



**“ANGEL KANCHEV” UNIVERSITY OF RUSE
UNION OF SCIENTISTS – RUSE**

Reports Awarded with "Best Paper" Crystal Prize

57th Annual scientific conference of University of Ruse and Union of Scientists

**NEW INDUSTRIES, DIGITAL ECONOMY,
SOCIETY - PROJECTIONS OF THE FUTURE**

2018 – Ruse, Silistra, Razgrad

Publishing: “Angel Kanchev” University of Ruse

Print: University of Ruse Publishing Center

Copyrights© 2019 ISBN 978-954-712-753-1 (Print)

INTRODUCTION

DEAR READERS,

University of Ruse and Ruse Union of Scientists present materials of the 57th annual scientific conference, which is co-organized by our two institutions. Scientific and plenary sessions are being held respectively in Silistra, on October 20, in Ruse – on 25, 26, and 27 October, and in Razgrad, on 2 and 3 November 2018.

Theme of the conference is "New Industries, Digital Economy, Society - Projections of the Future." The forum program includes 314 research result reports, which were presented during all the days of the session and other parallel events. The 534 authors from 17 countries discussed their views in the following research areas and topics, which correspond to the conference theme:

Agricultural Machinery and Technologies; Maintenance and Reliability Thermal; Hydro- and Pneumatic Equipment; Ecology and Conservation; Chemical Technologies; Biotechnologies and Food Technologies; Mechanical Engineering and Machine-building Technologies; Electrical Engineering, Electronics and Automation; Communication Systems and Networks; Transport and Machine Science; Economics and Management; Linguistic and Cultural Science, Intercultural and Political Communication; Mathematics, Informatics and Physics; Education – Research and Innovations; Pedagogy and Psychology; History, Ethnology and Folklore; Linguistics, Literature and Art Science; Health Prevention and Social Work; Health Promotion.

We hope, that scientific reports and discussions contribute to deepening the understanding related to various aspects of regional economic transformation based on the implementation of innovative strategies and approaches to *New Industries, Digital Economy, Society* and its relations to business environment and quality of life. The use of systematic thinking is the basis for creating effective applications and best practices in many areas of science and its impact on business development and growth.

Ruse Union of Scientists and Ruse University are characterized by their multi-profile identity, and they cover competencies in all above presented scientific fields and areas of research.

All abstracts with key words and reference lists in English, approved for presentation at the conference, met the layout requirements and had been included in the **“Proceedings - Programme and Abstracts of the 57th ISC of the University of Ruse’18”**.

After being nominated by the Program Committee, and successfully approved by international double blind reviewing, up to two papers from each section, that were submitted and presented in English which have been submitted and presented in English, were published in Compiled edition of **Reports Awarded with “Best Paper“ Cristal Prize’18**, as hard copy (ISBN 978-954-712-753-1) and on-line on the Conference Website (<http://conf.uni-ruse.bg>)

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

The online edition of Reports Awarded with “Best Paper“ Cristal Prize’18 of the University of Ruse“ is registered in the portal ROAD scientific resources online open access.



The authors have one month to finalize their reports and summaries. The official collections of the conference will be posted online at: <http://conf.uni-ruse.bg>.

- **Chair:**

Prof. Hr. Beloey, DTSc, COR MEM, RECTOR of the URAK and CHAIRPERSON of the USR

- **Scientific Secretary:**

Prof. Diana Antonova PhD, Vice-Rector Research of the URAK

PROGRAMME COMMITTEE

- **Prof. Velizara Pencheva, PhD,**
University of Ruse, Bulgaria
- **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. Ismo Hakala, PhD,**
University of Jyväskylä, Finland
- **Prof. Dr. Artur Jutman,**
Tallinn University of Technology, Estonia
- **Prof. RNDr. Vladimir Tvarozek, PhD,**
Slovak University of Technology in Bratislava, Bratislava, Slovakia
- **Doc. Ing. Zuzana Palkova, PhD,**
Slovak University of Agriculture in Nitra, Nitra, Slovakia
- **Andrzej Tutaj, PhD,**
AGH University of Science and Technology, Krakow, Poland
- **Assoc. Prof. Behiç TEKİN, PhD,**
EGE University, Izmir, Turkey,
- **Prof. Valentin NEDEFF Dr. eng. Dr.h.c.,**
“Vasile Alecsandri” University of Bacău, Romania
- **Dr. Cătălin POPA,**
“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. Dojčil Vojvodić PhD,**
Faculty of Philosophy, University of Novi Sad, Serbi
- **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, Santiago de Compostela, Spain
- **Assoc. Prof. Dr. Mehmet Şahin,**
Necmettin Erbakan University, Ahmet Keleşoğlu Faculty of Education, Konya, Turkey
- **Assoc. Prof. Erika Gyöngyösi Wiersum, PhD,**
Eszterházy Károly University, Comenius Campus in Sárospatak, Institute of Real Sciences, Sárospatak, Hungary
- **Anna Klimentova, PhD,**
Constantine the Philosopher University in Nitra, Slovakia
- **Prof. Igor Kevorkovich Danilov, DSc,**
Yuri Gagarin State Technical University of Saratov, Russia
- **Prof. Aleksander Valentinov Sladkowski, DSc,**
Silesian University of Technology, Poland
- **Prof. Pether Shulte, PhD,**
Institute for European Affairs (INEA), Dusseldorf, Germany
- **Prof. Aslitdin Nizamov, DSc., PhD,**
Bukhara Engineering-Technological Institute, Bukhara, Uzbekistan

