XXII euro FOOD chem

PROGRAM BOOK

XXII Congress

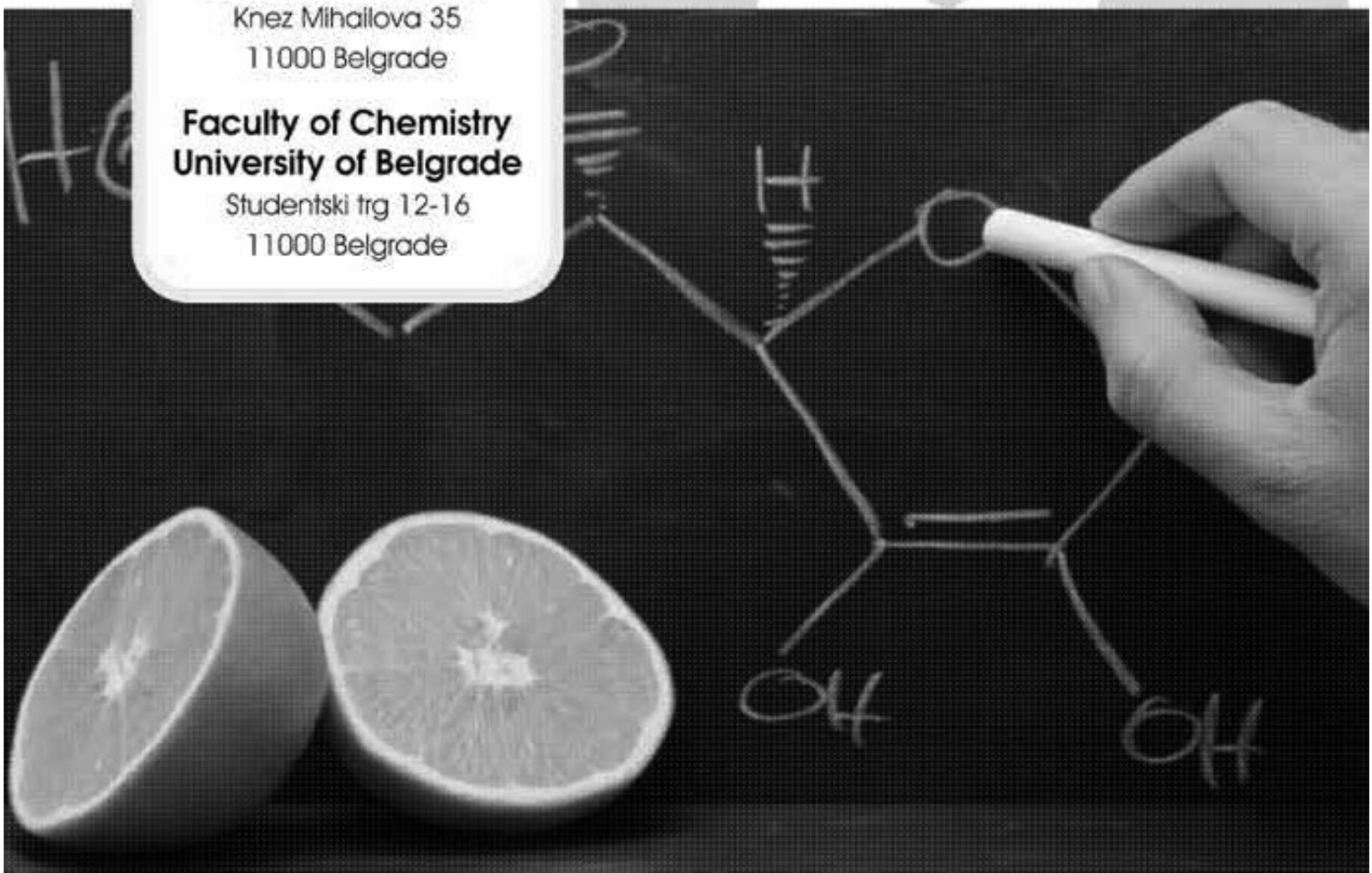
EuroFoodChem

June 14-16, 2023 | Belgrade, Serbia

https://xxiieurofoodchem.com
congress2023@xxiieurofoodchem.com

Serbian Academy of Sciences and Arts
Knez Mihailova 35
11000 Belgrade

Faculty of Chemistry University of Belgrade
Studentski trg 12-16
11000 Belgrade



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Under the auspices

Ministry of Science, Technological Development and Innovations, Republic of Serbia

Serbian Academy of Sciences and Arts

Organizers

EuChemS, Division of Food Chemistry

Serbian Chemical Society

WELCOME ADDRESSES

Dear Colleagues and Friends,

On behalf of the Food Chemistry Division of EuChemS and Serbian Chemical Society with support of the Serbian Academy of Sciences and Arts, I am delighted to welcome all the experts from different countries to Belgrade, Serbia to XXII EuroFoodChem.

Following the previous successful meetings of EuroFoodChem since 1981, Belgrade is for the first time honored to host this important international gathering in the field of food chemistry.

After a very successful virtual edition in 2021, we are thrilled to organize a face-to-face meeting again.

