GREETINGS OF THE PROGRAM COMMITTEE'S CHAIRMAN 3

GREETINGS OF THE ORGANIZING COMMITTEE'S CHAIRMAN 4

THE PROGRAM COMMITTEE 5

THE ORGANIZING COMMITTEE 7

PLENARY PRESENTATIONS 9

THE CONFERENCE'S ORGANIZERS 14

COMPUTER SIMULATION IN THE CHEMICAL TECHNOLOGY AND ENGINEERING 29

Airflow and Mass Transfer Modeling as a Tool for Analyzing Drug Aerosolization and Deliveryn. *Tomasz Sosnowsk, Agata Dorosz, Arkadiusz Moskal, Maciej Małecki* 30

Simulation of the Ultrafiltration Process: Modern Level and Development Trends. *Serhii Huliienko* 34

Mathematical Modeling of Heat and Mass Transfer and Phase Transformations in the Condensation Zone of a Heat Pipe. *Natalia Sorokova*, *Konstantin Polovynkin*, *Julia Kolchyk* 38

Topological Optimization of Mass Characteristics of a Lower Limb Prosthesis Stump Receiver Using SolidWorks. *Anastasiia Kucherenko*, *Anastasiia Boshchuk*, *Volodymyr Hlovatskyi*, *Vitaliy Korendiy*, *Volodymyr Moravskyi* 43

AI-Driven Predictive Modeling for Biomass Carbon Sequestration and Decarbonization. *Mykhailo Hurei* 47

Molecular Dynamics Modeling as an Innovative Approach to Solving Problems in Ecology. *Hlib Teteriatnykov*, *Anton Karvatskii*, *Olena Ivanenko* 53

Modeling the Operation of Glass Furnaces in Order to Optimize Technological Processes. *Nataliia Zhdaniuk*, *Oleksii Plemyannikov* 57

The Influence of Channel Curvature and Spacer Geometry on Flow Characteristics in Membrane Module Channels. *Vitaliy Yasenchuk*, *Sergiy Huliienko* 61

Molecular Modeling of Polymethylmethacrylate-Polyaniline Composites and Study of Its Properties. *Volodymyr Dutka*, *Yaroslav Kovalskyi*, *Halyna Halechko*, *Oleh Khamar* 65

DEVELOPMENT, ENERGY AND RESOURCE SAVING IN THE CHEMICAL AND FOOD TECHNOLOGIES 69

Design and Development of a High-Concentration Aqueous Ammonia Solution Production Plant. *Oleksandr Mandryka*, *Maksym Skydanenko*, *Oleksandr Liaposhchenko* 70

Interrelation of Quality Indicators of Coal Charge and Blast Furnace Coke. *Illia Avdeiuk*, *Denys Miroshnychenko* 78

Development and Optimization of Lithium Aluminosilicate Glass-Ceramic Materials with High β-Spodumene Content for Armor Protection. *Sviatoslav Riabinin*, *Artem Zakharov*, *Mykyta Maistat* 82

Kinetics of Filtration Drying of Wild Carrot Pomace. *Alina Denysiuk*, *Volodymyr Atamanyuk* 86

Development of Bio-Based Epoxy Thermosetting Materials Based on Imine Bonds. *Anastasiia Pidvorotnia*, *Roxana Dinu*, *Sandu Cibotaru*, *David D. Swanson*, *Alice Mija* 90

Research on a Combined System with a Hybrid Solar Collector. *Stepan Mysak*, *Stepan Shapoval*, *Anna Hyvliud* 94

Optimizing Coal Fine Properties for Industrial Applications Through Chemical Treatments. *Nataliya Korol*, *Viktor Yankovych* 99

Preparation and Structure of Chitosan-Based Porous Scaffolds for Potential Application in the Treatment for Diabetic Foot Complications. *Zoia Haholkina*, *Maite Rico*, *Rebeca Bouza* 104

