

MATERIALS RESEARCH SOCIETY OF SERBIA
INSTITUTE OF TECHNICAL SCIENCES OF SASA

Programme and the Book of Abstracts

**NINETEENTH YOUNG RESEARCHERS' CONFERENCE
MATERIALS SCIENCE AND ENGINEERING**

Belgrade, December 1-3, 2021



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

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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 2022.

Sponsors



ANALYSIS
LABORATORY EQUIPMENT

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Dissolving and water absorption ability of spray-dried willow gentian extract

Miloš Jovanović¹, Nada Čujić-Nikolić¹, Zorica Drinić¹,
Teodora Janković¹, Smilja Marković², Katarina Šavikin¹

¹*Institute for Medicinal Plants Research “Dr. Josif Pančić”, Tadeuša Koščuška 1, 11000 Belgrade,* ²*Institute of Technical Sciences of SASA, Knez Mihailova 35/IV, 11000 Belgrade*

Roots of the willow gentian (*Gentiana asclepiadea* L., Gentianaceae) are used in folk medicine to treat gastrointestinal diseases. Spray drying is the most commonly used technique for microencapsulation of plant extracts in the pharmaceutical, cosmetic and food industries. The choosing of suitable carriers is one of the critical points in the development of microencapsulated powder with the desired physicochemical properties. The extract of the willow gentian roots was spray-dried using different carriers (maltodextrin (MD) and whey protein (WP) at concentrations of 20, 40, and 60%; pectin (P), starch (S), and gelatin (G) at concentrations of 2.5, 5, and 7.5%). The aim of this study was to examine the ability of the obtained powder to dissolve and absorb water. For this purpose, the values of water solubility (WSI) and water absorption index (WAI) were determined. WSI is a measure of the powder degradation and dissolving in water, while WAI represents an indicator of water absorption ability. It is desirable that instant tea powders show high WSI and low WAI values. WSI values ranged from 71.15% (7.5% P) to 91.94% (7.5% G) indicating good powder disintegration properties. Concentration-dependent decrease in WSI values was observed for WP, P and S, while the opposite trend was observed in the case of MD. The carrier-free powder showed relatively low WAI value (13.32%). Powders with 20% MD and 5% S showed slightly lower WAI values (12.77 and 12.72%, respectively). On the other hand, powders with 5 and 7.5% P showed remarkably high WAI values of 91.59 and 91.49%, respectively. A concentration-dependent increase in WAI was observed in powders encapsulated with MD and WP. All encapsulated powders showed acceptable disintegration properties (high WSI), while in terms of water absorption (low WAI) powders with 20% MD and 5% S were the most suitable.