



**Innovation Center of
Faculty of Mechanical
Engineering**



**Faculty of Mechanical
Engineering, University
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**Center for Business
Trainings**



**„International Conference of Experimental and
Numerical Investigations and New Technologies“**

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**MINISTRY OF EDUCATION, SCIENCE AND TECHNICAL DEVELOPMENT
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Programme and The Book of Abstracts

29 June – 02 July 2020

Zlatibor, Serbia

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PREFACE

Dear Friends and Colleagues, Welcome to CNN Tech 2020 Conference and the fabulous mountain of Zlatibor!

With 70 papers (14 by international authors) and contributions by authors from 13 different countries, International Conference of Experimental and Numerical Investigations and New Technologies CNN Tech 2020 successfully sets the high level for the future conferences. Participation of a large number of domestic and international authors, as well as the diversity of topics, justifies our efforts to organize this conference and contribute to exchange of knowledge, research results and experience of industry experts, research institutions and faculties which all share a common interest in the field in experimental and numerical investigations.

This year CNN Tech 2020 focuses on the following topics:

- Mechanical Engineering,
- Materials Science,
- Chemical and Process Engineering,
- Experimental Techniques,
- Numerical Methods,
- New Technologies
- Clear sky
- Dental Materials and Structuresand
- Sustainable Design and New Technologies.

Apart from a plenty of interesting lectures, the participants will have a chance to lighten up and communicate in friendly and relaxed settings.

Organizing committee of CNN Tech 2020 would like to express gratitude to Ministry of Education, Science and Technological development for financial support of the Conference.

On behalf of the Innovation center of Faculty of Mechanical Engineering, Faculty of Mechanical Engineering and Center for Business Trainings, we wish this to be splendid CNN Tech conference filled with many memorable moments.

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SAWDUST BASED HYDROTHERMAL CARBON AS ADSORBENT FOR REMOVAL OF STEROLS FROM WATER

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Abstract

Nowadays, various types of inexpensive, sustainable and renewable lignocellulosic waste materials are increasingly being utilized as precursors for carbon adsorbents production. The usage of the lignocellulosic wastes for production of carbon materials is very attractive from the point of decreasing waste disposal costs and improving environment protection through the waste recycling and producing useful products. In this work, carbon adsorbents were obtained starting from beech sawdust (a waste from the wood industry), and using hydrothermal carbonization, followed by activation in the presence of KOH as an activating agent. By varying the activation parameters, activated hydrothermal carbon (AcHTC) samples with different characteristics were obtained. The specific surface area of AcHTC samples was examined by N₂ adsorption, while the nature and thermal stability of the surface oxygen groups was investigated by Fourier transform infrared spectroscopy and temperature programmed desorption method. The possibility of using AcHTC samples as adsorbents was tested using water solution of eleven sterols belonging to the different classes (human/animal and plant sterols). These sterols, usually present at a very high concentrations in wastewater influent and effluent samples, can cause numerous endocrine disorders and therefore should be removed from the aquatic environment. Obtained results showed that activated carbons based on hydrothermally treated sawdust were highly efficient adsorbents, completely removing all tested sterols from water.

Keywords

Waste beech sawdust, activated hydrothermal carbon, adsorption, sterols

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