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INSTITUTE OF
WOOD CHEMISTRY

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Program

April 28, Radisson Blu Latvia, Elizabetes Street 55	
9:00	Opening Ceremony
9:10	Tips on how to identify and avoid predatory publishers and conferences. Gita Rozenberga (The Library of the University of Latvia, OpenAIRE National Open Access Desk)
9:50	The research landscape of biorefinery: a scientometric overview. Arnis Kokorevics (Latvian State Institute of Wood Chemistry)
10:30	Coffee Break
10:50-12:30	Session 1A Chair Vladimirs Biziks
	Session 1B Chair Uģis Cābulis
10:50	Suberinic acids - from isolation to feedstock for bio-polyol synthesis. D.Godina, R.Makars, A.Abolins, A.Paze, M.Kirpluks, J. Rizikovs (Latvian State Institute of Wood Chemistry)
	Impact of arginine containing fertilizer on nitrogen isotope ratio and elemental content in young conifer stands. M.Bertins, L.Busa, D.Lazdina, K.Dumins, M.Klavins, A.Viksna (University of Latvia)
11:10	Novel bio-polyols for the polyurethane synthesis. O.Gotkiewicz, H.Beneš (Institute of Macromolecular Chemistry CAS)
	Effect of various fertilizers on stable isotope ratios and amino acid content in apple seeds. L.Buša, R.Kravceviča, J.Ruško, A.Viksna (University of Latvia)
11:30	Michael donor monomer synthesis for bio-based thermoset polymers using tall oil fatty acids. R.Pomilovskis, A.Fridrihsone, M.Kirpluks (Latvian State Institute of Wood Chemistry)
	Use of wood ash in the forest ecosystem and its effect on the rare earth element content in the forest soil and blueberries (<i>Vaccinium Myrtillus L.</i>). V.Lazarenko, V.Rudoviča, A.Viksna, M.Bērtiņš, J.Burlakovs, D.Lazdiņa (Faculty of Chemistry, Department of Analytical Chemistry, University of Latvia)
11:50	Michael donor monomer synthesis for polymeric materials using rapeseed oil. D.Eihe, A.Abolins, M.Kirpluks (Latvian State Institute of Wood Chemistry)
	Bio-fertilizers of spent coffee grounds and green algae <i>Chlorella sp.</i> biomass for enhancement of soil organic matter. D.Ragauskaitė, R.Šlinkšienė (Kaunas University of Technology)
12:10	Comparison between neat tall oil fatty acid and their methyl ester epoxidation in a rotating packed bed reactor. E.Kauliņa, R.Pomilovskis, M.Kirpluks (Latvian State Institute of Wood Chemistry)
	An insight into challenges of conducting an LCA study for a food waste biorefinery. K.Balina, E.Dace (University of Latvia)
12:30	Lunch
13:20-15:00	Session 2A Chair Agnė Kairytė
	Session 2B Chair Arturs Viksna
13:20	Development of an analytical method for the determination of tar in co-produced gases in the biomass pyrolysis process. S.Osipovs, A.Pučkins (Daugavpils University)
	Characterization and evaluation of water-based ecological paint for the protection of wood materials coated using dipping technique. E.Sansonetti, D.Cīrule, E.Kuka, B.Andersons, I.Andersone, M.Daniels (Latvian State Institute of Wood Chemistry)
13:40	Study of a novel bio-refining method for obtaining 2-furaldehyde, acetic acid and pulp from birch wood. M.Puke, D.Godina, P.Brazdausks, J.Rizikovs (Latvian State Institute of Wood Chemistry)
	The study of betulin particles containing hydrogels prepared by antisolvent precipitation. A.Pāže, S.Vītoliņa, R.Bērziņš, J.Rižikovs, R.Makars, D.Godina, A.Tereško (Latvian State Institute of Wood Chemistry)
14:00	New possibilities of using waste hemp biomass. J.Frankowski, D.Sieracka, W.Czeszak (Institute of Natural Fibres & Medicinal Plants – National Research Institute)
	Optimization of betulin colloidal aqueous suspension pretreatment for determination of particle characteristics. S.Vitolina, A.Paze, R.Berzins, J.Rizhikovs, R.Makars, D.Godina, A.Teresko (Latvian State Institute of Wood Chemistry)

