podosinnikova, Victoria Makarchuk, Alexander Filimonov	Nitric oxide as a basis for the creation of new promising drugs	180
Branka Dražić, Slađana Tanasković, Mirjana Antonijević-Nikolić	Preparation and study of two new mixed ligand Cu(II) complexes	181

22 RADIATION CHEMISTRY

Marcin Kozanecki, Paulina Maczugowska, Piotr Sawicki, Sebastian Sowinski, Krzysztof Halagan, Piotr Ulanski, Slawomir Kadlubowski	An initiation process in radiation induced polymerization in an aqueous solution – Simulations and experiments	183
Karina Falkiewicz, Witold Kozak, Janusz Rak	Can 6-substituted pyrimidine nucleosides sensitize DNA damage induced by ionizing radiation?	184
Sergey Bazhukov, Marina Pervova, Irina Bazhukova	Radiolysis of organic compounds under electron beam irradiation during radiation sterilization	185
Zaiana Dzhivanova, Elena Belova, Mikhail Kadyko	Regeneration of radiation-degraded extraction systems used in the reprocessing of spent nuclear fuel (SNF)	186
Zaiana Dzhivanova, Elena Belova, Ivan Skvortsov	Radiation-thermal stability of extraction systems based on diamides of heterocyclic dicarboxylic acids in diluents F-3 and FS-13	187
Slawomira Janiak, Henryk Bem	The correlation between radon in soil and indoor radon concentrations in houses in the City of Kalisz, Poland	188
Daria Mazurek, Slawomira Janiak, Henryk Bem	^{222}Rn and ^{226}Ra radionuclides in drinking water in the Kalisz Area of Poland	189
Krzysztof Piechocki, Marcin Kozanecki, Slawomir Kadlubowski	Radiation Induced Polymerisation and Crosslinking as an effective method for poly(olygoether methacrylates) smart materials synthesis	190
Krzysztof Piechocki, Marcin Kozanecki	POEGMAs based smart drug delivery systems prepared by Radiation Induced Polymerization and Crosslinking	191
Aleksandar Lazarević, Sanja Petrović, Jelena Stanojević, Dragan Cvetković, Jelena Zvezdanović	Irreversible bacteriochlorophyll a degradation induced by visible light in methanol solutions	192
Huanhuan Liu	Radiation induced drug release from PCL-PEO micelles	193
Radosław Wach	Radiation reactions in polysaccharides: Crosslinking vs. scission	194

23 RADIATION DOSIMETERS

Matanat Mehrabova, Hidayat Nuriyev, Huseyn Orujov, Niyazi Hasanov, Aybeniz Abdullayeva	Electrical and photoelectrical properties of CdTe/CdMn(Fe)Te thin-film heterojunctions	196
--	---	-----

Srboljub Stanković, Aleksandar Jakšić, Boris Lončar, Dragana Nikolić, Mirjana Radenković	One numerical method for determining the absorbed dose of gamma and X radiation in the ZrO₂ dielectric within the MOS capacitor	197
Markéta Koplová, David Zoul, Vít Rosnecký, Helena Štěpánková, Václav Římal, Josef Štěpánek	Study of molecular mechanisms of radiochromic phenomenon in polycarbonate	198
Slavica Porobić, Milena Marinović-Cincović, Dragana Jovanović, Dušan Mijin	Radiation, thermal and optical properties of PVA films containing arylazo pyridone dyes	199
Aleksandra Sokić, Luka Perazić, Jovana Knežević	Measurement of ambient dose equivalent H*(10) in the surroundings of nuclear facilities in Serbia and abandoned uranium mine in Kalna via OSL dosimetry	200
Krzysztof Chelminski, Wojciech Bulski	The comparison of sensitivity of gafchromic EBT film types	201
G. Kramberger, V. Cindro, D. Flores, S. Hidalgo, B. Hiti, M. Manna, I. Mandić, M. Mikuž, M. Mikuž, D. Quirion, G. Pellegrini, M. Zavrtanik	Simulation and measurements of 3D silicon detectors timing performance	202
Stefan Ilić, Aleksandar Jevtić, Nikola Đikić, Goran Ristić	Smart Geiger Muller counter	203

24 RADIATION EFFECTS

Paulina Filipczak, Piotr Chudobinski, Szymon Bres, Malgorzata Matusiak, Slawomir Kadlubowski, Marcin Kozanecki	An impact of electron-beam and laser irradiations on Ag nanoparticles stabilized by sodium tricitrate	205
Valentyn Laguta, Maksym Buryi, Martin Nikl	Trapped-electron and trapped-hole centers in oxide scintillators	206
Maksym Buryi, Valentyn Laguta, Akira Yoshikawa, Martin Nikl	Point defect origin and local structure in LiCaAlF₆ single crystals	207
Oleh Shpotyuk, Valentina Balitska, Mykhaylo Shpotyuk	On the phenomenological identity of radiation-induced effects in glassy chalcogenides under a prism of unified configuration-enthalpy model	208
Suzana Samaržija-Jovanović, Vojislav Jovanović, Branka Petković, Slaviša Jovanović, Gordana Marković, Milena Marinović-Cincović, Jaroslava Budinski-Simendić	The effect of UV irradiation on hydrolytic stability of urea-formaldehyde resins filled with thermally modified montmorillonite	209

Juan Antonio Garcia Pascual	Operational experience and performance with the ATLAS pixel detector at the large hadron collider at CERN	210
Wojciech Migdał, Urszula Gryczka, Sylwester Bulka, Dagmara Chmielewska-Śmietanko, Magdalena Ptaszek, Anna Jarecka-Boncela	Application of low energy electron beam for surface treatment of agricultural products	211
Dagmara Chmielewska-Śmietanko, Urszula Gryczka, Wojciech Migdał, Jarosław Sadło, Kamil Kopeć	Effect of electron beam irradiation on paper-based materials	212
Afrodita Ramos, Blagica Cekova	Safety features of irradiated food	213
Sergey Stefanovsky, Olga Stefanovsky, Michael Kadyko, Jana Glazkova	The effect of irradiation with accelerated electrons and gamma-rays on the oxidation state and structure of sodium-aluminum-iron-phosphate glasses	214
Denis Ukolov, Roman Mozhaev, Maxim Cherniak, Alexander Pechenkin	Radiation hardness estimation method of complex optoelectronic devices on YB:YAG laser with semiconductor laser pump	215
Slaviša Jovanović, Jaroslava Budinski-Simendić, Milena Marinović-Cincović, Gordana Marković, Vesna Teofilović, Dejan Kojić, Nevena Vukić, Vojislav Jovanović	The influence of network precursor ratio on the crosslinking and radiation resistance of hybrid elastomeric materials	216
Anna V. Novikova, Viktor E. Novikov, Anna A. Oleshkevich	Possible role of intravascular hemolysis in the pathogenesis of oxidant stress after sublethal ionizing and non-ionising radiation dose effect	217
Mikhail Ksendzuk, Marina Filimonova, Valentina Surinova, Alexander Filimonov, Tatyana Podosinnikova, Alina Samsonova	Nitrogen monoxide metabolites as the marker of acute radiation syndrome	218
Andrey Tugai, Tetiana Tugai, Viktor Zheltonozhsky, Marina Zheltonozhskaya, Olena Polischuk, Leinid Sadovnikov, Natalia Sergeichuk	Activation of lipid peroxidation (LPO) is one of the universal effects of chronic radiation exposure	219
Narendra Jain	Age associated tritium vulnerability in postnatally developing Swiss albino mouse cerebellum	220
Mirella Tanori, Arianna Casciati, Barbara Tanno, Paola Giardullo, Alessandro Zambotti, Carmela Marino, Caterina Merla, Mariateresa Mancuso	New therapeutic strategy for medulloblastoma: μS-Pulse Electric Field exposure targeting cancer stem cells to promote radiosensitization	221