The Congress program offers both exciting recent trends in food chemistry research and engaging networking opportunities that we all have missed over the last couple of years. In addition to abstract presentations and lectures by world renowned speakers, we will be offering a variety of networking options. The EuroFoodChem is an excellent opportunity for initiating or strengthening cooperations and knowledge.

For centuries Serbia has been strategically the most important region in the Balkans; many conquerors fought for this piece of land and left their own traces in time and space. We can only hope that the rich and tightly packed scientific program will allow you to explore the capital of Serbia and historical places nearby.

Serbia is a country of diversities and the city of Belgrade, as a place of intersection of different cultures and history, is the most beautiful example of it. Wine making has a long tradition in Serbia and it is now experiencing its renaissance. Vineyards have been a part of the diverse Serbian landscape since before the times of Romans. Belgrade is also a new hot spot on the European gastronomical map. In a city with so many historical influences, tradition intertwines with innovation.

I would also like to thank all of you who have worked with devotion on putting up this meeting together. On behalf of all of us involved in the event preparation, I wish you a great time at EuroFoodChem, and thank you for your participation and contribution to the high scientific quality of the event.

Hope that you will find the Congress and your stay in Belgrade valuable, enjoyable, and memorable!

Congress Chairman

Tanja Ćirković Veličković

COMMITTEES

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CONGRESS TOPICS

- **Food composition, quality, and safety**
- **Food sustainability, including byproducts valorization**
- **Novel foods**
- **Food and health, functional foods, and ingredients**
- **Chemical reactions and interactions of food components**
- **Chemical changes in food under processing and storage**
- **Food adulteration, authenticity, and traceability**
- **Novel methods for food chemistry**
- **Food contaminants**

GENERAL INFORMATION

Official Language:
English. No simultaneous translation will be provided:

Registration Desk opening times.

Day 1: June 14, 2023, 8:30-10:30h
Day 2: June 15, 2023, 8:30-10:30h
Day 3: June 16, 2023, 8:30-10:30h

The Registration Desk is situated in Serbian Academy of Sciences and Arts
Knez Mihailova 35, 11000 Belgrade

LOCAL ORGANIZER

PCO – ARIA Conference & Events doo
Karadjordjev trg 34 – 11080 Zemun – Belgrade, Serbia
Office: + 381 11 2600 978
Mail: office@aria.co.rs
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Liability and Insurance: Neither the Food Chemistry Division of EuChemS nor the local organizers will assume any responsibility whatsoever for damage or injury to persons or property during the Congress. Participants are recommended to arrange for their personal travel and health insurance.
Certificate of Attendance: Will be given at the registration desk and sent by email after the end of the Congress.

Stable, environmentally friendly and inexpensive biocatalysts for obtaining important ingredients applicable in the food industry

Višnja Kosić[1,*], Nataša Božić[1], Biljana Dojnov[1], Gordana Stevanović[1], Predrag Banković[1], Aleksandra Milutinović-Nikolić[1], Zorica Knežević-Jugović[2]
[1]University of Belgrade, Institute of Chemistry, Technology and Metallurgy, Njegoševa 12, Belgrade, Serbia (visnja.kosic@ihtm.bg.ac.rs)
[2] University of Belgrade, Faculty of Technology and Metallurgy, Karnegijeva 4, Belgrade, Serbia
* visnja.kosic@ihtm.bg.ac.rs

Clays are naturally occurring, environmentally friendly, chemically inert, thermostable, inexpensive resources that are easily modified into materials with tailored properties. As such, they can be used as suitable supports for enzyme immobilization and application in the food industry. Natural polysaccharides starch, xylan, pullulan, and its derivatives obtained by the action of enzymes, have numerous potentials for food industrial applications. In this work the enzyme supports were prepared from bentonite from Coal mine "Bogovina", Serbia by acid activation (AA), pillaring (P), and pillaring followed by acid activation (PAA). The characterization of the obtained materials included chemical and phase composition, surface acidity, and textural properties. After characterization, a-amylase from Bacillus paralicheniformis (BliAmy), commercial xylanase from Sigma-Aldrich (Xyl), and pullulanase from B. paralicheniformis (BliPull) were immobilized on bentonite based supports by 24 h adsorption at 25 °C. The obtained biocatalysts BliAmy-AA (106 IU/g), Xyl-P (74 IU/g), and BliPull-PAA (45 IU/g) showed very good storage stability with the activity preserved after 4 weeks of testing. Products of hydrolysis were detected by TLC and indicate a promising application in the food industry.

This work was supported by the Ministry of Science, Technological Development and Innovation of the Republic of Serbia (Grant number: 451-03-47/2023-01/200026).