14:20	Flammability studies of a pine sawdust coated with multicomponent suspension. N.Augaitis, S.Vaitkus, A.Kairyte, G.Balčiūnas, A.Kremensas, S.Vėjelis (Vilnius Gediminas Technical University)	Synthesis of novel C(3)-linked betulin azole conjugates. E.Jansons, J.Lugiņina, M.Turks (Institute of Organic Chemistry and Material science, Faculty of Materials Science and Applied Chemistry, Riga Technical University)
14:40	Potential of some Latvian industrial crops residuals for conversion to eco-friendly thermal insulation material. A.Berzins, R.Tupciauskas, M.Andzs, G.Pavlovichs (Latvian State Institute of Wood Chemistry)	Adaptation of the methylene blue adsorption method for specific surface area determination of betulin particles. R.Berzins, A.Paze, S.Vitolina, J.Rizhikovs, R.Makars, D.Godina, A.Teresko (Latvian State Institute of Wood Chemistry)
15:00	Coffee Break	
15:30-17:30	Session 3A Chair Kristīne Meile	Session 3B Francesco Romagnoli
15:30	Experimental design of cellobiose hydrolysis using activated biochar catalyst. D.Godina (Latvian State Institute of Wood Chemistry)	Water uptake and swelling of wood-plastic composites based on recycled polymer. A.Verovkins, J.Jaunslavietis, G.Shulga, B.Neiberte, S.Vitolina, T.Betkers, J.Brovkina, S.Livcha (Latvian State Institute of Wood Chemistry)
15:50	Partly unlocked macromolecule of technical lignins with vacuum, low temperature, microwave assisted pyrolysis. V.Biziks, J.Karthäuser, H.Frauentorf, H.Militz (Surfactor Germany GmbH)	Mycelium composites – an eco-friendly alternative to traditionally used synthetic packaging materials. G.D.Loris, I.Irbe, M.Škute, I.Filipova, L.Andže (Latvian State Institute of Wood Chemistry)
16:10	Study of catalysts for suberinic acid-based adhesive polymerization. R.Makars, J.Rizikovs, A.Paze (Latvian State Institute of Wood Chemistry)	PLA/lignin composites doped with Cu nanoparticles for food packaging applications. E.S. Esakkimuthu, I.Pylypchuk, D.DeVallance, M.H.Sipponen (InnoRenew CoE)
16:30	Optimization of solvent choice in resin desorption process after the separation of wood pyrolysis liquids. A.Jermolajeva, K.Meile, A.Zhurinsh (BaltTest)	Rheological, thermal and mechanical properties of wood plastic composites based on virgin and recycled polypropylenes and birch plywood waste. K.Kalnins, J.Kajaks, J.Matvejs (Institute of Polymer Materials, Faculty of Material Science and Applied Chemistry, Riga Technical University)
16:50	Properties of Kraft lignin substituted phenol formaldehyde resin for paper impregnation. M.Thébault, H.Lammer, A.R.Mahendran (Kompetenzzentrum Holz GmbH)	A study on waste paper reinforced recycled polypropylene biocomposite. J.Jaunslavietis, J.Ozolins, M.Kalnins, G.Shulga, B.Neiberte (Latvian State Institute of Wood Chemistry)
17:10	Analysis of gas-liquid interaction and constraint handling in stirred tank bioreactors. A.Buss, A.Suleiko, N.Jekabsons, J.Vanags, D.Loca (Rudolfs Cimdins Riga Biomaterials Innovations and Development Centre of RTU, Institute of General Chemical Engineering, Faculty of Materials Science and Applied Chemistry, Riga Technical University)	
19:30	Conference Dinner at Gutenbergs Rooftop Restaurant, Doma Square 1	

