

Volume 64 of PROCEEDINGS includes the papers presented at the scientific conference RU & SU'25, organized and conducted by University of Ruse "Angel Kanchev" and the Union of Scientists - Ruse. Series 10.2. contains papers reported in the Biotechnologies and Food Technologies (07.11., Razgrad) section.

Book	Code	Faculty and Section
Agrarian and Industrial Faculty		
1.1.	FRI-8.303b-1-AMT&ASVM	Agricultural Machinery and Technologies, Agrarian Science and Veterinary Medicine
	FRI-1.202-1-MR	Maintenance and Reliability
	FRI-9.2-1-THPE	Thermal, Hydro- and Pneumatic Equipment
	FRI-19.206-1-EC	Ecology and Conservation
	FRI-16.203-1-ID	Industrial Design
1.2.	THU-SSS-AMT&ASVM	Agricultural Machinery and Technologies, Agrarian Science and Veterinary Medicine
	THU-SSS-MR	Maintenance and Reliability
	THU-SSS-THPE	Thermal, Hydro- and Pneumatic Equipment
	THU-SSS-EC	Ecology and Conservation
	THU-SSS-ID	Industrial Design
Faculty of Mechanical and Manufacturing Engineering		
2.1.	FRI-1.317-1-MEMBT	Mechanical Engineering and Machine-Building Technologies
2.2.	TUE-1.417-SSS-MEMBT	Mechanical Engineering and Machine-Building Technologies
Faculty of Electrical Engineering Electronics and Automation		
3.1.	FRI-10.326-1-EEEE	Electrical Engineering, Electronics and Automation
3.2.	FRI-2G.303-1-CCT	Communication and Computer Technologies
3.3.	THU-10.326-SSS-EEEE	Electrical Engineering, Electronics and Automation
	THU-2G.303-SSS-CCT	Communication and Computer Technologies
Faculty of Transport		
4.1.	FRI-KC.H2-1-TMS	Transport and Machine Science
4.2.	FRI-20.21-2-SITSTL	Sustainable and Intelligent Transport Systems, Technologies and Logistics
4.3.	MON-5.21-SSS-TMS	Transport and Machine Science
Faculty of Business and Management		
5.1.	FRI-2B.412-1-EM	Economics and Management
5.3.	THU-2G404-SSS-EM	Economics and Management
5.4.	FRI-2G.510-1-ESIS	European Studies and International Security
8.2.	FRI-1.322-1-SW	Social Work
Faculty of Natural Sciences and Education		
6.1.	FRI-1.414-MIP	Mathematics, Informatics and Physics
6.2.	FRI-2G.305-1-PP	Pedagogy and Psychology
6.3.	FRI-2G.309-1-LL	Linguistics and Literature
	FRI-12.23-1-AS	Art Studies
6.4.	FRI-2G.307-1-ERI	Education - Research and Innovations
6.5.	FRI-1.219-SSS-PP	Pedagogy and Psychology
6.6.	FRI-2G.405-SSS-LLA	Linguistics, Literature and Art Science & History, Ethnology and Folklore
6.7.	FRI-2.203-SSS-FM	Financial Mathematics