Plant Oil-Based Polymers: Synthesis, Structure, and Temperature-Responsive Properties Near Physiological Temperatures. *Anastasiia Chebotar*, *Bohdan Domnich*, *Yurij Panchenko*, *Volodymyr Donchak*, *Yurij Stetsyshyn*, *Andriy Voronov* 108

Mass Transfer During the Dissolution of Ammonium Tetrafluoroborate, Based on the Theory of Locally Isotropic Turbulence. *Oleksandr Kuzyk*, *Yaroslav Gumnitsky* 112

Pressure Influence on the Carbon Gasification Process. *Nazar Lysyy*, *Andriy Helesh*, *Vasyl Popovych* 118

QM/MM Study of the Cyclization Reaction Mechanism for Pimelic o-Aminobenzamide Histone Deacetylase (HDAC) Inhibitor 4b. *Olena Klenina*, *Laura Márquez Cantudo*, *Claire Coderch*, *Beatriz de Pascual-Teresa Fernandez* 123

Lignocellulous Raw Materials and Its Wastes Transformation Into Value-Added Products. *Bohdan Korinenko*, *Tetiana Tkachenko*, *Oleksandr Pavliuk*, *Dmytro Kamenskyh*, *Vitalii Yevdokymenko* 132

Diffusive Mass Transfer During Filtration Drying of Match Splints. *Tetiana Kuzminchuk* 138

Evaluation of the Effect of Technical Lignin on the Properties of Petroleum Bitumen. *Myroslava Donchenko*, *Yuriy Prysiazhnyi*, *Andriy Nagurskyy*, *Taras Chipko* 142

Synthesis and Properties of Latex Composites Filled with PVA Hydrogel and Keratin. *Oleksandra Dzeikala*, *Mirosława Prochoń* 146

Formation of Specific Electrical Resistance of Blast Furnace Coke Under the Influence of Raw Materials and Technological Factors of Its Production. *Yevhen Soloviov*, *Denys Miroshnychenko* 150

Intensification of Evaporation of Sulfuric Acid Solutions. *Andriy Helesh*, *Roksoliana Bukliv*, *Yaroslav Kalymon*, *Oksana Kurylets* 154

Mechanical Properties of Biodegradable Films Based on Polyvinyl Alcohol and Starch. *Oleksandra Krykhovets*, *Vyacheslav Repeta* 160

Processing of Petroleum-Containing Waste by Low-Temperature Pyrolysis Method. *Oleg Grynyshyn*, *Andrii Kopach*, *Yuriy Znak*, *Taras Chervinskyy* 164

Study of Mechanical Properties of Starch-Based Biodegradable Films and Their Degradation Under UV Radiation. *Valentyna Slobodianyk* 168

THE INNOVATIONS, NANOTECHNOLOGIES, AND CATALYSIS IN THE CHEMICAL AND FOOD INDUSTRIES 172

Study of Gas-Dynamic Throttle Elements as Sensors for Nanotechnology Processes. *Ivan Stasiuk*, *Ihor Dilai*, *Roman Brylynskyi*, *Solomiia Markiv* 173

Innovative Techniques For Producing Yogurts With Increased Nutritional Value. *Dariia Kichura*, *Roman Subtelnyy* 180

Study of the Wine Clarification Process with Bentonite. *Khrystyna Frys*, *Oksana Nahurska*, *Olha Fedotova* 184

Sol-Gel Synthesis of Organic/Inorganic Materials with High Proton Conductivity. *Mariia Zhyhailo*, *Iryna Yevchuk*, *Oksana Makota* 189

Hydrothermal and Mechanochemical Modification as a Tool for Preparing ZrO_2 with Desired Physicochemical Characteristics and Improved Photocatalytic Properties. *Volodymyr Sydorchuk*, *Joanna Olszowka*, *Svitlana Khalameida*, *Svitlana Levytska*, *Stefan Vajda* 195

Crystallization Parameters of $CsPbBrCl_2$ Melt. *Oleh Kopach*, *Vasylyna Kopach*, *Taras Diiakoniuk*, *Petro Fochuk* 199