- **Prof. Marina Sheresheva, PhD,**
Lomonosov Moscow State University, Russia
- **Prof. Erik Dahlquist, PhD,**
Mälardalen University, Sweden
- **Prof. Erik Lindhult, PhD,**
Mälardalen University, Sweden
- **Prof. Annika Kunnasvirta, PhD,**
Turku University of Applied Sciences, Finland
- **Prof. Walter Leal, Dr. (mult.) Dr.h.c. (mult.),**
Hamburg University of Applied Sciences, Germany
- **Prof. Dr. Gerhard Fiolka,**
University of Fribourg, Switzerland
- **Prof. Haluk Kabaalioglu, PhD,**
Yeditepe University, Turkey
- **Prof. Silva Alves, PhD,**
University of Lisbon, Portugal
- **Hanneke van Bruggen,**
Appeldoorn, The Netherlands
- **Nino Žganec,**
President of European Association of Schools of Social Work, Prof. at the Department of Social Work,
University of Zagreb, Croatia
- **Prof. Violeta Jotova,**
Направление „Педиатрия“ в УМБАЛ „Св. Марина“ - Варна, България
- **Prof. Tanya Timeva, MD, PhD,**
Obstetrics and Gynecology Hospital "Dr. Shterev", Sofia, Bulgaria
- **Prof. Kiril Stoychev, PhD,**
Institute of Metal Science, Equipment and Technologies “Acad. A. Balevsci” with Hydroaerodynamics
centre - BAS, Bulgaria
- **Assoc. Prof. Mark Shamtsyan, PhD,**
Technical University, Saint Petersburg, Russia
- **Assoc. Prof. Oleksii Gubenia, PhD,**
National University of Food Technology, Kiev, Ukraine
- **Assoc. Prof. Olexandr Zaichuk, DSc,**
Ukrainian State University of Chemical Technology, Dnepropetrovsk, Ukraine
- **Prof. Eugene Stefanski, DSc,**
Samara University, Russia
- **Doc. Dr. Tatiana Strokovskaya,**
International University of Nature “Dubna”, Dubna, Russia
- **Prof. DSc. Petar Sotirow,**
Maria Curie-Skłodowska University of Lublin, Poland
- **Prof. Papken Ehasar Hovsepian,**
Sheffield Hallam University, Sheffield, UK
- **Accos. Prof. Krassimir Dochev Dochev, PhD,**
University of Portsmouth School of Engineering, UK
- **Mariana Yordanova Docheva, PhD,**
University of Portsmouth School of Engineering, UK
- **Assoc. Prof. Ivan Antonov Lukanov, PhD,**
University of Botswana, Faculty of Engineering and Technology, Gaborone, Botswana
- **Assoc. Prof. Petko Vladev Petkov, PhD,**
Research Associate Cardiff University, UK
- **Prof. Stepan Terzian DSc,**
Bulgarian Academy of Science, Bulgaria
- **Prof. Dr. Gabriel Negreanu,**
University Politehnica of Bucharest, Romania