	FRI-1.407.1-SSS-I	Informatics
Faculty of Law		
7.1.	FRI-2B.313-1-L	Law Studies
7.2.	FRI-2B.312-1-NS	National Security
7.3.	WED-2B313-SSS-L	Law Studies
Faculty of Public Health and Health Care		
8.1.	FRI-2K.201-1-HP	Health Promotion
8.3.	FRI-2G.104-1-HC	Health Care
8.4.	FRI-2G.309-1-MCDA	Medical and Clinical Diagnostic Activities
8.5.	THU-K.101-SSS-HP	Health Promotion
	SAT-SSS-SMHPA	Sports Medicine and Health Prevention of the Athlete
8.6.	FRI-2.101-SSS-HC	Health Care
8.7.	THU-2Г.105-SSS-MCDA	Medical and Clinical Diagnostic Activities
Quality of Education Directorate		
9.1.	FRI-2.104-1-QHE	Quality of Higher Education
Razgrad Branch of the University of Ruse		
10.1.	FRI-LCR-1-CT(R)	Chemical Technologies
10.2.	FRI-LCR-1-BFT(R)	Biotechnologies and Food Technologies
10.3.	TUE-SSS-BFT(R)	Biotechnologies and Food Technologies
	TUE-SSS-CT(R)	Chemical Technologies
Silistra Branch of the University of Ruse		
11.1.	FRI-110-1-MT(S)	Methodology of Training in...
	FRI-229-1-P(S)	Philology
	FRI-216-1-TS(S)	Technical Sciences
11.2.	FRI-239-I-PMT(S)	Methodology of Training in...
	FRI-229-I-H(S)	Humanities
	FRI-216-I-TS(S)	Technical Sciences

The papers have been reviewed.

ISSN 1311-3321 (print)

ISSN 2535-1028 (CD-ROM)

ISSN 2603-4123 (on-line) Copyright © authors

The issue was included in the international ISSN database, available at <https://portal.issn.org/>.

The online edition is registered in the portal ROAD scientific resources online open access



PROGRAMME COMMITTEE

- **Prof. Amar Ramdane-Cherif**
University of Versailles, France
- **Assoc. Prof. Manolo Dulva HINA**
ECE Paris School of Engineering, France
- **Prof. Leon Rothkrantz**
Delft University of Technology, Netherlands
- **Assoc. Prof. Antonio Jose Mendes**
University of Coimbra, Portugal
- **Prof. Ville Leppanen**
University of Turku, Finland
- **Assoc. Prof. Marco Porta**
University of Pavia, Italy
- **Prof. Douglas Harms**
DePauw University, USA
- **Prof. Zhanat Nurbekova**
L.N.Gumilyov Eurasian National University, Nur Sultan, Kazakhstan
- **Prof. Mirlan Chynybaev**
Kyrgyz State Technical University, Bishkek, Kyrgyzstan
- **Prof. Ismo Hakala, PhD**
University of Jyväskylä, Finland
- **Prof. Artur Jutman, PhD**
Tallinn University of Technology, Estonia
- **Prof. RNDr. Vladimir Tvarozek, PhD**
Slovak University of Technology in Bratislava, Slovakia
- **Doc. Ing. Zuzana Palkova, PhD**
Slovak University of Agriculture in Nitra, Slovakia
- **Andrzej Tutaj, PhD**
AGH University of Science and Technology, Krakow, Poland
- **Prof. Valentin NEDEFF Dr. eng. Dr.h.c.**
“Vasile Alecsandri” University of Bacău, Romania
- **Cătălin POPA, PhD**
“Mircea cel Bătrân” Naval Academy, Constantza, Romania
- **Prof. dr Larisa Jovanović**
Alfa University, Belgrade, Serbia
- **Prof. dr hab. Edmund LORENCOWICZ**
University of Life Sciences in Lublin, Poland
- **Assoc. Prof. Ion MIERLUS - MAZILU, PhD**
Technical University of Civil Engineering, Bucharest, Romania
- **Prof. Dojčić Vojvodić PhD**
Faculty of Philosophy, University of Novi Sad, Serbia
- **Assoc. Prof. Alexandrache Carmen, PhD**
Department of Teacher Training, “Dunarea de Jos”, Galati University, Romania
- **Prof. Alberto Cabada**
University of Santiago de Compostela, Faculty of Mathematics, Spain