<p>Ilaria De Stefano, Barbara Tanno, Simona Leonardi, Emanuela Pasquali, Francesca Antonelli, Paola Giardullo, Arianna Casciati, Mirella Tanorii, Gabriele Babini, LDLensRad Consortium, Simonetta Pazzaglia, Mariateresa Mancuso</p>	<p>Radiation-induced cataract in <i>Ptch1</i>^{+/-} mice: Exploring the role of age, dose, dose rate and genetic background</p>	<p>222</p>
<p>Marko Milovanovic, Maciej Trzebinski, Michael Rijssenbeek, Karlheinz Hiller, Patrick Fassnacht, Tomas Sykora, Sebastian Grinstein, Marco Bruschi, Hasko Stenzel</p>	<p>Effects of radiation damage in ATLAS Roman Pots (ALFA & AFP)</p>	<p>223</p>
<p>Miroslav Vlcek, Karel Palka, Stanislav Slang, Liudmila Loghina, Anastasia Iakovleva</p>	<p>Radiation induced 3D structuring of chalcogenide glass thin films</p>	<p>224</p>
<p>Galina P. Zhurakovskaya, Svetlana V. Belkina</p>	<p>The influence of pharmaceuticals on the ionization and excitation of molecules while exposed to ionizing radiation</p>	<p>225</p>

25 RADIATION IN MEDICINE

<p>Mirjana M. Petrović, Živorad N. Savić, Katarina Ž. Savić, Sofija Ž. Savić, Aleksandra R. Vasiljević, Dušanka R. Petrović, Dragana D. Brakočević, Danica M. Kovljanić, Valentina S. Radunović, Vanja Puletić, Drina Lj. Janković, Aleksandar A. Vukadinović, Vojislav Antić, Vladimir Jurišić</p>	<p>Clinical significance of radioimmunoassay (RIA) and immunoradiometric assay (IRMA) in endocrinology</p>	<p>227</p>
<p>Ekaterina Shleenkova, George Kaidanovsky, Stepan Bazhin, Vladimir Iliyn</p>	<p>On the issue of control of equivalent doses of radiation for the eye lens for medical personnel</p>	<p>228</p>
<p>Đurđica Milković, Danica Batinić</p>	<p>Radiologic examination of urinary tract in children with special reference to ionizing radiation</p>	<p>229</p>
<p>Francisco Cutanda-Henriquez, Silvia Vargas Castrillon</p>	<p>Assessment of volume averaging effects in thimble ion chambers for flattening filter free photon beams</p>	<p>230</p>
<p>Darka Hadnađev Šimonji, Olivera Nikolić, Marijana Basta Nikolić, Olivera Ciraj Bjelac, Sanja Stojanović, Mirela Juković</p>	<p>Evaluation of radiation dose at optimized protocols for some standard MDCT examinations in a large university hospital</p>	<p>231</p>

Monica Cavallari, Laura Mantovani, Loredana D'Ercole, Nicoletta Paruccini, Raffaele Villa, Raffaella Soavi	Image quality and delivered dose in neuroradiological procedures	232
Luisa Alunni Solestizi	Possible use of CMOS image sensors in radioguided surgery with β emitters	233
Jan Slezak	New approach for prevention and treatment of radiation induced heart disease: Molecular hydrogen significantly reduces the effects of oxidative stress	234
Magdalena Długosz-Lisiecka, Teresa Jakubowska, Magdalena Zbrojewska	Activation of cyclotron construction elements	235
Narcisa Tribulova, Csilla Vicenczova, Barbara Szeiffova Bacova, Tamara Egan Benova, Branislav Kura, Chang Yin, Rakesh Kukreja	Myocardial connexin-43 and PKC signaling are involved in adaptation of the heart to irradiation-induced injury: Implication of miR-1 and miR-21	236
Barbara Szeiffova Bacova, Csilla Vicenczova, Branislav Kura, Tamara Egan Benova, Chang Yin, Rakesh C. Kukreja, Jan Slezak, Narcisa Tribulova	Irradiation-induced cardiac connexin-43 and miR-21 responses are hampered by treatment with atorvastatin and aspirin	237
Mihon Mirela, Ilie Simona, Carmen Manea ¹ , Chilug Livia	Improved radioanalytical methods for quality control of [¹⁸F]NaF	238

26 RADIATION MEASUREMENTS

Sung-Hee Jung, Ji-Ho Yoon	A study on preparation of HQ clathrate as gaseous radiotracer carrier	240
Jovana Nikolov, Natasa Todorovic, Andrej Vranicar, Péter Völgyesi, Éva Kovács-Széles	Comparison of non-destructive nuclear forensics methods for analysis of nuclear material	241
Michal Cieslak, Kelum A.A. Gamage, James Taylor	Study of modulation properties of tungsten-based coded-aperture	242
Taylan Tuğrul	Absorption ratio of treatment couch and effect on surface and build-up region doses	243
Mariia Pyshkina, Michael Zhukovsky, Alexey Ekidin	Testing of RAM ION dosimeter in operational fields	244
Magdalena Długosz-Lisiecka, Marcin Krystek, Michał Barasiński	Radiation monitoring report from sailing around the Antarctic continent, along and south of the 60th parallel	245
Tomas Nemes, Dusan Mrdja, Istvan Bikit	Random coincidences in the sum-peak method	246

Elena Shishkina, Alexandra Volchkova, Denis Ivanov, Yurii Timofeev, Bruce Napier	Ensuring the effectiveness of extensive EPR dosimetry study of combined radiation exposure	247
Natasa Todorovic, Jovana Nikolov, Ivana Stojkovic	Determination of ^{210}Pb in water by Cherenkov counting	248
Simona Ilie, Calin Alexandru Ur, Octavian Sima, Gabriel Suliman	Determination of the Co-60 source activity by using the sum-peak method	249
Ivana Stojković, Nataša Todorović, Jovana Nikolov	LSC screening of wastewater samples	250
Hana Assmann Vratislavská, Jaroslav Šoltés, Pavel Kůs, Hana Kořenková	Development of short-lived radioactive tracers for the description of processes influencing the migration of contaminants in the environment	251
Manssour Fadil, Ngoc-Duy Trinh, Marek Lewitowicz	Thick target neutron yields: Experimental program in GANIL to measure the double differential neutron fluxes generated by the interaction of heavy ions with thick targets	252
Deniz Bender, Rasit Turan, Merve Genc Unalan, Mustafa Unal, Özden Basar Balbasi, Ercan Yilmaz	A study on the performance the CdZnXTe1-X radiation detectors grown by Vertical Gradient Freeze (VGF) technique	253
Michael Schubert, Jürgen Kopitz, Kay Knoeller	Improved approach for LSC detection of ^{35}S aiming at its application as tracer for short groundwater residence times	254
Elena Katamanova, Elena Beigel, Kseniya Panchukova, Oksana Kalinina, Evgeniya Zayka	Use of contemporary diagnostic radiography methods in occupational diseases	255
Iurii Simirskii, Alexey Stepanov, Ilia Semin, Anatoly Volkovich	Radiation survey during research reactor dismantling	256
Andrej Vraničar, Nataša Todorović, Jovana Nikolov, Ivana Stojković, Jan Hansman, Branislava Tenjović, Miloš Travar, Miodrag Krmar	^{226}Ra in water measurement by non-Marinelli geometry and gamma spectrometry	257
Miloš Travar, Jovana Nikolov, Nataša Todorović, Andrej Vraničar, Jan Hansman, Dušan Mrđa	The ^{210}Pb correction for the self-absorption effect in EFFTRAN and Angle software	258
Ufuk Paksu, Birol Engin	ESR spectroscopy study of gamma irradiated dry yeast	259
Ana Sofia Silva, Maria de Lurdes Dinis	Distribution of the gamma dose rate measured in 15 Portuguese thermal establishments	260
Toshiyuki Onodera, Keitaro Hitomi	Photoresist on thallium bromide crystals for gamma-ray detector fabrication	261