ORGANISING COMMITTEE

- ◆ **ORGANIZED BY: University of Ruse (UR) and Union of Scientists (US) - Ruse**
- ◆ **ORGANISING COMMITTEE:**
 - **Chairperson:**
COR. MEM Prof. Hristo Beloev, DTSc - Rector of UR, Chairperson of US - Ruse
 - **Scientific Secretary:**
Prof. Diana Antonova PhD, Vice-Rector Research,
dantonova@uni-ruse.bg, 082/888 249
- ◆ **THEMATIC FIELDS:**
 - **Agricultural Machinery and Technologies & Agrarian Sciences and Veterinary Medicine (AMT&ASVM)**
 - **Maintenance and Reliability (MR)**
 - **Thermal, Hydro- and Pneumatic Equipment (THPE)**
 - **Ecology and Conservation (EC)**
Assoc. Prof. Kaloyan Stoyanov, PhD
kes@uni-ruse.bg, 082/888 542
 - **Mechanical Engineering and Machine-building Technologies (MEMBT)**
Assoc. prof. Velina Bozduganova, PhD,
velina@uni-ruse.bg, 0887119914
 - **Electrical Engineering, Electronics and Automation (EEEA)**
Assoc. Prof. Kiril Sirakov, PhD,
csirakov@uni-ruse.bg, 082/888 364
 - **Communication and Computer Technologies (CCT)**
Assoc. Prof. Milko Marinov, PhD,
mmarinov@ecs.uni-ruse.bg, 082/888 356
 - **Communication Systems and Networks (CSN)**
Pr. Assist. Ivanka Tsvetkova, PhD,
itsvetkova@uni-ruse.bg, 082/888 836
 - **Transport and Machine Science (TMS)**
Assoc. Prof. Simeon Iliev, PhD,
spi@uni-ruse.bg, 082/888 331
 - **Economics and Management (EM)**
Assoc. Prof. Pavel Vitliemov, PhD,
pvitliemov@uni-ruse.bg, 082/888 495
 - **Linguistic and Cultural Science, Intercultural and Political Communication (LCSIPC)**
Prof. Juliana Popova, PhD,
jppopova@uni-ruse.bg, 0887 899 654
Pr. Assist. Hristina Sokolova, PhD,
hsokolova@uni-ruse.bg
 - **Mathematics, Informatics and Physics (MIP)**
Pr. Assist. Magdalena Andreeva, PhD,
magie@ami.uni-ruse.bg, 082/888 470
 - **Education - Research and Innovations (ERI)**
Assoc. Prof. Emilia Velikova, PhD,
evelikova@uni-ruse.bg, 0885 635 874

- **Pedagogy and Psychology (PP)**
Assoc. Prof. Bagryana Ilieva, PhD,
bilieva@uni-ruse.bg 082 888 219
- **History, Ethnology and Folklore (HEF)**
Pr. Assist. Reneta Zlateva, PhD,
rzlateva@uni-ruse.bg, 082/888 752
- **Linguistics and Literature (LL)**
- **Art Science (AS)**
Pr. Assist. Velislava Doneva, PhD,
doneva_v@uni-ruse.bg, 0886 060 299
- **Health Promotion (HP)**
Assoc. Prof. Stefka Mindova,
smindova@uni-ruse.bg, 0882 895 149
- **Social Work (SW)**
Assoc. Prof. Sasho Nunev, DSc of SW,
snunev@uni-ruse.bg, 0886 802466
- **Health Care (HC)**
Assoc. Prof. Despina Georgieva, PhD,
dpgeorgieva@uni-ruse.bg, 0889 789 100
- **Law (L)**
Assoc. Prof. Elitsa Kumanova, PhD,
ekumanova@uni-ruse.bg, 082/ 888 434
- **Quality of Higher Education (QHE)**
Assoc. Prof. Emil Trifonov, PhD, e_trifonov@abv.bg,
Daniela Todorova,
dtodorova@uni-ruse.bg, 082 888 378
- **Linguistics; Literature; Issues of Education (LLIE) (19.10., Silistra)**
Assoc. Prof. Galina Lecheva;
glecheva@uni-ruse.bg
- **Natural and Technical Sciences (NTS) (19.10., Silistra)**
Pr. Assist. Milen Sapundzhiev, PhD;
milenvs@abv.bg
- **Chemical Technologies (CT) (03-04.11., Razgrad)**
Assoc. Prof. Tsvetan Dimitrov, PhD,
conf_rz@abv.bg, 0887 631 645
- **Biotechnologies and Food Technologies (BFT) (03-04.11., Razgrad)**
Assoc. Prof. Nastya Ivanova, PhD,
nivanova@uni-ruse.bg, 0899 450 177

