

## CONTENTS

*Ninth International Conference of FMNS (FMNS-2021) "Modern Trends in Science",  
Blagoevgrad, Bulgaria, September 15-19, 2021*

### *Section Chemistry*

<i>I. R. Iliev, Y. K. Koleva, S. R. Georgieva, Study of the reactivity of the generated liver metabolites of a newly synthesized derivative of bexarotene and paracetamol.....</i>	7
<i>I. R. Iliev, Y. K. Koleva, S. F. Georgieva, Influence of skin metabolites of the newly synthesized derivative of bexarotene and paracetamol on the potential antitumor effect....</i>	15
<i>B. A. Karamanova, P. S. Ublekov, L. S. Soserov, Ch. P. Novakov, I. V. Dimitrov, A. E. Stoyanova, Hybrid supercapacitors with innovative binder - ex-situ structural and morphological studies.....</i>	20
<i>Y. K. Koleva, The probable reactivity of a petroleum component.....</i>	27
<i>B. B. Mladenova, T. E. Stankulov, B. A. Karamanova, S. K. Veleva, V. G. Ilcheva, A. E. Stoyanova, Synthesis and characterization of carbon xerogels and MnO<sub>2</sub> as electrode materials for energy storage systems.....</i>	33
<i>K. Vl. Stefanova, N. Dr. Shukova, Mathematical modeling, software simulation and directions of development for waste gas purification from SO<sub>2</sub>.....</i>	40
<i>S. Stefanov, S. Stoeva, S. Georgieva, M. Hristova, K. Nikolova, M. Dobрева, V. Andonova, In vivo comparative assessment of incised wound healing in rats after application of hydrogel/organogel formulation containing St. John's wort methanol extract.....</i>	46
<i>M. Stoev, N. Ivanova, E. Chorbadzhiyska, Drinking water purification in integrated system... </i>	52
<i>Y. Nacheva, A. Garkinin, I. Trenchev, Zh. Velkov, DFT investigation of the radical-scavenging activity of biogenic amines.....</i>	61
<i>E. L. Pekhtasheva, E. Yu. Raykova, T. I. Chalykh, M. A. Polozhishnikova, M. P. Slavova, Biodegradation of polycapromide textile materials .....</i>	66

### *Section Physics*

<i>L. M. Ivanov, T. D. Cholakov, Optical quartz fibers as non-linear media and four-wave mixing method for determination of fibers geometrical parameters.....</i>	73
<i>D. Kaisheva, A. Anchev, V. Dunchev, B. Stoyanov, S. Valkov, M. Ormanova, G. Kotlarski, V. Todorov, M. Atanasova, P. Petrov, Welding of copper and 304L stainless steel with continuous electron beam.....</i>	78
<i>A. P. Viraneva, I. Y. Vlaeva, T. A. Yovcheva, Influence of humidity on surface potential decay of gamma irradiated polypropylene and poly(ethylene terephthalate) electrets.....</i>	82
<i>T. E. Vlakhov, G. B. Hadjichristov, Y. G. Marinov, Impedimetric response of phospholipid Langmuir-Blodgett films to methanol vapors.....</i>	88

### *Section Methodology of Education*

<i>I. Kotseva, N. Nikolov, The potential of YouTube as a learning tool in physics education: a survey among secondary students.....</i>	97
<i>I. Kotseva, M. Gaydarova, F. Kunis, K. Ilchev, Analysis of problem-based learning in physics from the perspective of integrated STEM education.....</i>	102
<i>F. Kunis, I. Kotseva, M. Gaydarova, Applying collaborative activities in high school physics course during a hybrid model of learning.....</i>	106
<i>R. I. Vassileva, An integrated approach to teaching the topic of <i>light and colors</i> from the seventh grade physics syllabus.....</i>	112

### *Section Technical Sciences*

<i>P. Kissabekova, D. Karabekova, A. Khassenov, L. Chirkova, A. Satybalidin, Investigation of the operation of a thermoelectric converter.....</i>	119
--	-----

### *Special session Low-carbon energy for transport and household*

<i>S. Stefanov, Ts. Parvanova-Mancheva, L. Ljutzkanov, E. Razkazova-Velkova, Membraneless fuel cells for remediation of sulfide and nitrate contaminated fluxes.....</i>	125
--	-----

<i>INSTRUCTIONS TO AUTHORS.....</i>	133
-------------------------------------	-----

