TwinPrebioEnz

International conference:

BIOCHEMICAL ENGINEERING & BIOTECHNOLOGY

For Young Scientists

BOOK of ABSTRACTS

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BIOCHEMICAL ENGINEERING AND BIOTECHNOLOGY FOR YOUNG SCIENTISTS

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CONFERENCE AGENDA

Thursday, 7th December

10:00-10:30	**Registration**	
10:30-10:40	**Opening ceremony**	
10:40-11:00	**Opening lecture**	

Coffee break and posters

Biotechnology Applications in Biomedical Sciences,
Chair: Ellen H. van den Bogaard and Patrick Zeeuwen

11:30-12:00	**Invited speaker - Aryl hydrocarbon receptor signaling in health and disease: the potential and threats of targeting environmental sensors in human skin**	**Ellen H. van den Bogaard (RadboudUMC, The Netherlands)**
12:00-12:15	**Expanding the possibilities of the stratum corneum model for bacterial growth**	**Noor van Hout**
12:15-12:30	**3D in vitro skin models: a toolbox to study skin biology, disease pathophysiology, and therapeutics**	**Jaimy Klijnhout**
12:30-12:45	**Bacteria X: studying microbe-microbe interaction**	**Mona Fayyazi Jolandan**
12:45-13:00	**Advancing the studies of physiological and pathological bone conditions by using a 3D in vitro cell culture model based on bone-like biomaterial and a perfusion bioreactor**	**Ivana Banićević**

Lunch break and posters

Biotechnological Production and Assessment of Bioactive Compounds
Chair: Patrick Jansen and Nevena Luković

14:00-14:30	**Invited speaker - The Spicy Solution: Capsaicin's Therapeutic Potential in Hepatocarcinoma through AMPK activation.**	**Alicia C. Bort (Alcalá University, Spain)**
14:30-15:00	**Invited speaker - Customized LNPs for targeted transfection**	**Marcus Janschel (Fraunhofer IAP Center, Germany)**
15:00-15:15	**Galactomannan extraction and characterization from Ceratonia siliqua seeds**	**Iván Benito**
15:15-15:30	**By-products from the processing of herbs as sources of antioxidants**	**Mihailo Mladenović**

15:30-15:45	**Discovering potential of polyphenol compounds from blueberry, cranberry and chokeberry extracts as skin prebiotics**	**Anja Petrov Ivanković**
15:45-16:00	**Sugar functionalized superparamagnetic nanoparticles for capturing of cancer cells in liquid biopsy**	**Ivana Banićević**

Coffee break and posters

Enzyme Engineering and Immobilization
Chair: Jose Migel Palomo

16:00-16:30	**Invited speaker - Enzyme-metal nanoparticle hybrids for modulating enzyme-like activity and chemoenzymatic cascade processes for sugar building blocks synthesis**	**Noelia Garcia Losada (University of Lisboa, Portugal)**
16:30-16:45	**Immobilization of xylanase on magnetic nanoparticles modified with polyethyleneimine and its application in xylooligosaccharides synthesis**	**Katarina Banjanac**
16:45-17:00	**New life of waste material: immobilized horseradish peroxidase for degradation of antraquinone dye**	**Tanja Nedeljkov**
17:00-17:15	**Determining the potential of submerged fermentation on wheat bran for production of xylanase**	**Ivana Gazikalović**
17:15-17:30	**Study and preparation of artificial manganese metalloenzymes with laccase-like activity**	**Ana Vukoičić**

Friday, 8th December

Environmental Biotechnology
Chair: Maja Đolić

09:30-10:00	**Registration**	
10:00-10:15	**Characterization of emission from the combustion of solid biofuels in the residential heating appliances**	**Vasilije Matijašević**
10:15-10:30	**Removal of critical metals leached from fly ash using naturally derived cellulose-adsorbent**	**Vanja Lukić**
10:30-10:45	**Utilization of fibrous textile wastes for adsorption of Inorganic and organic pollutants from water**	**Nataša Karić**
10:45-11:00	**Chemometric modelling of the adsorption parameters of drug residues from water using modified fly ash as adsorbent**	**Dušan Trajković**