- **Kamen Rikey, PhD**
Institute of Slavic Philology, Maria Curie-Skłodowska University in Lublin, Poland
- **Anna Klimentova, PhD**
Constantine the Philosopher University of Nitra, Slovakia
- **Prof. Ricardo Gobato, PhD**
Secretariat of State of Parana Education and Sport, Laboratory of Biophysics and Molecular Modeling Genesis, Brazil
- **Prof. Fatima Rahim Abdul Hussein, PhD**
University of Misan, College of Basic Education, Iraq
- **Prof. Liqaa Habeb Al-esedi, PhD**
English Department, College of Education for Human Science, University of Diyala, Iraq
- **Prof. Esengeldin Baurzhan Satybaldyuly, PhD**
Pavlodar Pedagogical University “Alkey Margulan”, Kazakhstan
- **Prof. Igor Kevorkovich Danilov, DSc**
Yuri Gagarin State Technical University of Saratov, Russia
- **Prof. Aleksander Valentinov Sladkowski, DSc**
Silesian University of Technology, Poland
- **Prof. Vera Karadjova, PhD**
“St. Kliment Ohridski” University – Bitola, North Macedonia
- **Prof. Aleksandar Trajkov, PhD**
“St. Kliment Ohridski” University - Bitola, North Macedonia
- **Prof. Petar Pepur, PhD**
University of Split, Croatia
- **Prof. Korhan Arun, PhD**
Namik Kemal University, Tekirdağ, Turkey
- **Prof. Yuliya Yorgova, PhD**
Burgas Free University, Bulgaria
- **Jelena Stankovic, PhD**
University of Nis, Serbia
- **Prof. Dr. Diana E. Woolfolk Ruiz**
CETYS University, Mexico
- **Prof. Gerhard Fiolka, PhD**
University of Fribourg, Switzerland
- **Prof. Haluk Kabaalioglu, PhD**
Yeditepe University, Turkey
- **Prof. Silva Alves, PhD**
University of Lisbon, Portugal
- **Prof. Elena Torina**
Tula State Pedagogical University "L. N. Tolstoy", Russia
- **Prof. Violeta Jotova**
St. Marina University Hospital - Varna, Bulgaria
- **Prof. Tanya Timeva, MD, PhD**
Obstetrics and Gynecology Hospital "Dr. Shterev", Sofia, Bulgaria
- **Prof. Kiril Stoychev, PhD**
Institute of Metal Science, BAS, Bulgaria
- **Assoc. Prof. Mark Shamtsyan, PhD**
Technical University, Saint Petersburg, Russia

- **Assoc. Prof. Oleksii Gubenia, PhD**
National University of Food Technology, Ukraine
- **Prof. Eugene Stefanski, DSc**
Samara University, Russia
- **Assoc. Prof. Ivan Antonov Lukanov, PhD**
University of Botswana
- **Prof. Gabriel Negreanu, PhD**
University Politehnica of Bucharest, Romania
- **Prof. Radoslaw Wrobel, DSc**
Wrocław University of Science and Technology, Poland
- **Assoc. Prof. Darina Dimitrova PhD**
University of Economics - Varna

ORGANISING COMMITTEE

♦ ORGANIZED BY: UNIVERSITY OF RUSE (UR) AND UNION OF SCIENTISTS (US) - RUSE

♦ ORGANISING COMMITTEE:

▪ Chairperson:

Assoc. Prof. Desislava Atanasova, PhD – Rector of University of Ruse

Acad. DTSc. Hristo Beloev, DHC mult., Academician of Bulgarian Academy of Sciences –
Chairperson of US - Ruse

▪ Scientific Secretary:

Prof. Daniel Bratanov, PhD

dmbratanov@uni-ruse.bg, +359 82 888-377

▪ THEMATIC FIELDS:

- **Agricultural Machinery and Technologies, Agrarian Sciences and Veterinary Medicine**
Assoc. Prof. Atanas Atanasov, PhD, aatanasov@uni-ruse.bg, +359 885 497 406