Tariq F. Hailat, Molham M. Eyadeh, Khalid A. Rabaeh, Balázs G. Madas, Feras M. Aldweri	Dosimetric characterization of Methylthymol blue Fricke gel dosimeters using nuclear magnetic resonance and optical techniques	262
Seung Kyu Lee, Sang In Kim, Jungil Lee, Insu Chang, Jang-Lyul Kim, Hyoungtaek Kim, Min Chae Kim	Design and performance testing of the neutron detection module based on an inorganic scintillator for the neutron dosimetry	263
Alfonso Compagno, Nadia Cherubini, Maria Letizia Cozzella, Alessandro Lago, Luigi Lepore	ISOCS measurements: A way to improve radioactive waste characterization	264
Dusan Mrdja, Rade Marjanovic, Kristina Bikit-Schroeder, Istvan Bikit, Jaroslav Slivka, Sofija Forkapic, Tomas Nemes	Monte-Carlo simulation of coincidence background spectrum of large-volume NaI(Tl) detector	265
Kristina Bikit-Schroeder, Dusan Mrdja, Istvan Bikit, Jaroslav Slivka, Gergő Hamar, Gábor Galgóczi, Dezső Varga	Monte-Carlo simulation of the MUCA imaging system	266
Anna Bianchi, Valeria Conte, Anna Selva, Paolo Colautti, Alessio Parisi, Brigitte Reniers, Filip Vanhavere	Microdosimetry with a sealed mini-TEPC at the SOBP of CATANA	267
Elio Tomarchio	On the feasibility of dating the age of a nuclear incidental event by gamma-ray spectrometry of environmental samples	268
Monika Mietelska, Marcin Pietrzak, Aliaksandr Bantsar, Zygmunt Szepliński	Overview of recent nanodosimetric experiments with Jet Counter device	269
Alexey Stepanov, Iurii Simirskii, Nikolay Gromov, Iliia Semin, Vyachaslav Stepanov, Anatoly Volkovich	Survey of soil radioactive contamination in the basement premises of the reactor MR	270
Kristina Bikit-Schroeder, Dusan Mrdja, Istvan Bikit, Jaroslav Slivka, Gergő Hamar, Gábor Galgóczi, Dezső Varga	Investigation of light collection efficiency in plastic scintillators	271
Agata Walencik-Łata, Danuta Smółka-Danielowska	Analysis of radioactivity content in hard coal and products of coal combustion	272
Vyacheslav Stepanov, Oleg Ivanov, Sergey Smirnov, Victor Potapov, Alexey Danilovich	Application of remotely controlled collimated spectrometric systems in the works on dismantling the MR reactor and rehabilitation of the territory of NRC Kurchatov Institute	273

Stepan Bazhin, Ekaterina Shleenkova, George Kaidanovsky, Vladimir Iliyn	Comparative assessment of individual doses of radiation of personnel in Russia and the European countries	274
Gintautas Tamulaitis, Saulius Nargelas, Augustas Vaitkevicius, Alberto Gola, Alberto Mazzi, Mikhail Korjik	Influence of Mg codoping on carrier dynamics in GAGG:Ce scintillation crystals	275
Jan Kisiel	Natural radiation background measured within the BSUIN (Baltic Sea Underground Innovation Network) project	276
Jordanka Semkova, Rositza Koleva, Victor Benghin, Krasimir Krastev, Yuri Matviichuk, Borislav Tomov, Tsvetan Dachev, Stephan Maltchev, Plamen Dimitrov, Igor Mitrofanov, Alexey Malakhov, Dmitry Golovin, Maxim Mokrousov, Anton Sanin, Maxim Litvak, Andrey Kozyrev, Vladislav Tretyakov, Sergey Nikiforov, Andrey Vostrukhin, Vyacheslav Shurshakov, Sergey Drobyshhev	New results for the space radiation environment aboard the ExoMars Trace Gas Orbiter during the transit to Mars and in Mars orbit	277
Mikhail Petrichenkov, Vladimir Chudaev, Anatoliy Repkov, Vladimir Eksta, Nataliya Shamakina, Sergey Melnik	Neutron dosimetry at BINP using TLDs with LiF and portable devices	278
Nevenka M. Antović, Nikola R. Svrkota, Sergey K. Andrukhovich	Registration of gamma-gamma coincidences from Ba-133 decay	279
Zbigniew Tymiński, Paweł Saganowski, Tomasz Dziel, Anna Listkowska, Edyta Lech, Ewa Kołakowska, Tomasz Ziemek, Daniel Cacko, Ryszard Broda	Quality assurance of gamma ray measurements with HPGc detectors used in radiopharmaceutical production	280
Dmitry Spassky, Sergey Omelkov, Vitali Nagirnyi, Nina Kozlova, Nataliya Krutyak, Alice Ukhanova, Oleg Buzanov, Mikhail Korjik	Study of luminescence properties of $Gd_3(Ga,Al,Sc)_5O_{12}:Ce^{3+},Ca^{2+}$ scintillating single crystals under UV and electron beam excitation	281
Georgi Gorine, Jacopo Bronuzzi, Giuseppe Pezzullo, Isidre Mateu, Blerina Gkotse, Maurice Glaser, Didier Bouvet, Alessandro Mapelli, Federico Ravotti, Jean-Michel Sallese	Low-mass radiation-hard beam profile monitors for high energy protons using microfabricated metal thin-films	282

Diego Sanz, Harris Kagan, William Trischuk	Development of polycrystalline chemical vapor deposition diamond detectors for radiation monitoring	283
Vojislav Antic, Olivera Ciraj- Bjelac, Predrag Bozovic, Otas Durutovic	Assessment of the occupational exposure of urologists during percutaneous nephrolithotomy surgical interventions	284
V.V. Zabrodskii, S.V. Bobashev, A.V. Nikolaev, A.G. Alekseev, P.N. Aruev, E.V. Sherstnev	A 2×32-format hybrid matrix high-speed XUV- detector	285

27 RADIATION ONCOLOGY

Igor Stojkovski, Violeta Klisarovska, Petar Chakalaroski	Radiation dose to the brain in postoperative radiation and impact on survival of patients with glioblastoma multiformae	287
Evgenija Kuzmina, Tatiana Mushkarina, Tatiana Konstantinova, Tatiana Bogatyreva, Ludmila Grivtsova	Reaction of peripheral blood's regulatory suppressor T-lymphocytes to components of chemoradiation therapy of Hodgkin's lymphoma	288
Ioana-Carmen Brie, Maria Perde-Schrepler, Pirooska Virag, Eva Fischer-Fodor, Olga Soritau	Combined immune and radiation therapy in the management of poor prognostic cancers	289
Mateusz Bilski, Karolina Brzozowska, Kamila Masłowska, Monika Bilaska, Ludmiła Grzybowska- Szatkowska	Radiation induced bystander effect – Pros and cons	290
Mateusz Bilski, Anna Rycyk, Piotr Kozłowski, Karolina Szymańska, Ludmiła Grzybowska-Szatkowska	High fraction doses for glioma treatment – An alternative for selected patients	291
Violeta Klisarovska, Petar Chakalaroski, Igor Stojkovski	Acute toxicity in standard treatment of cervical cancer	292
Özlem Mermut, Esra Arslan	Sinonasal intestinal-type adenocarcinoma	293
Özlem Mermut	Pelvic insufficiency fracture (PIF)	294
Adam Spyra	Monte Carlo simulations of radioembolization in various human organs	295
Olena Safronova, Tetyana Udatova, Yaroslav Kmetuyk	Determination of optimal safety margins using image- guided radiotherapy for prostate cancer	296
Olena Safronva	Evaluation of radiation doses to organs at risk with application of 3D-conformal radiotherapy and intensity-modulated radiotherapy for treatment of patients with breast cancer	297