Coffee break and posters		
Bio-based products and industrial biotechnology Chair: Mirjana Rajilić-Stojanović		
11:30-12:00	**Invited speaker - Biobased polymer materials as promising tool for efficient drug delivery**	**Maja Marković (ICFTM, Serbia)**
12:00-12:15	**The employment of pullulan and collagen in the preparation of electrospun nanofibers loaded with *Teucrium montanum* L. extract**	**Ana Mandura Jarić**
12:15-12:30	**The processing, bioactivity and biocompatibility of scaffolds based on multi-ion doped calcium-phosphates coated with chitosan**	**Teodora Jakovljević**
12:30-12:45	**The use of starch and *β*-lactoglobulin composite hydrogels as frameworks for preserving c-phycocyanin**	**Zorana Jovanović**
12:45-13:00	**Different treatments of lignocellulosic biomass for enhanced delignification and enzymatic hydrolysis**	**Jovana Grbić**

Lunch break and posters		
Functional food and feed Chair: Oswaldo Hernández-Hernández		
14:00-14:30	**Invited speaker - The chemical features of dietary fibers with prebiotic potential - why is it important?**	**Kahlile Youssef Abboud (Maastricht University, The Netherlands)**
14:30-14:45	**Edible flowers of marigold (Calendula officinalis L.) as functional food**	**Sofia Kilibarda**
14:45-15:00	**Sensory analysis of nutritionally improved corn-based snack product with addition of protein- and fiber-rich ingredients**	**Jovana Delić**
15:00-15:15	**Exploring the microbial degradation profile of 3 different dietary fibers via bacterial monoculture and an in vitro fermentation model of the colon (TIM-2)**	**Yanyun Zhang**
15:15-15:30	**Broccoli microgreens-apple juice as novel beverages: total phenolic, flavonoids and antioxidant activity**	**Spasoje Belošević**
15:30-15:45	**Nanofiltration as a tool for high-yield purification of dietary oligosaccharides**	**Milica Veljković**
15:45-16:00	**Valorization of soybean meal for production of high protein animal feed and value-added products using new strain of *Aureobasidium pullulans***	**Slađana Davidović**
16:00-16:30	**Closing ceremony**	

FROM WASTE CELLULOSE TO EFFECTIVE BIOMEMBRANES: WASTEWATER PURIFICATION

Aleksandar Jovanović[1]*, Mladen Bugarčić[1], Nataša Knežević[2], Aleksandar Marinković[3]

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Pollution of water with toxic substances is increased. Therefore, innovative solutions for their treatment are essential. This paper represents results from an adsorption study where novel synthesized biobased membranes were applied in the removal of dye metanil yellow from wastewater solution. Batch adsorption tests were applied, where the different operational impacts including contact time, initial pollutant concentration, temperature, etc. were varied. Fabricated membranes were based on waste cellulose tobacco boxes modified by amino acid lysine with an aim to increase sorption capacity toward azo dye. Structural properties were examined by FE-SEM and ATR-FTIR techniques. The activities of materials prior to and after modification were compared. It was found that the modified material achieved a better sorption capacity. The resulting adsorption capacity for the improved membrane was 65 mg/l compared to 51 mg/l, at 45°C, for the base cellulose membrane. The kinetics of the process follows a pseudo second-order curve. The best agreement of the correlation factor R^2 was shown with the Freundlich isotherm. The obtained results show the success of the modification with a good sorption capacity of the material towards the target pollutant. Overall, it can be concluded that the modified membranes lay a good foundation for potential application in industrial dye wastewater treatment systems.

Keywords: dye removal; metanil yellow; environmental protection; water purification; adsorption

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