April 29, Radisson Blu Latvia, Elizabethes Street 55			
9:00-10:40	Session 4A Chair Inese Filipova	Session 4B Chair Jānis Rižikovs	Session 4C Chair Miķelis Kirplūks
9:00	Nanocellulose-coated paper dipsticks with visual response towards heavy metal ions. A.Frigola, R.Aguado, Q.Tarrés, P.Mutjé, M.Delgado-Aguilar (University of Girona)	Enabling circular bioeconomy via estimating the potentially valorisable food loss and waste in the Northern European region. R.Soloha, L.K.Lukasa, K.Balina, E.Dace (University of Latvia)	Bioeconomy based biorefining solutions for valorisation of food wastes to obtain bioactive and functional ingredients. L.Klavins (The Natural Resource Research Centre of the University of Latvia)
9:20	The protective coatings of the lignocellulose-based composite boards formed using the drying and semi-drying oils. D.Vasiliauskienė, G.Balčiūnas, R.Boris, A.Kairytė, A.Kremensas, J.Urbonavičius (Vilnius Gediminas technical university)	The resource potential of fermentation residues. A.Stikane, E.Dace, E.Stalidzans (Institute of Microbiology and Biotechnology, University of Latvia)	Vanillic and Meldrum's acid containing antioxidant. L. Bērziņa, I. Mieriņa (Riga Technical University)
9:40	Densified juniper wood for use in bone implants. L.Andze, M.Andzs, M.Skulte, V.Nefjodov, R.Tupciauskas (Latvian State Institute of Wood Chemistry)	Waste rapeseed cooking oil is perspective substrate for biosurfactant synthesis via yeast <i>Starmerella Bombicola</i>. I.Berzina, L.K.Lukasa, J.Liepins (Institute of Microbiology and Biotechnology, University of Latvia)	Determination of antioxidant activity in fractions of pyrolysis liquids. E.Volkova, K.Meile, A.Zhurinsh (Latvian State Institute of Wood Chemistry)
10:00	Cellulose Modification with maleic anhydride. V.Fridrihsone, J.Zoldners, M.Skute, L.Andze, I.Filipova (Latvian State Institute of Wood Chemistry)	Development of low-cost medium for <i>Bacillus Subtilis</i> spore obtainment. E.Didrihsone, O.Grīgs, E.Bolmanis (Latvian State Institute of Wood Chemistry)	Valorization of liquid by-products from hemp carbonization. M.Zouari, L.Marrot, K.Meile, R.Herrera Diaz (Innorennew CoE)
10:20	Homogeneous synthesis of cellulose palmitate derivatives in ionic liquid via transesterification. N.Savale, E.Tarasova, I.Krasnou, V.Gudkova, A.Krumme (Tallin University of Technology)	Medium formulation and fed-batch cultivation of <i>Methylosinus Trichosporium</i>. A.Suleiko, K.Dubencovs, A.Suleiko, J.Vanags, S.Glukhikh (Latvian State Institute of Wood Chemistry)	Torrefaction of pulp industry sludge: Experimental validation, opportunities and challenges. T.R.K.C Doddapapenei, L.Pärn, T.Kikas (Institute of Forestry and Engineering, Estonian University of Life Sciences)
10:40	Coffee Break		
11:00	The failure of success - are research assessments helping or hurting science? Noémie Aubert Bonn (Hasselt University and Amsterdam UMC)		
11:40	How to get in: the story of a young researcher reaching for the Horizon. Laura Andže (Latvian State Institute of Wood Chemistry)		
12:20	Closing Ceremony, Awards		
12:30	Lunch		

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THE RESOURCE POTENTIAL OF FERMENTATION RESIDUES

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Successful transition to circular bioeconomy relies on the availability and efficient use of organic feedstocks, which can be transformed to a variety of products through technologies of biorefinery and industrial biotechnology. These approaches in turn create industrial side-residues such as spent microbial biomass (SMB).

This study aims to reflect on the current state of SMB within bioeconomy and to create awareness of this growing industrial resource. To do this we use data from a range of published fermentation processes to estimate how much SMB is formed per unit of a fermentation product (e.g., weight per weight, wt/wt) across different types of bioproducts. To the best of our knowledge, this is the first attempt to estimate how much SMB is generated within the growing biotechnology industry.

The amount of SMB differs across bioproducts and production processes. In general, production of bulk products (e.g., alcohols) generates less SMB than the product itself, whereas production of high-value low-volume specialty products (e.g., vitamins) can generate 10 to even 100 times more SMB than the target product. Thus, SMB from bulk and specialty bioproducts account for roughly equal amounts of global SMB, which is estimated as more than 50 million tons of protein and other nutrient-rich SMB (in 2013).

These results indicate that SMB is a significant, growing, and predictable nutrient-rich industrial residue. These attributes make SMB suitable for nutrient circulation through various valorisation routes (e.g., protein biorefinery, feed or food applications, fermentation substrates, agricultural biofertilizer, energy) providing nutrient links across different industries and contributing to circular bioeconomy.

The Fer2Fer project is funded under the European Regional Development Fund Specific Objective 1.1.1. Project No. 1.1.1.2/VIAA/4/20/610.