Petar Chakalaroski, Violeta Klisarovska, Igor Stojkovski, Lenche Kostadinova, Bojana Petreska	Organ wall as a superior volume in presenting the absorbed dose compared to the whole organ volume in intensity-modulated irradiation therapy-treated gynecological malignancies	298
Songül Barlaz Us, Özden Vezir, Ülkü Çömelekoğlu	Protective effects of N-acetylcysteine on acute radiotherapy-induced cardiotoxicity in rats: An electrophysiological evaluation	299
Serap Ketenci, Ayşe Dağlı Değerli, Funda Öztürk, Mustafa Özer, Tarık Sütçü, Beste M. Atasoy	Dosimetric results of two different planning systems for craniospinal irradiation with VMAT techniques	300
Dejan Trbojevic	Hadron radiation in cancer therapy	301
Berrin Inanc	A dosimetric comparison of single arc and double arc therapy in the treatment of high-risk prostate cancer with pelvic nodal radiation therapy	302
Svetlana V. Belkina, Galina P. Zhurakovskaya, Olga A. Vorobey	Hyperthermic sensitization of tumour cells to radiation or chemicals: Optimization of the efficiency	303

28 RADIATION PHYSICS

Matanat Mehrabova, Niyazi Hasanov, Aygun Kazimova, Aygul Hasanli	Ab initio calculations of electronic structure of defects in $Cd_{1-x}Mn_xTe(Se)$ and impact of γ-irradiation on optical properties of their epitaxial films	305
Tomasz Wasowicz, Marta Łabuda, Bogusław Pranszke	Collisions of low-energy helium cations with furan molecules	306
Anatoly Titov, Iurii Lomachuk, Daniil Maltsev, Nikolai Mosyagin, Sergei Semenov, Leonid Skripnikov	Concept of clusters embedded in a crystal: Study of properties of point defects in xenotime and monazite containing actinides	307
Anna Zakharova, Marina Bedrina, Sergei Semenov	Quantum-chemical modeling of gadolinium endocomplexes with fullerenes	308
Daniil Maltsev, Yuriy Lomachuk, Nikolai Mosyagin, Leonid Skripnikov, Anatoly Titov	Embedding a potential method for the cluster modeling of solids and its application to the study niobate minerals as actinide immobilization matrices	309
Renat Ibragimov, Natalia Khatina, Evgeny Klopikov, Svyatoslav Kolesnikov, Elena Ryabeva	Analytical model for calculating the energy spectra of neutron radiation produced in d-t reactions for neutron generators with gas-filled or vacuum neutron tubes	310
Irina Bazhukova, Sergey Sokovnin, Alexandra Myshkina, Valentina Kasyanova, Sergey Bazhukov	Irradiation of cerium oxide nanoparticles by fast electrons	311

David Zoul, Pavel Zháňal, Ladislav Viererbl, Antonín Kolros, Milan Zuna, Václava Havlová	Computed gamma tomography of radioactive metallurgical and geological samples	312
Leena Diehl, Riccardo Mori, Marc Hauser, Karl Jakobs, Ulrich Parzefall, Liv Wiik-Fuchs	Investigation of charge multiplication in irradiated p- type silicon sensors designed for the ATLAS Phase II Strip Tracker	313
Dragana Krstic, Dragoslav Nikezic	Application of Monte Carlo software for calculation of efficiency of semiconductor germanium detector	314
Arif Maharramov, Ulker Samedova, Musa Nuriyev, Mazahir Bayramov, Amdulla Mekhrabov	Microwave absorbance properties of Fe₃O₄+epoxy resin and Fe₃O₄+bentonite/epoxy resin nanocomposites	315
Tomasz Wasowicz, Annti Kivimaki, Robert Richter	Fragmentation of molecules into neutral high- Rydberg fragments after core excitation and core ionization using soft X-ray synchrotron radiation	316
Alexandr Belousov, Vladimir Morozov, Grigorii Krusanov, Andrey Davydov, Maria Kolyvanova, Alexander Shtil, Vladimir Klimanov, Alexander Samoylov	Repartition of the secondary particles contributions into the absorbed dose of proton radiation behind the Bragg peak in the presence of gold nanoparticles	317
Giuseppe Lorusso, Alberto Boso, Peter Ivanov, Ana Denis- Bacelar, Andrew Pollard, Hiroshita Haba	Auger electron spectroscopy studies at the National Physical Laboratory for medical applications	318
Michal Piasecki	The TlPb₂Br_{5-x}I_x system as potential detectors for X- ray and γ-ray at ambient temperature	319
Heidi Nettelbeck, Carmen Villagrasa, Marion Bug, Hans Rabus	Nanodosimetry: Estimating radiation damage to DNA with Monte Carlo track structure simulation	320

29 RADIATION PROTECTION

Harmen Bijwaard, Ischa de Waard	Current state of medical diagnostic reference levels and possibilities for improvements in the Netherlands	322
Alexandru Pavelescu, Carmen Tuca, Radu Deju	Modelling of a radiological incident in the intermediary storage of activated wastes from VVR-S nuclear research reactor decommissioning	323
Charlotte Duchemin, Matteo Magistris, Marco Silari, Biagio Zaffora	Clearance from regulatory control in Switzerland of CERN's radioactive waste	324
Radu Deju, Carmen Tuca, Monica Mincu	Radiological monitoring approach for dismantling of the fuel assembly separator from VVR-S nuclear research reactor	325

Vlado Valkovic	Terrorists and “dirty bomb”	326
Chris Theis, Fernando Pereira, Helmut Vincke	PyActiWiz – A massively parallel scripting environment to calculate radionuclide inventories for radiation protection purposes	327
Nataliya Maznyk, Franz Fehringer, Christian Johannes, Tetiana Sypko, Nataliia Bohatyrenko, Wolfgang-Ulrich Müller	Virtual biodosimetry laboratory as a small network for radiation emergencies	328
Vijay Singh	Biomarkers for assessing radiation injury identified using large animal model	329
Alexander Grebenyuk, Alexander Starkov, Olga Strelova, Alexey Miliaev, Kamil Mamedov	Health protection measures for major radiation accidents	330
Alain Niba Ngwa, Steffen Kerker	Radon measurements in big buildings	331
Mee Jang, Chang Jong Kim, Won Woo Choi, Jong Myoung Lim	Development of an in-situ radioactivity screening method for building materials using XRF and radioactivity index	332
Marina Maslova, Lidia Gerasimova	Synthesis and adsorption properties of $\text{TiO}(\text{OH})\text{H}_2\text{PO}_4 \cdot \text{H}_2\text{O}$ titanium phosphate	333
Lidia Gerasimova, Marina Maslova, Shchukina Ekaterina, Anatoly Nikolaev	Ion-exchange behavior of titanosilicate ivanukite framework in relation to nuclear wastes treatment	334
Pavel Sharagin, Elena Shishkina, Evgenia Tolstykh, Alexandra Volchkova, Michael Smith, Bruce Napier, Marina Degteva	Comparison of ^{90}Sr dose factors for active bone marrow of adult males and females	335
Evgeniy Nazarov, Alexey Ekinin, Alexey Vasilyev	Compilation of available information on carbon-14 releases from different types of nuclear reactors	336
Carmen Tuca, Alexandru Pavelescu	Dose assessment in decontamination process of hot cells from VVR-S nuclear research reactor under decommissioning	337
Zoran Mirkov	The level of patient doses in intraoral and panoramic radiography in Serbia	338
Elimkhan Jafarov, Haydar Piriye	Are there alternatives to nuclear power?	339
Sergei Akhromeev, Sergei Kiselev, Vladimir Shlygin, Tatyana Lashchenova, Natalya Shandala	Comprehensive study of environmental contamination at nuclear legacy sites in the Russian Far East	340