Effect of Chemical Etching on Photoinduced Modulation of Subterahertz Radiation by Crystalline Germanium. *Roksoliana Bukliv*, *Oksana Balaban*, *Bohdan Venhryn*, *Dmytro Vynnyk*, *Andriy Danylov* 204

Temperature Influence on the Rheological Properties of C9 Hydrocarbon Resin Solutions. *Roman Subtelnyy*, *Dariia Kichura*, *Bohdan Dzinyak* 209

Studying the Rheological Behaviour of Polyamide Nanocomposites. *Natalia Chopyk*, *Victoria Zemke*, *Mykhaylo Bratychak* 213

Characterization of Miscanthus Biomass Waste -Derived Biochar Produced by Oxydative Pyrolysis: Implications for Carbon Sequestration. *Valentyna Pidlisnyuk*, *Tatyana Stefanovska*, *Volodymyr Klius*, *Larysa Borysenko*, *Artem Medkov* 217

Prospects of Sulfur Nanoparticles Application in the Technology of Food Emulsion Systems. *Erika Boichuk*, *Anastasiia Sachko*, *Viktoriia Pylypko*, *Yuriy Khalavka* 222

La-Modified $Cu/ZnO/Al_2O_3$ System as the Modern Heterogeneous Catalysts for Water-Gas Shift Process. *Paweł Kowalik*, *Katarzyna Anotniak-Jurak*, *Anna Mrozek*, *Piotr Baran* 228

New Types of Cold-Applied Bituminous Roofing Materials. *Dmytro Aleksandrov*, *Yuriy Khlibyshyn*, *Volodymyr Yuzyfyshyn*, *Andrii Nahurskyi*, *Oleg Grynyshyn* 232

Luminescent Determination of 4-Nitrophenol in Water Using $AgInS_2$ and $CuInS_2$ Nanoparticles. *Vasylyna Kopach*, *Yuriy Khalavka*, *Anastasiia Piasetska* 236

Selenium-Modified Microgels: Novel Catalysts for Cross-Phase Oxidation of Aromatic Aldehydes. *Anastasiia Pavliuk*, *Oliver Fiukowski*, *Volodymyr Ivasiv*, *Roman Nebesnyi*, *Andrij Pich* 240

Tuning Excited-State Proton Transfer in 3-Hydroxyflavones by Inclusion Into β-Cyclodextrins. *Arsenii Snizhko*, *Liudmyla Chepeleva*, *Eugene Gladkov*, *Alexander Kyrychenko* 245

Design of Polyfunctional Catalysts for C2, C4 (Bio)alcohols' Conversion Into Valuable Alkenes and Oxygenates. *Olga Larina*, *Karina Valihura*, *Oksana Zikrata*, *Svitlana Orlyk*, *Sergiy Soloviev* 250

Degradation Changes in the Crystal and Electronic Structure of Lead Iodide Perovskite. *Volodymyr Karbivskyy*, *Svitlana Smolyak*, *Arsen Soroka*, *Nazar Shvachko*, *Oleksii Ivanov* 254

Investigation of Suspensions of Mixed Iron Oxide/Manganese Oxide and Iron Oxide/Cobalt Oxide Nanoparticles in Aqueous Surfactant Solutions and Their Use for Mixer Studies in Liquids Feeds. *Tamara Sakhno*, *Valentina Panchenko*, *Nikolay Barashkov*, *Yuriy Sakhno* 258

Catalytic Properties of CeO2 and Its Nanocomposites with SBA-15 Mesoporous Molecular Sieve in Cyclic Carbamates Production from CO2 and Aminoalcohols. *Mykhailo Kurmach*, *Dmytro Kyryliuk*, *Pavlo Yaremov*, *Oleksiy Shvets*, *Nataliya Shcherban* 262

Research on the Cracking of Heavy Oil Fractions Activated by Atmospheric Oxygen. *Vasyl Konyk*, *Yuriy Khlibyshyn* 268

Effect of Acrylic Monomer Formulation on Photocuring and Water Swelling Ability of PVA Hydrogel. *Vasyl Vaskiv*, *Dmytro Saiuk*, *Viktor Tokarev* 272