Hydroxyapatite Pickering emulsions loaded with olive leaf extract as an innovative alternative to traditional mayonnaise-like food sauces

Andreia Ribeiro[1,2,*], Isabel M. Martins[1,2], Maria Eduarda Relvas[1,2], Larissa C. Ghirro[3,4], José Carlos B. Lopes[1,2], Maria Filomena Barreiro[3,4], Madalena M. Dias[1,2]
[1]LSRE-LCM - Laboratory of Separation and Reaction Engineering – Laboratory of Catalysis and Materials, Faculty of Engineering, University of Porto, Rua Dr. Roberto Frias, 4200-465 Porto, Portugal
[2]ALiCE - Associate Laboratory in Chemical Engineering, Faculty of Engineering, University of Porto, Rua Dr Roberto Frias, 4200-465 Porto, Portugal
[3]CIMO - Centro de Investigação de Montanha, Instituto Politécnico de Bragança, Campus de Santa Apolónia, 5300-253 Bragança, Portugal
[4]SusTEC - Laboratório para a Sustentabilidade e Tecnologia em Regiões de Montanha, Instituto Politécnico de Bragança, Campus de Santa Apolónia, 5300-253 Bragança, Portugal
* *asribeiro@fe.up.pt [Andreia Ribeiro]*

The production of innovative food products is an emergence of the food industry to satisfy consumers' needs and trends, namely healthy, fat-reduced, and bioactive-based functional products [1, 2]. In this context, Pickering emulsions, which are stabilised by solid particles, have been increasingly studied due to their high physical stability, mainly to coalescence, Ostwald ripening, and their ability to create functional and label-friendly solutions [1]. Additionally, agro-food residues are a source of complex carbohydrates, fibres, proteins, lipids, vitamins, and phytochemicals (phenolics, carotenoids) with potential health benefits [3]. The present work aims to combine these two current topics in food research by developing (1) Pickering emulsions stabilised with nano-hydroxyapatite (n-HAp) particles, and (2) functional Pickering emulsions through the incorporation of olive leaf extract. Thus, in this perspective, the main goal of this study is to create a differentiated emulsion formulation with functional and vegan characteristics to replace traditional mayonnaise sauces.

The n-HAp aqueous paste (nanoXIM-HApCare, supplied by Fluidinova S.A.), sunflower oil, and olive leaf extract were used as aqueous and oil phases, respectively. For the oil-in-water (O/W) Pickering emulsions production, a mixing system comprised of a rotor-stator homogeniser (Miccra D-9) and a peristaltic pump was used. Briefly, the oil phase was injected into the aqueous phase using the peristaltic pump at ~43 mL/min, and the homogenising device was set at 11 000 rpm to ensure a prompt dispersion. The olive leaf extract was obtained using supercritical fluid extraction using carbon dioxide as solvent (SFE-CO2) for 2 h, 90 bar and 50 °C. This methodology, a sustainable and green technology, was used to increase the bioactive compound's selectivity and preservation. This study addresses the effect of n-HAp solid particles concentration (5-15 wt.%) and oil/water ratio (oil phase ranging from 50% to 80%) on emulsion stability. The morphology, droplet size distribution, phase inversion, rheological properties, and oxidative stability of the produced Pickering emulsions were monitored using an optical microscope, laser diffraction, droplet test, rheometer, and a Rancimat, respectively.

The results indicate that the produced Pickering emulsions have good stability for the tested period of 30 days, except the 80/20 oil/water Pickering emulsion that revealed phase separation after a few days from production. Additionally, the Pickering emulsions produced with higher n-HAp or oil concentrations have a semi-solid structure making them attractive options to mimic the traditional mayonnaise texture. Regarding oxidative stability, the Pickering emulsions showed considerably improved stability compared to commercial mayonnaise (traditional and light products), which suggests higher resistance to the peroxidation by-products and a longer shelf life for the n-HAp Pickering emulsions. The n-HAp Pickering emulsions can offer advantages for olive leaf extract encapsulation. Overall, this approach can also provide a promising perspective to develop innovative food-like products with low-fat, eggless and functional properties as replacements for traditional ones.

Acknowledgements: This work was financially supported by LA/P/0045/2020 (ALiCE), UIDB/50020/2020, UIDP/50020/2020 (LSRE-LCM), LA/P/0007/2021 (LA SusTEC), UIDB/00690/2020 and UIDP/00690/2020 (CIMO), and funded by national funds through FCT/MCTES (PIDDAC). This work is also a result of project "BIOma - Soluções Integradas de Bioeconomia para Mobilização da Cadeia Alimentar", with reference POCI-01-0247-FEDER-046112, co-funded by the European Regional Development Fund (ERDF), through the Operational Programme for Competitiveness and Internationalization (COMPETE 2020) and the Lisbon Regional Operational Programme (LISBOA 2020), under the PORTUGAL 2020 Partnership Agreement. The authors also thank Fluidinova for providing the nanoXIM-HAp-Care paste.

References:

[1] A. Ribeiro, J.C.B. Lopes, M.M. Dias, M.F. Barreiro, Molecules, 28 (2023) 2504.
[2] L.C. Ghirro, S. Rezende, A. Ribeiro, N. Rodrigues, M. Carocho, J.A. Pereira, L. Barros, B. Demczuk, M.F. Barreiro, A. Santamaria-E-chart, Molecules, 27 (2022) 1250.
[3] E. Capanoglu, E. Nemli, F. Tomas-Barberan, Journal of Agricultural and Food Chemistry, 23 (2022) 6787.