Wangkyu Choi, Seungeun Kim, Seonbyeong Kim	Removal of radioactive contaminants incorporated in corrosion oxide film using decontamination foams	341
Sergei Kiselev, Vladimir Shlygin, Sergei Akhromeev, Tatyana Lashchenova, Renata Starinskaya, Tamara Gimadova, Julia Zozul, Natalia Shandala	Regulatory supervision during decommissioning & dismantling of nuclear submarines in the Russian Northwest	342
Jozef Sabol, Jana Hudzietzová	Problems in meeting regulatory requirements related to the skin dose	343
Denis Komarov, Olga Komova, Viktoriya Gavrilova	The scavengers of reactive oxygen species TEMPOL and reactive nitrogen species cPTIO enhance chromosome aberrations induced by low-dose γ-irradiation	344
Dejan Vasovic, Goran Janackovic, Stevan Musicki	Occupational health and safety considerations within CBRN area	345
Petr Kuča, Jan Helebrant, Irena Češpírová, Jiří Hůlka	RAMESIS project aimed at supporting citizen monitoring network in the Czech Republic – Final report	346
Nataliya Shandala, Sergei Kiselev, Vitaly Starinskiy, Dmitrii Isaev, Yrii Belskih, Vladimir Shlugin, Alexey Titov	30 years following the accident at the Chazhma Bay (Primorsky Territory): Environmental assessment of the contaminated areas	347
Inge Schmitz-Feuerhake	Dose estimations for Chernobyl contaminations by UNSCEAR: Neglected lessons from cytogenetic studies	348
Stevan Musicki, Sladjan Hristov, Dejan Vasovic	Review of SAF CBRN equipment and personnel: Expectations, advantages and constrains	349
Vitaly Starinskiy, Nataliya Shandala, Sergey Kiselev, Alexey Titov, Anna Filonova, Sergey Ahromeev	Study of environmental contamination and the health status of the population living in the vicinity of uranium legacy sites in the Central Asia countries	350
Snežana Stankovic ¹ , Dušan Popović ² , Matejka Bizjak ³ , Ana Kocić ¹ , Dragana Grujić ⁴ , Goran Poparić	UV protection offered by textile fabrics	351
Jozef Sabol, Bedřich Šesták	A need for a simplified system in radiation protection	352
Milos Mladenovic, Ivana Maksimovic, Miodrag Milenovic, Dalibor Arbutina, Stevan Karimanovic, Danijela Soldatović, Nebojša Bilanović	Nuclear safety and nuclear security – Integrated approach (PC NFS experience)	353
Sixuan Li, Qiuju Guo, Youyi Ni	Study on plutonium in seawater collected around several nuclear power plants in China	354

Sebastian Pflugbeil, Inge Schmitz-Feuerhake	Radiation effects in occupationally exposed persons: Who cares for the adoption of the state of knowledge in compensation cases?	355
Elio Tomarchio, Mariarosa Giardina, Daniele Greco	Measurement of long-lived radionuclide activity induced in target components of a cyclotron used for [¹⁸F]-[FDG] production	356
Nikola Svrkota, Jelena Popović, Nevenka M. Antović	Occupational exposures in the Centre for Nuclear Medicine, Clinical Centre of Montenegro	357
Anna Cimmino, Robert Froeschl, Heinz Vincke	Analysis of the radiological risks associated with the installation, extraction, and long-time storage of the CASTOR detector at the CMS experiment	358

30 RADIOBIOLOGY

Ihar Chesnyk, Natallia Puzan, Alexander Nikitin	Study of radioprotective properties of microbiological preparations EM-1 and EMX-Gold	360
Tariq Hailat, Emese Drozdik, Balázs Madas	Computational cell dosimetry for alpha-particle exposure by Monte-Carlo methods	361
Nataliya Maznyk, Tetiana Sypko, Nataliia Bohatyrenko, Olena Sukhina, Irina Krugova, Viktor Starenkiy	Cytogenetic effects in lymphocytes of cancer patients with different tumor localizations on early and late stages of radiotherapy treatment	362
Soile Tapio, Zohaib Nisar Khan, Omid Azimzadeh, Fabian Metzger, Munira Kadhim, Fiona Lyng, Simonetta Pazzaglia, Mariateresa Mancuso, Anna Saran	“Out-of-target” effects in the murine hippocampus after partial body irradiation	363
A. Ristić-Fira, O. Keta, V. Petković, G.A.P. Cirrone, G. Petringa, G. Cuttone, I. Petrović	On formation of DNA double strand breaks after irradiation of human malignant cells with therapeutic proton and carbon ion beams	364
I. Petrović, S. Incerti, V. Petković, O. Keta, G.A.P. Cirrone, G. Petringa, G. Cuttone, A. Ristić-Fira	Radiobiological validation of the GEANT4-DNA simulation toolkit through evaluation of DNA DSBs	365
Ulyana Bliznyuk, Valentina Avduhina, Alexander Belousov, Polina Borschegovskaya, Alexander Chernyaev, Irina Gordonova, Victoria Ipatova, Zoya Nikitina, Felix Studenikin, Dmitry Yurov	The influence of accelerated 1 MeV electron beam on microbiological and organoleptic parameters of a chilled rainbow trout	366

Nely Metlyaeva, Valery Krasnyuk, Boris Kukhta, Vladimir Yatsenko, Vyacheslav Korenkov, Lyubov Yunanova	Human acute stress response to entry of cesium and strontium into an organism as a result of an unfortunate event in the manufacture	367
Tatiana Mushkarina, Evgenija Kuzmina, Tatiana Konstantinova	Reaction to gamma irradiation at in vitro studies of regulatory suppressor T cells (T_{reg}) of healthy donors	368
Simone Moertl, Lisa Mutschelknaus, Michael Schneider, Omid Azimzadeh, Michael Atkinson	Exosomes are communicators of prosurvival signals during radiation response	369
Fulger Ciupagea, Nuta Niculaie, Gabriela Rosca Fartat, Constantin Ghioca	Health study of industrial radiography of occupationally exposed workers	370
Elimkhan Jafarov, Mehriban Velijanov, Jamala Orujova	Effect of pre-sowing irradiation of chickpea seeds on the content of low molecular weight antioxidants under salt stress	371
Coretchi Liuba, Gincu Mariana	Microdosimetry investigations as a dosimetric tool to explore the radiation cellular mechanism	372
Kei Wakimura, Mikio Kato	Motility and chemotactic response of <i>Escherichia coli</i> mutant strains and gamma-irradiated cells	373
Jin Kyu Kim, Mi Young Kang, Jin-Hong Kim, Seungsik Lee	Molecular dosimetry with gamma-H2AX Foci in MCF7 cells	374
Larisa Andronic	Comparative evidence of meiotic rearrangements in gamma irradiated and virus infected tomato plants	375
Alina Glazunova, Firdaus Hazieva	The application of electromagnetic radiation in the development of <i>Polemonium caeruleum</i> varieties	376
Natalia Koltovaya, Nadya Zhuchkina, Ksenia Lyubimova	Gene mutations induced by gamma-rays in haploid and diploid yeast cells	377
Zacharenia G. Nikitaki, Ifigenia V. Mavragani, Spyridon A. Kalospyros, Alexandros G. Georgakilas	Clustered DNA damage: A severe biological triggering effect with challenging detection	378
Iurii Severiukhin	Assessment of visual behavior and optomotor response of rats after irradiation with 5 Gy protons	379
Andreyan Osipov, Margarita Pustovalova, Anna Grekhova, Petr Eremin, Natalia Vorobyeva	Low-dose X-ray irradiation does not cause detrimental effects in the progeny of irradiated mesenchymal stem cells	380
Tadashi Hongyo, Yukimitsu Sawai, Hirofumi Kuchino, Itsuki Seki, Kentaro Yamamura, Shota Hirose, Io Ishibashi, Yasuyuki Ueda	Thyroid dysfunction of a child who was born after a radiological examination of its mother by oil-soluble iodinated contrast medium (Lipiodol)	381

