



Serbian Chemical Society
Serbian Young Chemists' Club



9th Conference of the Young Chemists of Serbia

Book of Abstracts

Novi Sad
4th NOVEMBER 2023



9th Conference of Young Chemists of Serbia

Book of Abstracts

4th November 2023

University of Novi Sad - Faculty of Sciences

CIP – Kategorizacija u publikaciji
Narodna biblioteka Srbije, Beograd

9th Conference of Young Chemists of Serbia

Novi Sad, 4th November 2023

Book of Abstracts

Published and organized by

Serbian Chemical Society and Serbian Young Chemists' Club

Karnegijeva 4/III, 11000 Belgrade, Serbia

Tel./fax: +381 11 3370 467; www.shd.org.rs; office@shd.org.rs

Publisher

Dušan **SLADIĆ**, president of Serbian Chemical Society

Editors

Jelena **MILOVANOVIĆ**

Vuk **FILIPOVIĆ**

Života **SELAKOVIĆ**

Snežana **PAPOVIĆ**

Branko **KORDIĆ**

Jelena **KESIĆ**

Mila **LAZOVIĆ**

Mihajlo **JAKANOVSKI**

Page Layout and Design

Jelena **KESIĆ**

Mila **LAZOVIĆ**

Mihajlo **JAKANOVSKI**

Circulation

20 copies

ISBN 978-86-7132-084-9

Printing

Development and Research Centre of Graphic Engineering

Faculty of Technology and Metallurgy, Karnegijeva 4, Belgrade, Serbia

Scientific Committee

Dr. Jelena Milovanović - University of Belgrade - Institute of Molecular Genetics and Genetic Engineering, Belgrade, Serbia

Dr. Vuk Filipović - University of Belgrade - Institute of Molecular Genetics and Genetic Engineering, Belgrade, Serbia

Dr. Života Selaković - Helmholtz Institute for Pharmaceutical Research Saarland, Germany and University of Belgrade, Faculty of Chemistry, Belgrade, Serbia

Dr. Snežana Papović - University of Novi Sad, Faculty of Sciences, Novi Sad, Serbia

Dr. Branko Kordić - University of Novi Sad, Faculty of Sciences, Novi Sad, Serbia

Organizing Committee

Jelena Kesić - University of Novi Sad, Faculty of Sciences

Mila Lazović - Innovation Centre of Faculty of Chemistry Ltd., Belgrade, Serbia

Mihajlo Jakanovski - Innovation Centre of Faculty of Chemistry Ltd., Belgrade, Serbia

European Young Chemists' Network

Gaia De Angelis, Global Connection Team Leader

Sponsorship

The organizing committee is grateful for the donations of the selected sponsor participants:

European Young Chemists' Network



Analysis doo



Ministry of Science, Technological Development and Innovation



Република Србија
МИНИСТАРСТВО НАУКЕ,
ТЕХНОЛОШКОГ РАЗВОЈА И
ИНОВАЦИЈА

Acknowledgement

Acknowledgement to the University of Novi Sad - Faculty of Sciences for the use of the space of the faculty during the 9th Conference of Young Chemists' of Serbia.

Thanks to the Board of the Serbian Chemical Society for the supporting during organization of the Conference.

Deeply acknowledgments to the European Young Chemists' Network for the financial support of the best oral and poster presentations.

Thanks to the Analysis doo for confidence and the promoting material.

Contents

Plenary Lecture	1
Invited Lectures	5
Oral presentations	11
Poster presentations	25
Chemistry and Society	27
Chemistry meets Biology	31
Developments in chemical synthesis	63
Environmental awareness	79
Physical and computational chemistry	97
Phytochemistry and Food Chemistry	117
Solution chemistry and Chemical equilibrium	149
Supramolecular Chemistry and Functional Materials	151
Author index	167

Preparation of NiO supported carbon paste electrode for sensitive and selective determination of Gallic acid in plant samples

Tijana Mutić¹, Vesna Stanković¹, Petar Ristivojević², Dalibor Stanković²

¹ University of Belgrade - Institute of Chemistry, Technology and Metallurgy, National Institute of the Republic of Serbia, Belgrade, Serbia

² University of Belgrade - Faculty of Chemistry, Belgrade, Serbia

Gallic acid (GA), namely 3,4,5-trihydroxy benzoic acid, is a natural phenolic compound present in tea, wine, fruits, beverages, and various medicinal plants [1]. Due to their ability to scavenge free radicals and act as antioxidants, gallic acid and its derivatives, including lauryl-, propyl-, octyl-, tetradecyl-, hexadecyl-gallate, can prevent the oxidation and rancidity of oils and fats, and as a result, they are used as food additives [2]. There are numerous scientific reports on the biological and pharmacological activities of GA, with an emphasis on antioxidant, antimicrobial, anti-inflammatory, anticancer, cardioprotective, gastroprotective, and neuroprotective effects [1,2].

In this work, nickel oxide (NiO) nanoparticles were synthesized by the chemical coprecipitation method and used for modification of the carbon paste electrode for GA detection and determination. Morphological properties of prepared material were investigated using ICP-OES (inductively coupled plasma–optical emission spectrometry), XRD (X-ray diffraction), SEM and TEM (Scanning and Transmission Electron Microscopy). The electrochemical properties of the prepared electrode and the behavior of GA over the modified electrode were examined using CV (Cyclic Voltammetry), EIS (Electrochemical impedance spectroscopy), and SWV (Square Wave Voltammetry). The prepared electrode showed better electrocatalytic response than the bare carbon paste electrode. After square wave voltammetry (SWV) optimization, the electrode showed a wide linear working range from 0.2 to 100 μM at pH 3 of Britton–Robinson buffer solution (BRBS) as the supporting electrolyte. The excellent selectivity of the proposed method, with good repeatability and reproducibility, strongly suggests a potential application of the method for the determination of GA in plant samples.

References

1. Ü. T. Yilmaz, A. Kekillioglu, R. Mert, *J. Anal. Chem.* **2013**, 68 (12), 1064.
2. S. Choubey, L. R. Varughese, V. Kumar, V. Beniwal, *Pharmaceutical patent analyst.* **2015**, 4 (4), 305.