- **Maintenance and Reliability**

Prof. Mitko Nikolov, DcS, mnikolov@uni-ruse.bg, +359 82 888 458

- **Thermal, Hydro- and Pneumatic Equipment**

Prof. Gencho Popov, PhD, gspopov@uni-ruse.bg, +359 82 888 441

- **Ecology and Conservation**

Assoc. Prof. Plamen Manev, PhD, pmanev@uni-ruse.bg, +359 82 888 485

- **Industrial Design**

Assoc. Prof. Yordan Doichinov, PhD, doichinov@uni-ruse.bg, +359 887 273 040

- **Pedagogy, Didactics and Methodology of training in... (18.10., Silistra)**

Assoc. Prof. Diana Zhelezova-Mindizova, PhD, dmindizova@uni-ruse.bg,

- **Philology (18.10., Silistra)**

Assoc. Prof. Rumyana Lebedova, PhD, rlebedova@uni-ruse.bg,

- **Technical Sciences (18.10., Silistra)**

Assoc. Prof. Evgenia Goranova, PhD, egoranova@uni-ruse.bg,

- **Chemical Technologies (07.11., Razgrad)**

Prof. Tsvetan Dimitrov, PhD, conf_rz@abv.bg, +359 887 631 645

- **Biotechnologies and Food Technologies (07.11., Razgrad)**

Prof. Tzvetan Dimitrov, PhD, conf_rz@abv.bg, +359 887 631 645

- **Mechanical Engineering and Machine-building Technologies**

Prof. Rosen Radev, PhD, rradev@uni-ruse.bg, +359 82 888 778

- **Electrical Engineering, Electronics and Automation**

Prof. Boris Evstatiev, DSc, bevstatiev@uni-ruse.bg, +359 82 888 371

Assoc. Prof. Kiril Sirakov, PhD, csirakov@uni-ruse.bg, +359 82 888 364

- **Communication and Computer Technologies**

Assoc. Prof. Yordan Kalmukov, PhD, jkalmukov@uni-ruse.bg, +359 82 888 681

Assoc. Prof. Adriana Borodzhieva, PhD, aborodzhieva@uni-ruse.bg, +359 82 888 734

- **Transport and Machine Science**

Assoc. Prof. Toncho Balbuzanov, PhD, tbalbuzanov@uni-ruse.bg, +359 82 888 608

- **Sustainable and Intelligent Transport Systems, Technologies and Logistics**
Assoc. Prof. Toncho Balbuzanov, PhD, tbalbuzanov@uni-ruse.bg, +359 82 888 608
- **Economics and Management**
Pr. Assist. Miroslava Boneva, PhD, mboneva@uni-ruse.bg, +359 82 888 776
Pr. Assist. Elizar Stanev, PhD, eastanev@uni-ruse.bg, +359 82 888 557
- **European studies and International Security**
Prof. Vladimir Chukov, DSc, vlachu1@gmail.com, +359 82 825 667
Pr. Assist. Eva Parvanova, PhD, eparvanova@uni-ruse.bg, +359 82 888 703
- **Mathematics, Informatics and Physics**
Prof. Tsvetomir Vasilev, PhD, tvasilev@uni-ruse.bg, +359 82 888 475
- **Education - Research and Innovations**
Pr. Assist. Ralitsa Vasileva-Ivanova, PhD, rivanova@uni-ruse.bg, +359 884 109 719
- **Pedagogy and Psychology**
Assoc. Prof. Valentina Vasileva, PhD, vvasileva@uni-ruse.bg, +359 898 407 577
Assoc. Prof. Galina Georgieva, PhD, gggeorgieva@uni-ruse.bg, +359 889 951 920
- **History, Ethnology and Folklore**
Assist. Veselka Radeva, PhD, vradeva@uni-ruse.bg, +359 899 776 368
- **Linguistics, Literature and Art Science**
Assoc. Prof. Velislava Doneva, PhD, doneva_v@uni-ruse.bg, +359 886 060 299
- **Health Promotion**
Assoc. Prof. Stefka Mindova, PhD, smindova@uni-ruse.bg, +359 887 796 910
- **Social Work**
Pr. Assist. Ana Popova, PhD, apopova@uni-ruse.bg, +359 889 874 219
- **Medical and Clinical Diagnostic Activities**
Pr. Assist. Denitsa Trancheva, PhD, dtrancheva@uni-ruse.bg, +359 82 888 410
- **Health care**
Assoc. Prof. Tsveta Hristova, PhD, tshristova@uni-ruse.bg, +359 878 389 793
- **Law**
Assoc. Prof. Elitsa Kumanova, PhD, ekumanova@uni-ruse.bg, +359 884 980 050
- **National Security**
Assoc. Prof. Milen Ivanov, DSc, poligon@abv.bg, +359 82 888 736
- **Quality of Higher Education**
Prof. Ivanichka Serbezova, PhD, iserbezova@uni-ruse.bg,
Daniela Todorova, dtodorova@uni-ruse.bg, +359 82 888 378