Adrianna Tartas, Maciej Galecki, Mateusz Filipek, Werner Friedland, Andrzej Wójcik, Beata Brzozowska-Wardecka	Modeling of chromosome aberrations induced in cells exposed to mixed beams of ionizing radiation	382
Ekaterina Koryakina, Vladimir Potetnya, Marina Troshina, Maria Efimova, Raisa Baykuzina, Anatoliy Lychagin, Alexey Solovev, Sergey Koryakin, Stepan Ulyanenko	RBE of accelerated carbon ions and of neutron-produced heavy-charged particles in Chinese hamster cells	383
Vladimir Potetnya, Ekaterina Koryakina, Marina Troshina, Nina Boldueva, Sergey Koryakin, Stepan Ulyanenko	Dosimetric and radiobiological aspects of cell monolayer irradiation with 14 MeV neutrons in the presence and absence of proton equilibrium	384
Mateusz Filipek, Beata Brzozowska-Wardecka, Maciej Galecki, Adrianna Tartas	DNA damage in cancer cells exposed to beta radiation measured experimentally and modeled in Monte Carlo simulations	385
Eszter Persa, Tünde Szatmári, Nikolett Sándor, Géza Sáfrány, Katalin Lumniczky	Pitfalls in isolation and characterisation of bone marrow extracellular vesicles mediating radiation-induced bystander effects in mice	386
Tetiana Andriichuk, Natalia Raksha, Sergii Vakal, Ludmyla Ostapchenko	Some aspects of nuclear-mediated pathway of radiation-induced apoptosis	387
Valérie Van Eesbeeck, Ruben Props, Mohamed Mysara, Rob Van Houdt, Pauline Petit, Corinne Rivasseau, Jean Armengaud, Pieter Monsieurs, Jacques Mahillon, Natalie Leys	Effect of radiation and temperature on the microbial community in the cooling water of a nuclear reactor	388
V. V. Panfilova, O. I. Kolganova, O. F. Chibisova	Higher brain functions of the offsprings of irradiated animals	389
Natalia Vorobyeva, Oleg Kochetkov, Margarita Pustovalova, Anna Grekhova, Taisia Blokhina, Elizaveta Yashkina, Andrey Osipov, Dmitry Kabanov, Pavel Surin, Valeryi Barchukov, Andreyan Osipov	Comparative study of DNA double-strand breaks formation in human mesenchymal stem cells exposed to organically bound tritium vs tritiated water, and X-rays	390
Dariya Babina, Vladislav Petin, Victoria Panfilova	Exposure of yeast cells with different repair efficiency to densely ionizing radiation	391
Nadezhda Shimalina, Makar Modorov, Elena Antonova, Vera Pozolotina	Genetic diversity in <i>Plantago major</i> L. populations growing under conditions of radioactive and chemical contamination	392

31 RADIOCHEMISTRY

Ingrid Lehman-Andino, Evgen V. Govor, Alexander N. Morozov, Alexander M. Mebel, Christopher J. Dares, Raphael G. Raptis, Konstantinos Kavallieratos	Ligands for extraction of actinides from alkaline high-level waste and from acidic used nuclear fuel. Theoretical and experimental studies of the effect of soft-donors in binding and extraction selectivity	394
Piotr Szajerski, Agnieszka Bogobowicz, Andrzej Gasiorowski	Leaching behavior of Cs-137, Sr-90, Co-60 and Am-241 isotopes from native and radiation-degraded sulfur polymer concrete (SPC) composites	395
Sergey Kulyukhin, Igor Rumer, Elena Krasavina, Andrey Gordeev	Sorption of U(VI) onto Mg-Al layered double hydroxides and oxides from aqueous solutions	396
Svyatoslav Vuchkan, Ihor Syika, Yuriy Kylivnyk	Adsorption of heavy metal ions onto titanium silicate	397
Alexei A. Bessonov, Iraida A. Charushnikova, Alexander M. Fedosseev	Cation-cation interaction of $N_pO_2^+$ ions in double neptunium(V) nitrate crystal complexes	398
Dagmara Chmielewska-Śmietanko, Marek Henczka, Pavel Apel, Oleg Orelovich, Marina Gustova	Application of nanocomposite sorbent SiEA-KNiFe in the process of water purification from radioactive isotopes	399
Hanna Vasylyeva, Ivan Myroniuk, Igor Myktytn	Adsorption of Y^{3+} ions from aqueous solutions by neodymium-supported titanium dioxide	400
Vladimir Kulemin, Aleksandr Veleshko, Sergey Kulyukhin	Plutonium and uranium concentration from sea water	401
Elena Belova, Mikhail Kadyko, Yulia Nikitina, Ivan Skvortsov	The products of radiolysis of extraction systems based on TODGA in 1-decanol with Isopar-M and TODGA in 1-nonanol with Isopar-M	402
Maria Angela Menezes, Paula Salles, Márcia Sathler, Hellen Oliveira, Radojko Jaćimović	An action towards food safety: Evaluation of chemical impurities in sugar by neutron activation analysis	403
Juan F. Facetti-Masulli, Hector D. Colman	Effects of gamma irradiation on cassava flour from Paraguay	404
Paula Salles, Márcia Sathler, Cláudia Ferreira, Maria Ângela Menezes, Radojko Jaćimović	Elemental composition of hair in individuals with sedentary lifestyle from Belo Horizonte, Brazil, analysed by ko-INAA	405
Konstantin Dvoeglazov, Ekaterina Pavlukevich, Lubov Podrezova, Tatyana Podimova, Yelizaveta Filimonova	Study of Tc(VII) ions reduction by diformylhydrazine in nitric acid solutions	406

Ekaterina Pavlyukevich, Konstantin Dvoeglazov, Polina Mitrças	Kinetics of Np(VI) and Pu(VI) reduction with diformylhydrazine in nitric acid	407
Andrei Ivanets, Irina Shashkova, Natalja Kitikova, Artem Radkevich, Tatiana Stepanchuk, Marina Maslova, Natalia Mudruk	New Ti-Ca-Mg phosphate sorbents for removal of ¹³⁷Cs, ⁶⁰Co and ⁸⁵Sr from multicomponent liquid radioactive waste	408
Mirza Nuhanovic, Mirza Nuhanovic, Nusret Dreskovic, Samir Đug, Narcisa Smječanin	Investigation of the natural radioactivity of the sediment samples from the area of Una River	409
Vladimir Petrov, Anastasiya Smirnova, Petr Matveev, Artem Mitrofanov, Igor Rodin, Timur Baygildiev, Stepan Kalmykov	Experimental and theoretical study of gamma- radiolysis of diamides of N-heterocyclic acids promising for separation of trivalent f-elements	410
Petr Matveev, Vladimir Petrov, Nickolay Andreadi, Natalia Borisova, Gladis Zakirova, Elena Belova, Boris Myasoedov, Stepan Kalmykov	New pyridine-based phosphine oxides for liquid extraction of Am(III), Cm(III) and Ln(III)	411
Aliaksandr Zaruba, Artsiom Radkevich, Olga Korenkova, Nadzeia Voronik	Study of radionuclide speciation in spent fuel pool model solutions	412
Iurii Nevolin, Sergey Kulyukhin, Vladimir Petrov, Stepan Kalmykov	Gas-phase conversion of UPd₃, URu₃ and URh₃ intermetallides into water-soluble uranium compounds	413
Elena Belova, Alexey Rodin, Georgy Thorzhnitskiy, Mikhail Kadyko, Zayana Dzhivanova, Ivan Skvortsov, Anton Smirnov, Yulia Nikitina	Exothermic processes in extraction systems during the reprocessing of spent nuclear fuel	414

