BOOK of ABSTRACTS

2nd International Conference on Advanced Production and Processing

20th-22nd October 2022

Novi Sad, Serbia

Title:
Book of Abstracts of the 2nd International Conference on Advanced Production and Processing publishes abstracts from the following fields: Innovative Food Science and Bioprocesses, Nutraceuticals and Pharmaceuticals, Sustainable Development, Chemical and Environmental Engineering, Materials Design and Applications, Petroleum Refining and Production.

Publisher:
University of Novi Sad, Faculty of Technology Novi Sad,
Bulevar cara Lazara 1, 21000 Novi Sad, Serbia

For publisher:
prof. Biljana Pajin, PhD, Dean

Editorial board:
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Design and Printing Layout:
Saša Vulić

CIP - Каталогизација у публикацији
Библиотеке Матице српске, Нови Сад

658.5(048.3)

INTERNATIONAL Conference on Advanced Production and Processing (2 ; 2022 ; Novi Sad)
Book of abstracts [Elektronski izvor] / 2nd International Conference on Advanced Production and Processing, 20th-22nd October 2022, Novi Sad ; [editor-in-chief Zita Šereš]. - Novi Sad : Faculty of Technology, 2022

Način pristupa (URL): https://www.tf.uns.ac.rs/download/icap-2022/book-of-abstracts.pdf. - Opis zasnovan na stanju na dan 14. 10. 2022. - Nasl. s naslovnog ekrana.

ISBN 978-86-6253-160-5

a) Технологија - Производња - Апстракти

COBISS.SR-ID 77341961

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Table of Contents

2nd International Conference
on Advanced Production and Processing

A SENSITIVE VOLTAMMETRIC SENSOR FOR CAFFEIC ACID MADE FROM THERMOLISED MODIFIED UF RESINS WITH INCORPORATED Fe(III) AND Ti(IV) OXIDE PARTICLES

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Domestic high performance electrode material was prepared by thermolysis of *in situ* synthesized urea-formaldehyde (UF) resins modified with Fe(III) nitrate and Ti(IV) oxide in different combinations: iron salt and UF resins (SynFe/UF-TP), titan oxide and UF resins (SynTi/UF-TP) and both metal compounds together and UF resins (SynFe+Ti/UF-TP). For comparison, the thermolysis prepared materials produced by simple physical mixture of metal compounds and UF resins (Fe/UF-TP, Ti/UF-TP and Fe+Ti/UF-TP) were made, too. The surface morphology characterization of all materials were done by SEM. Electrochemical results obtain by cyclic voltammetry and impedance spectroscopy have shown that *in situ* synthesized UF material modified with iron and titan compounds prepared by thermolysis, incorporated in carbon paste electrode (SynFe+Ti/UF-TP@CPE) possesses a better electrochemical response and conductivity than the other materials prepared by the same procedure, or pure CPE without addition of extra material. After optimization of experimental conditions and parameters of differential pulse technique, selectivity of proposed electrochemical method was examined. The proposed sensor with incorporated developed material has proven itself as a selective and sensitive electrochemical platform for determination of caffeic acid (CA). It was successfully applied for the determination of antioxidant capacity, based on CA equivalents, for honey, liqueur and juice samples.

Keywords: Modified urea-formaldehyde resin, Thermolysis, Voltammetric sensor, Caffeic acid

Acknowledgements: Financial support for this study was granted by the Ministry of Science and Technological Development of the Republic of Serbia (451-03-68/2022-14/200123).