▪ **REVIEWERS:**

Prof. Grygorii Deinychenko, DSc
Prof. Antonina Dubinina, DSc
Prof. Oleksandr Gavva, DSc
Prof. Olexandr Zaichuk, DSc
Prof. Galyna Polischuk, DSc
Prof. Volodymyr Telychkun, PhD
Prof. Venelin Enchev, DSc
Prof. Rositsa Titorenkova
Prof. Stefan Stefanov, PhD
Prof. Irena Markovska, PhD
Prof. Stanka Damianova, DSc
Prof. Tsvetan Dimitrov, PhD
Prof. Neyko Stoyanov, PhD
Assoc. Prof. Mark Shamtsyan, PhD
Assoc. Prof. Olena Karasyk, PhD
Assoc. Prof. Olena Khomenko, PhD
Assoc. Prof. Oleksii Gubenia, PhD
Assoc. Prof. Cristina Popovici, PhD
Assoc. Prof. Liviu Gacheu, PhD
Assoc. Prof. Miluvka Stancheva, PhD
Assoc. Prof. Temenujka Haralanova, PhD
Assoc. Prof. Iliana Kostova, PhD

Biotechnologies and Food Technologies 07.11., Razgrad

Content

1.	FRI-LCR-1-BFT(R)-01 Quantitative benedict test for reducing sugar and milk analyses <i>Radina Ivanova, Zlatina Chengolova</i>	11
2.	FRI-LCR-1-BFT(R)-02 The practical results of LCA Care project as a driving force for the development of SMEs in the agri-food sector in Bulgaria <i>Juliana Popova, Velizara Pencheva, Stanka Damyanova, Pavel Vitliemov, Asen Asenov</i>	12
3.	FRI-LCR-1-BFT(R)-03 Evaluation of food safety knowledge and attitudes among food technology students <i>Darina Georgieva</i>	19
4.	FRI-LCR-P-1-BFT(R)-01 Biohydrogen production <i>Evgenia Vasileva, Evgeniy Ganev, Venko Beschkov</i>	26
5.	FRI-LCR-P-1-BFT(R)-02 Whey cheese with added almond protein – physical and chemical indicators <i>Toncho Kolev</i>	31
6.	FRI-LCR-P-1-BFT(R)-03 Application of sweet chestnut flour and essential oils from the Lamiaceae family in culinary sauces <i>Hafize Fidan, Silviya Mollova</i>	38
7.	FRI-LCR-P-1-BFT(R)-04 Comparative analysis of small breads with flax seed flour <i>Toncho Kolev</i>	48
8.	FRI-LCR-P-1-BFT(R)-05 Biogas from agricultural and industrial organic wastes <i>Ivan Angelov, Venko Beschkov</i>	54
9.	FRI-LCR-P-1-BFT(R)-06 Development of a savory biscuit recipe utilizing technological residues from grain products manufacturing <i>Darina Georgieva</i>	59