

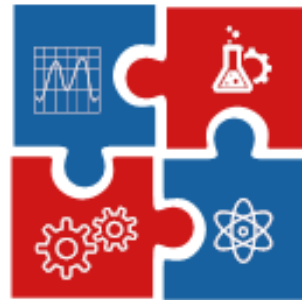
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CNN TECH

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

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**Programme
and
The Book of Abstracts**

05 – 08 July 2022

Zlatibor, Serbia

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Investigations and New Technologies“**

CNN TECH 2022

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We particularly wish to thank our sponsor, **The Ministry of Education, Science and Technological development**, Government of the Republic of Serbia.

We are also grateful to companies, **3D Republic**, **Shimadzu** and **IMW Institute** who have significantly contributed to the organization and realization of the conference.

PREFACE

Dear Friends and Colleagues, Welcome to CNN Tech 2022 Conference and the fabulous mountain of Zlatibor!

With 88 papers (19 by international authors) and contributions by authors from 14 different countries, International Conference of Experimental and Numerical Investigations and New Technologies CNN Tech 2022 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 2022 focuses on the following topics:

- Mechanical Engineering,
- Engineering Materials,
- Chemical and Process Engineering,
- Experimental Techniques,
- Numerical Methods,
- New Technologies,
- Clear sky,
- Dental Materials and Structures
- Advanced Materials and Technology,
- Artificial intelligence and
- Student session.

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 2022 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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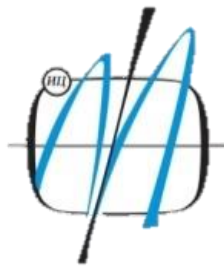
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ADVANCED OXIDATION PROCESSES FOR TREATMENT OF INDUSTRIAL WASTEWATER

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Abstract

Due to the increased pollution of waters, the general interest is to put this issue in the foreground, as one of the biggest problems of modern society. Following that, there is a need for the development of various technologies for their purification, as well as their constant improvement from the point of cost-efficiency of the process. Because of that, various techniques called "advanced oxidation processes" are applied to remove pollutants from wastewater. They differ in the mode of action and application in specific cases of water pollution (i.e., the origin and type of treated wastewater). The following techniques are most commonly used: ozonation, ultrasound (US), UV radiation, and different combinations of them: ozonation with US, UV radiation with various catalysts, ozone with hydroxide-peroxide, etc. Before the advanced processes, the application of standard wastewater treatments (such as coagulation, flocculation, sedimentation, and filtration) was performed to optimize the applied treatment, as well as to assess the increase the overall efficiency of so-called "coupled technologies". In this study, the wastewater samples originating from the armor industry were treated firstly by coagulation, and then with a combination of ozone and US. The purification efficiency was analyzed by reducing the concentration of heavy metals (Pb^{2+} , Cd^{2+}) using atomic absorption spectroscopy (AAS). The concentration of organic pollutants was followed by the values of chemical oxygen demand (COD) and biochemical oxygen demand (BOD_5). The removal degree of metals were over 70%, and organic compounds were 95%. Based on the obtained results, combining the conventional and advanced wastewater treatment, the optimal purification solution was determined.

Keywords

Environmental engineering, wastewater treatment, AOPs, ozonation, ultrasound

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