32 RADIOECOLOGY

S.V. Ostakh	The label method for the assessment of the technical feasibility waste management of the oil and gas industry	416
Konrad Wysogład	Environmental studies of the radioisotope concentration in coal mine waste in Silesian and Lubelskie Province – Poland	417
Lydia Bondareva, Nataliya Fedorova	Environmental risks for the freshwater ecosystem of the Yenisei River and health risks for humans	418
M. Radenković, S. Milošević, S. Stanković, J. Joksić, A. Onjia	Airborne uranium assessment by epiphytic lichen species in contaminated areas	419

Hing Ming Hung	The impact of high energy X-ray and β-ray irradiation on the germination of rice seed	420
Mihajlo Vićentijević, Dubravka Vuković, Vujadin Vuković, Branislava Mitrović, Dragan Živanov, Jasna Kureljušić	RH control Cs¹³⁷ in fito-sanitary supervision	421
Ludmila Mikhailovskaya, Vera Pozolotina	The spatial distribution of radionuclides in the soils of the Urals contaminated from different sources	422
Dmitry Manakhov, Elena Alekhina, Denis Lipatov, Sergrey Mamikhin	Speciation of ²²⁶Ra and ²³²Th in Albic Stagnic Retisol	423
Liliana Petrenko	Geological and non-geological aspects in the context of geological radioactive waste disposal	424
Mikhail Melgunov, Kseniya Mezina, Boris Shcherbov, Yulia Vosel, Inna Zhurkova, Maksim Rubanov	Pb-210, Be-7 and Cs-137 in lichens, mosses and pine needles of the south of Western Siberia	425
Fabio Girardi, Maria Letizia Cozzella, Donatella Ferri, Nadia Cherubini	Optimization of nutrient ratio in Hoagland solution to improve the capability of rapeseed (<i>Brassica napus</i> L) to decontaminate water from pollution of radioactive cesium isotopes in hydroponic condition	426
Osman Günay, Serpil Aközcan	Measurements of natural radioactivity in soil of Buyukcekmece (Istanbul-Turkey)	427
Marya Kropacheva	The artificial isotope distribution in substrate–plant system: The design of rhizobox for laboratory and nature experiments	428
Alexander A. Dvornik, Alexander M. Dvornik, Sergey Gaponenko, Natalia Shamal, Raisa Korol, Alesya Bardyukova, Veronika Seglin	Decision support system on radioactive consequences of wildfires in Chernobyl Exclusion Zone (Belarus)	429
Dmitri Gudkov, Alexander Kaglyan, Sergey Kireev, Ludmila Yurchuk, Vladimir Belyaev, Alexander Nazarov	Estimation of radiation dose rate to fish occupying different ecological zones in water bodies within the Chernobyl Exclusion Zone	430
Christina Ganzha, Dmitri Gudkov, Igor Abramiuk, Vladyslav Pavlovsky, Oleksandr Kaglyan	Abnormalities of the postcranium skeleton of juvenile fish from lakes within the Chernobyl Exclusion Zone	431
Vesna Radumilo, Ivan Knežević, Dalibor Arbutina, Boris Lončar	Atmospheric dispersion modeling of radionuclides around nuclear facilities in Serbia	432
Shafiga Topchiyeva, Matanat Mehrabova	Definition of air pollution	433

Christo Angelov, Ilia Penev, Todor Arsov, Stefan Georgiev	Natural and man-made aerosol activity observation at Moussala BEO	434
Marija Lekić, Nataša Lazarević, Nevena Zdjelarević, Dalibor Arbutina, Boris Lončar	Determination of gamma-emitting radionuclides in soil sample for the purposes of proficiency test IAEA- TEL-2018-04 ALMERA	435
Tetiana Tugai, Lubov Zelena, Andrey Tugai, Olena Polischuk, Natalia Sergeichuk	Evaluation of genomic alterations in <i>Cladosporium cladosporioides</i> with radioadaptive properties	436
Ivanka Antović, Nikola Svrkota, Nevenka Antović	Beryllium-7 in six fish species from the Bay of Boka Kotorska	437
Robert-Csaba Begy, Daniel S. Veres, Szabolcs Kelemen	Climate change reconstruction for modern warm period in north of Romania by using ²¹⁰Pb chronology	438
Robert-Csaba Begy, Szabolcs Kelemen, Daniel S. Veres, Timea Sandor-Nagy	Studies on the effects of land use changes on soil erosion and increased sedimentation using radionuclides	439
Milan Tanić, Denis Dinić, Željko Mihaljev, Brankica Kartalović, Marko Daković	Natural and artificial radionuclides in the soil of public parks and playgrounds in Kruševac, Serbia	440
N. Pomortseva, D. Gudkov, A. Kaglyan	Effects of long-term irradiation on cytogenetic characteristics of the common roach (<i>Rutilus rutilus</i> L.) from water bodies within the Chernobyl Exclusion Zone	441
Vladimir I. Ivanenko, Roman I. Korneikov	Extraction of cesium, strontium and cobalt radionuclides by titanium phosphate adsorbents from NPP complex solutions	442
Milda Peciuliene, Vaida Vasiliauskiene, Vigilija Cidzikiene, Dainius Jasaitis	Natural radionuclides in soil and evaluation of their exposure in specific areas on the territory of Lithuania	443
Sanja Bijelović, Nataša Dragić, Emil Živadinović, Tanja Likić, Nataša Todorović, Jovana Nikolov	Is there a health risk of radionuclides in drinking water from districts in Vojvodina?	444

33 RADIOLOGY

Živorad N. Savić, Katarina Ž. Savić, Sofija Ž. Savić, Mirjana M. Petrović, Vladimir S. Radak, Srbislav S. Pajić, Vojislav M. Antić	CT perfusion of endocranium	446
Milan Mijailović, Snežana Lukić	Comparing kinetic imaging with conventional DSA - 55% X-ray dose reduction in angiography	447

Snežana Lukić, Milan Mijailović	MR lower limb angiography, alternative to reduce radiation dose	448
Magdalena Radović	The role of strain sonoelastography in evaluation of breast lesions - Physics, indications and diagnostic performance	449
34 RADIOPHARMACOLOGY		
Boyan Todorov, Iva Belovezhdova, Outi Keinänen, Anu J. Airaksinen	2-deoxy-2-[¹⁸F]fluoro-D-glucose glycoconjugates via oxime formation	451
Olha Storchlyo	Mechanisms of the implementation of damage to the functions of the small intestine in two generations of posterity of irradiated rats	452
35 RADIOTHERAPY		
Yong Nam Kim, Hyeong-min Joo	Development of inverse planning strategy using volumetric arc therapy for intensity-modulated radiation treatment for prostate cancer	454
Francisco Cutanda Henriquez, Silvia Vargas Castrillon	The value of robust statistics in the analysis of linac quality assurance images	455
Andrey Vertinskiy, Evgeniya Sukhikh, Leonid Sukhikh	The cylindrical dosimeter for 3D verification of high-modulated radiation therapy plans	456
Dražan Jaroš, Goran Kolarević, Bojan Pavičar	Accuracy of intensity-modulated radiation therapy treatment planning and delivery	457
Violeta Acovska, Dragan Nikolovski	Comparison of 3D-CRT vs IMRT for anal cancer treatment planning	458
Songül Barlaz Us, Eda Bengi Yilmaz	Evaluation of tomotherapy HDA beam parameters	459
Hargita Hegyesi, Nikolett Sándor, Balázs Hornyák, Szabina Mecsei, Lilla Turiák, Ágnes Kittel, Géza Sáfrány, Lóránd Bertók, Edit I Buzás	Proteomic signature of bone marrow-derived small extracellular vesicles in heart-irradiated radiotherapy model	460
Nazar Bartosik	Study of nuclear fragmentation in particle therapy with the FOOT experiment	461
Marcello Serra, Gianluca Ametrano, Borzillo Valentina, Rossella Di Franco, Paolo Muto, Maria Quarto, Giuseppe Roberti, Federica Savino	A dosimetric comparison between cyberknife and intensity/volumetric modulated techniques in stereotactic radiosurgery (SRS)	462