Preparing the Organic-Inorganic Hybrid Perovskites for the Effective Solar Cell. *Volodymyr Karbivskyy*, *Oleksii Ivanov*, *Nazar Shvachko*, *Nataliia Kurgan*, *Serhii Shulyma* 279

Constant Magnetic Field Influence on (Meth)Acrylic Esters Polymerisation in the Presence of Polyvinylpyrrolidone. *Galyna Dudok*, *Natalia Semenyuk*, *Taras Behei*, *Volodymyr Skorokhoda* 285

Fundamentals of the Technology of Obtaining Interactive Materials for Use in Catalysis and Biosensors in the Context of Food Freshness Assessment. *Iryna Kirina*, *Khrystyna Frys*, *Oksana Nahurska*, *Volodymyr Ivasiv*, *Roman Nebesnyi* 291

Influence of Dispersion Medium Parameters on Suspension Polymerization of Methacrylic Esters in Presence of Polyvinylpyrrolidone. *Nataliya Semenyuk*, *Galyna Dudok*, *Volodymyr Malynovskyi*, *Nazar Shalata*, *Volodymyr Skorokhoda* 295

OPTIMIZATION OF BIOCHEMICAL PROCESSES AND BIOENGINEERING 301

Exploring the Potential of Organophosphorus Compounds as Chelators for Enhancing Zinc Bioavailability in Agriculture. *Magdalena Tymoszewicz*, *Ewelina Klem-Marciniak*, *Marta Huculak-Mączka*, *Tomasz Olszewski* 302

Biocatalytic Method for the Synthesis of Enantiomerically Pure β-Methyl-phenylethylamines. *Oleh Faiziiev*, *Anastasiia Kolodiazhna*, *Dmytro Prysiazhnuk* 308

Enhancing Mechanical Properties of Biopolymer-Based Composites: The Influence of Organic and Inorganic Additives. *Szymon Szczepanik*, *Mirosława Prochoń* 313

Organs-on-a-chip in the Study of Ophthalmic Diseases. *Marharyta Chalenko*, *Olena Golembiovska* 318

Enzymatic Synthesis is a Method for Obtaining Optically Active Compounds. *Anastasiia Kolodiazhna* 324

Preparation of Enantiomerically Pure 3-Heteryl-2-Methylpropanoic and 3-Heterylbutanoic Acids by Enzymatic Kinetic Resolution. *Oleh Faiziiev*, *Anastasiia Kolodiazhna*, *Dmytro Prysiazhnuk* 332

The Content of Anthocyanins and Ascorbic Acid in Extract of *Malva Sylvestris* L. Obtained by Enzyme-Assisted Extraction. *Anastasiia Kulakivska*, *Roksolana Konechna* 337

GREEN CHEMISTRY 341

Design and Research of Eco-Friendly Biodegradable Composites Based on Renewable Biopolymer Materials and Reed Waste. *Artem Kariev*, *Volodymyr Lebedev*, *Yevgen Sokol*, *Magomediemin Gasanov*, *Anna Cherkashina* 342

The Analysis of Green Metrics Indices of Chemical Technologies: Accountability of Environmental Performance and Sustainability Assessments. *Marharyta Radomska*, *Oksana Tykhenko* 349

Comparison of Selected Physicochemical Properties of Green Clay After Mechanochemical Treatment with the Finished Composite Based on Green Clay and Hydroxyapatite Obtained by the Wet Method. *Klaudia Kowalska*, *Ewa Skwarek* 354

Closing the Recycling Loop of PEM Electrolyzer: Synthesis of Ir Precursor from Spent Electrocatalyst. *Lesia Sandig-Predzymirska*, *Alexandros Charitos* 360

Animal Fats and Vegetable Oils – Promising Resources for Obtaining Effective Corrosion Inhibitors for Oil Refinery Equipment. *Serhiy Pyshyev*, *Oleksandr Romanchuk*, *Petro Topilnytskyy*, *Viktoriya Romanchuk*, *Denis Miroshnichenko*, *Yurii Rohovyi*, *Hennadii Omelianchuk*, *Yurii Parkhomov* 364

