INSTITUTE OF TECHNICAL SCIENCES OF SASA
MATERIALS RESEARCH SOCIETY OF SERBIA

Programme and the Book of Abstracts

TWENTIETH YOUNG RESEARCHERS' CONFERENCE MATERIALS SCIENCE AND ENGINEERING

Belgrade, November 30 – December 2, 2022

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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 «Programme 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 2023.

Sponsors

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Modified food wastes as potential sorbents for phosphate removal

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Annually, around 1.4 billion tonnes of food worldwide is classified as waste. This waste, usually disposed at landfills, poses a serious threat to both the environment and human health. With appropriate modifications, food waste can be converted into value-added products for the removal of organic and inorganic contaminants from aqueous solutions. In this study food waste (peach, cherry and plum stones) were modified with $MgCl_2$ and pyrolyzed to produce biochar, a multifunctional highly porous carbon rich material with improved properties for phosphate (PO_4^{3-}) removal. The samples were categorized using the Fourier transform infra-red (FTIR-ATR) technique, point of zero charge (pH_{pzc}) and pH suspension (pH_{sus}). The experimental sorption results revealed that the modified plum stone biochar (PSB-M) has higher sorption capacities than other materials. Kinetic adsorption experiments demonstrated that the pseudo-second-order model was the most suitable one for PO_4^{3-} adsorption on PSB-M. The production of such a sorbent can be affordable considering that the raw material is regarded as waste. Therefore, the findings of this research can be a foundation for the synthesis of an effective phosphate sorbent, whose properties and maximum sorption capacity should be further researched.