

**TWENTY-THIRD YOUNG RESEARCHERS'  
CONFERENCE  
MATERIALS SCIENCE AND ENGINEERING**

**December 3 – 5, 2025, Belgrade, Serbia**

**Program and the Book of Abstracts**

**Materials Research Society of Serbia  
&  
Institute of Technical Sciences of SASA**

2025

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Program and the Book of Abstracts

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## **Aim of the Conference**

Main aim of the conference is to enable young researchers (post-graduate, master or doctoral student, or a PhD holder younger than 35) working in the field of materials science and engineering, to meet their colleagues and exchange experiences about their research.

## **Topics**

Biomaterials  
Environmental science  
Materials for high-technology applications  
Materials for new generation solar cells  
Nanostructured materials  
New synthesis and processing methods  
Theoretical modelling of materials

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## Results of the Conference

Beside printed «Program and the Book of Abstracts», which is disseminated to all conference participants, selected and awarded peer-reviewed papers will be published in journal “Tehnika – Novi Materijali”. The best presented papers, suggested by Session Chairpersons and selected by Awards Committee, will be proclaimed at the Closing Ceremony. Part of the award is free-of-charge conference fee at YUCOMAT 2026.

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### Enhancing solubility of ellagic acid from raspberry biomass using ionic liquids

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Ellagic acid (EA) is a naturally occurring polyphenolic compound widely present in fruits and berries, recognized for its strong antioxidant, anticarcinogenic, and anti-inflammatory properties. It has been associated with potential protective effects against cancer, cardiovascular diseases, and neurodegenerative disorders. However, its broader therapeutic and commercial applications remain limited due to its poor water solubility and low bioavailability, which also make its extraction from plant materials and incorporation into functional formulations challenging. Traditional extraction methods employing organic solvents such as methanol, ethanol, or acetone are often inefficient, environmentally unsustainable, and inadequate for dissolving hydrophobic compounds like EA. In recent years, ionic liquids (ILs) and natural deep eutectic solvents (NADES) have emerged as promising green alternatives for the extraction of phenolic compounds. Composed of renewable and non-toxic components, these solvents offer tunable solvation capacity, enhanced extraction efficiency, and a low environmental impact, aligning closely with the principles of sustainable chemistry. In this study, whole raspberries and raspberry pomace were investigated as raw materials for ellagic acid extraction. Samples were lyophilized and extracted using 20% aqueous cholinium-based ionic liquids. Six cholinium chloride-based ionic liquids were applied as extraction media, while water and ethanol served as reference solvents for comparison. The obtained extracts were analyzed using HPLC-DAD. All tested ILs significantly enhanced the EA yield compared to water and ethanol, with cholinium acetate proving to be the most efficient, particularly in extractions from raspberry pomace. Furthermore, freeze-dried raspberry pomace yielded higher EA concentrations than whole raspberries, confirming that both solvent composition and biomass pretreatment are key factors of extraction efficiency. Overall, these results demonstrate that cholinium-based ionic liquids are highly effective green solvents for the sustainable extraction of ellagic acid and other phenolic compounds from raspberry-processing residues, thereby supporting the valorization of agro-industrial by-products and the advancement of environmentally responsible extraction technologies.

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