ALTERNATIVE AND NON-CONVENTIONAL ENERGY SOURCES 370

The Characteristics of Banana Peel-Derived Carbon and Its Potential Utility in Energy Storage Devices. *Xymena Gross*, *Beata Kurc* 371

Methods of Biogas Purification and Enhancement. *Pavlo Holubiev*, *Andriy Slyuzar* 375

Pyrolysis of Waste Tires: Product Characteristics and Industrial Applications. *Bohdan Korchak*, *Serhiy Pyshyev*, *Yurii Lypko* 381

Investigation of the Energy Characteristics of Sunflower Stalks and Their Separated Tissues as Lignocellulosic Raw Materials for Solid Biofuel Production. *Diana Kindzera*, *Roman Hosovskyi*, *Viktoria Kochubei* 385

The Influence of Dehydration Mode on the Duration of the Drying Process of Protein-Containing Raw Materials of Animal Origin. *Zhanna Petrova*, *Kateryna Samoilenko*, *Yuliia Novikova*, *Pavlo Petrov*, *Oleksandr Yurchak* 389

The Influence of Polyethylene on the Thermophysical Properties of Fuel from Municipal Solid Waste. *Tetiana Korinchevska*, *Viacheslav Mykhailyk*, *Yurii Sniezhkin* 395

ECOLOGY AND SUSTAINABLE DEVELOPMENT. ENVIRONMENTAL PROTECTION 399

Increase the Reliability and Accuracy of Assessing the Ecological State of a Surface Water Body's Sub-Basin. *Svitlana Kovalenko*, *Roman Ponomarenko*, *Oleg Tretyakov* 400

Fusel Oil and the Ecology of Road Transport. *Anatoliy Ludyn*, *Viktor Reutskyy*, *Volodymyr Reutskyy* 407

Evaluation of the Influence of Biosurfactants, Microbial Preparation, Sorbents on the Adaptive Capacity of Rye During Growth on Oil-Contaminated Soil. *Andriy Banya*, *Tetyana Pokynbroda*, *Nataliia Koretska*, *Olena Karpenko*, *Ihor Bobalo*, *Vira Lubenets* 416

The impact of Biochar Amendments and Biostimulant on Soil Nematodes and Biomass Yield of Miscanthus on Poor-Nutritionally Soils of Post-Military Areas in Kyiv Region. *Anastasiia Husieva*, *Tatyana Stefanovska*, *Andrzej Skwiercz*, *Vitaliy Stadnik*, *Irina Artemchuk* 421

Methods of Initial Assessment for Safety Secondary Application of Duroplastic Waste. *Matusiak Alicja*, *Zawadzka Ewa*, *Wacławek Stanisław*, *Silvestri Daniele*, *Wypiór Alicja* 428

State Policy in the Field of Ecologization Trade-Logistics Centers. *Oleh Nahurskyi*, *Oleh Semenchuk* 436

On Techno-Economic Analysis of Rapid Filtration of Groundwater with High Iron Content. *Vadym Poliakov*, *Serhii Martynov* 441

The XPS-Revealed Difference in the Molecular Sorption Mechanism of Se(IV) and Se(VI) on Mg-Al-CO_3 Layered Double Hydroxides (LDHs) Focusing on the Material Surface Speciation. *Natalia Chubar* 446

Intelligent Flowmeter Based on the Film Method of Gas Flow Measurement for Environmental Monitoring. *Ivan Stasiuk*, *Ihor Dilai*, *Solomiia Markiv*, *Valentyn Shevchuk*, *Oksana Parneta* 452

Granulated Slow-Release Fertilizers Based on Urea and Flue Gas Desulfurization Gypsum. *S. Schab*, *M. Borowik* 459

CONTENT 464

SPONSORS AND PARTNERS 471

TO THE MEMORY OF THE OUTSTANDING SCIENTIST AND PEDAGOGUE OF LVIV POLYTECHNIC ZORIAN HRYHOROVYCH PIKH 477