CONTENTS

FRI-110-1-LLIE(S)-04	Concepts and Reality in the Novel „Convicted Souls" Imagery Code Function <i>Rumyana Lebedova</i>	12
FRI-110-1-LLIE(S)-07	Discovering Language and Speech Pathologies in Pre-School and Primary School Children <i>Valentina Vasileva, Desislava Stoyanova</i>	18
FRI-8.121-1-AMT&ASVM-01	Study of Vibrations Caused by Rotary Movement of Electric Motor <i>Radko Mihaylov, Vladimir Demirev</i>	24
FRI-8.121-1-AMT&ASVM-02	Mechanization of Small Family Farms in Poland <i>Edmund Lorencowicz, Jacek Uziak</i>	30
FRI-9.3-1-THPE-10	Research Regarding the Pyrolysis of Poultry Waste as an Alternative for its Use in Energy Production <i>Gheorghe Lăzăroiu, Lucian Mihăescu, Ionel Pișă, Viorel Berbece, Gabriel Paul Negreanu</i>	35
FRI-9.3-1-THPE-12	Performance Assessment of Sorption Regenerator for Dehumidification in Air Handling Unit <i>Yordan Penev, Pencho Zlatev, Valentin Bobilov</i>	40
FRI-1.417-1-MEMBT-03	Dissolution and Mechanical Properties of 3D Printed Polylactic Acid for Bio-Implants <i>Mariana Ilieva, Dimitar Kamarinchev, Danail Godpodinov, Ekaterin Minev, Emil Yankov, Roussi Minev</i>	45
FRI-10.326-1-EEEE-07	Current Status and Future Directions of Renewable Energy Use in Afghanistan <i>Najmuddin Noorzad, Nicolay Mihailov</i>	53
FRI-10.326-1-EEEE-10	Design of Direct Alternating Current Driver System for Decrease of Flicker Index <i>Denis Sami, Seher Kadirova, Ozgur Sanatsever</i>	59
FRI-2G.302-1-CSN-12	Analysis of Different Antenna Types for Wireless Communications Using a Laboratory Testbed <i>Ivanka Tsvetkova, Plamen Zahariev</i>	65
FRI-2.203-1-TMS-06	Design and Study of Electromobile Prototype DTT-3 by Catia V5 <i>Emil Mitev, Simeon Iliev, Dancho Gunev</i>	73
FRI-2.203-1-TMS-15	Main Problems and Prospects for Development of Urban Passenger Transport in Bulgaria <i>Velizara Pencheva, Asen Asenov, Ivan Georgiev, Aleksander Sladkowski</i>	83
FRI-2G.404-1-EM-07	Public Spending and Its Impact on Gross Domestic Product (GDP) <i>Kamelia Assenova</i>	91
FRI-2G.305-1-ERI-01	Students and Digital Mathematics Teaching <i>Ion Mierlus-Mazilu, Emilia Velikova, Ralitsa Vasileva-Ivanova</i>	97
FRI-2G.305-1-ERI-05	Apprenticeship Cluster in Mechanical Engineering and Mechatronics <i>Irena Rashkova, Tsvetelina Petrova</i>	109
FRI-2G.307-1-LL-02	“The Bulgarian in Prison” – A Forgotten Polish Poem from 1877 <i>Kamen Rikev</i>	116
FRI-2G.307-1-LL-05	The Personality of Academician Mikhail Arnaudov in the Context of the Ten Arnaudov Readings <i>Nikola Benin, Iliyana Benina</i>	122

FRI-2.205-1-AS-02 Enrichment of Children's Creative Potential Through Music Games <i>Petya Stefanova</i>	128
FRI-K.201-1-HP-09 Tools to Assessing Rehabilitation After Stroke <i>Ivelina Stefanova</i>	133
FRI-2.114-1-SW-01 Quality of Social Services - Theoretical Approaches and Practical Challenges <i>Lilyana Rusanova</i>	138
FRI-2G.104-2-HC-05 Training of Relatives and Attendants of Hemodialysis Patients <i>Teodora Todorova</i>	143
FRI-2B.313-1-L-03 Religion, Culture and Law as Inclusive Conditions and Criteria for Belonging to the European Civilization and the European Union <i>Ivelin Velchev</i>	146
FRI-2B.311-1-L-08 Insolvency Proceedings of Members of a Group of Companies <i>Vladislav Ivanov</i>	153
FRI-K1-1-QHE-03 Regional Dimensions of the University Leadership (The Case With the University of Ruse, Bulgaria) <i>Hristo Beloiev, Velizara Pencheva, Juliana Popova, Diana Antonova, Svilen Kunev</i>	157
FRI-K1-1-QHE-13 Increasing the Motivation for Learning of the Students from the Professional Field Mechanical Engineering at the University of Ruse <i>Tanya Grozeva</i>	168
FRI-LCR-1-CT(R)-02 Synthesis and Study of Ni-Doped Willemite Ceramic Pigments <i>Tsvetalina Ibrevva, Tsvetan Dimitrov, Irena Markovska</i>	173
FRI-LCR-1-BFT(R)-03 Sensory Evaluation and Rheological Behaviour of Yogurts Prepared from Goat Milk <i>Cristina Popovici, Mihaela Adriana Tita, Renata Brinza</i>	179
SAT-LB-1-CT(R)-10 Strategic Design of Integrated Supply Chains for Production and Distribution of Bioethanol <i>Yunzile Dzhelil, Evgeniy Ganev, Boyan Ivanov, Dragomir Dobrudzhaliev</i>	187
SAT-LB-P-2-BFT(R)-08 Comparison of Alexa 488, DR110 and Fite Conjugated to Antibody for Microscopic Assays <i>Zlatina Becheva, Yavor Ivanov, Tzonka Godjevargova</i>	194

Reports Awarded with "Best Paper" Crystal Prize'18