Federica Savino, Gianluca Ametrano, Maria Quarto, Marcello Serra, Cecilia Arrichiello, Leonardo Baldassarre, Fabrizio Cammarota, Giuseppe Roberti, Paolo Muto	Evaluation of the additional dose delivered to the patient during imaging procedures in image-guided radiotherapy through in vivo measurements: Preliminary results	463
Irena Muçollari, Artur Xhumari, Aurora Aliraj, Anastela Mano, Gramoz Braçe, Rejnardo Tafaj, Ejona Lilamani, Bledar Cullhaj, Blerina Myzeqari, Erald Karaulli	Stereotactic radiosurgery for small volume intracranial meningiomas: Plan quality	464
Lenche Kostadinova, Petar Chakalaroski, Marina S. Vukashinovic	Adaptive radiotherapy in advanced nasopharyngeal carcinoma - Case report	465

36 RADON AND THORON

Piotr Szajerski, Maciej Jura	Low radon exhalation rate composites based on NORM residues	467
Perko Vukotic, Ranko Zekic, Tomislav Andjelic, Nikola Svrkota, Marija Bogicevic, Aleksandar Dlabac	Radon in Montenegrin schools and kindergartens – Preliminary results	468
Karel Jilek	The NRPI low-level continuous radon gas monitor for measurement below 1 Bq/m³	469
Igor Čeliković, Gordana Pantelić, Ivana Vukanac, Jelena Krneta-Nikolić, Miloš Živanović, Aleksandar Kandić, Boris Lončar	²²²Rn and ²²⁰Rn exhalation rate and natural radionuclide content in different granites used in Serbia	470
Hüseyin Ali Yalim, Ayla Gümüş	Soil gas radon concentration and terrestrial radioactivity correlations in Afyonkarahisar	471
Hüseyin Ali Yalim, Ayla Gümüş, Ridvan Ünal	Indoor radon concentrations and related dose rates at the houses of Afyonkarahisar	472
Anita Csordás, Katalin Zsuzsanna Szabó, Zoltán Sas, Erika Kocsis, Tibor Kovács	Indoor radon survey in Hungarian kindergartens	473
Michael Zhukovsky, Hyam Nazmy, Mostafa Y. A. Mostafa, Vladislav Semyannikov	A combined system for the measurements of aerosol size distribution	474
Coretchi Liuba	National radon survey in Moldova Republic	475

Gordana Pantelic, Ivana Vukanac, Jelena Krneta Nikolic, Milos Zivanovic, Igor Celikovic, Milica Rajacic	Uncertainty evaluation in radon concentration measurement in soil using NAI detectors	476
Yunxiang Wang, Lei Zhang, Qiuju Guo	Long-term observation and analysis of atmospheric radon and its short-life progeny	477
Kremena Ivanova, Zdenka Stojanovska, Jana Djounova, Bistra Kunovska, Nina Chobanova, Decislava Djunakova	Sample design for radon concentration investigation in Bulgarian caves	478
Bistra Kunovska, Kremena Ivanova, Zdenka Stojanovska, Nina Chobanova, Decislava Djunakova, Jana Djounova	The sampling frame definition of the buildings with public access to radon concentration surveys	479
Nina Chobanova, Jana Djounova, Kremena Ivanova, Bistra Kunovska	Radon risk communication program for buildings with public access	480
Yucai Mao, Yunxiang Wang, Lei Zhang, Qiuju Guo	Influence of humidity on an electrostatic radon monitor with 16.8L volume	481
Yunxiang Wang, Lei Zhang, Qiuju Guo	Determination of relative degassing rate of an extraction membrane based on a radon-in-water source	482
Robert Lakatoš, Sofija Forkapić, Selena Samardžić, Kristina Bikit-Schroeder, Dušan Mrđa	Statistical analysis of naturally occurring predictors affecting radon concentration in indoor air	483
Ljiljana Gulan, Gordana Milic, Zora Zunic, Bajram Jakupi	Correlation between indoor radon/thoron activity concentrations and gamma dose rates in Central Kosovo and Metohija	484
Ljiljana Gulan, Gordana Milić, Biljana Vučković, Jelena Živković Radovanović, Boris Drobac	Case study of indoor radon measurements in one building	485

Airborne uranium assessment by epiphytic lichen species in contaminated areas

M. Radenković¹, S. Milošević², S. Stanković¹, J. Joksić³, A. Onjia⁴

1 Vinča Institute of Nuclear Sciences, University of Belgrade, Belgrade, Serbia

2 Municipality of Bujanovac, Bujanovac, Serbia

3 Directorate for Radiation and Nuclear Safety and Security, Belgrade, Serbia

4 Faculty of Technology and Metallurgy, University of Belgrade, Belgrade, Serbia

Natural uranium, consisting of ^{238}U , ^{234}U and ^{235}U isotopes is present in the environment in low concentrations especially in the atmosphere where it usually exists as a constituent of particulate matter submicron conglomerates suspended in the air. In the case of contamination, uranium may be present in the aerosol, being transferred to other areas by wind and again settled on the surface soil with possible migration into deeper layers or resuspension under certain meteorological conditions. Here results on the airborne uranium assessment based on the analysis of lichen species already present or transplanted into contaminated areas will be presented. With that aim, different *in situ* and transplanted epiphytic lichen species have been taken at selected locations in southern Serbia in the stage of existing contamination by depleted uranium, during the clean-up activities and afterwards, in all four seasons. Collected samples underwent analysis by sensitive nuclear analytical techniques. The INAA and ICP MS results are derived from ^{238}U mass fraction while high resolution alpha-spectrometry gave results for each isotope expressed as specific activity concentration (Bq kg^{-1}). Based on the isotopic ratios $^{235}\text{U} / ^{238}\text{U}$ and $^{234}\text{U} / ^{238}\text{U}$, depleted uranium content was possible to distinguish from natural uranium in the samples. Results have shown that the sensitivity of the examined morphologically different lichen types and their ability to accumulate metals including uranium, strongly depend on metals' concentration in the air as well as on the age of lichens, properties of host species, chemical properties of particles, local climate conditions, exposure time etc. Epiphytic lichen species *Evernia prunastri* was found to be the most suitable bioindicator for the accumulation of uranium airborne particles. Concerning the uranium content, a significant difference in concentrations had been observed for different sampling phases, with maximum depleted uranium contribution during the clean-up activities. The variability in uranium concentrations was noticeable in relation to prevailing wind direction, position and distance of the sampling points. Having in mind the results obtained within the national radioactivity monitoring program 2011-2017, it may be concluded that for detailed airborne uranium assessment, a methodology such as biomonitoring with the application of sensitive nuclear techniques should be considered.