

EDITORIAL COMMENT

Dear readers,

I have the pleasure to present the first English language issue for 2023 of your favorite journal *Ecological Engineering and Environmental Protection* being approved by the Editorial Board. The articles proposed after peer reviewing are referred to the rubrics *Renewable and Alternative Energy Sources and Biofuels*, *Technologies for Depollution*, *Microorganisms and Environment*, *Remote Sensing of the Environment*, *Environmental Biotechnology*, *Man and Biosphere*, and *Radiation Ecology*.

Intriguing articles are published in the rubric *Renewable and Alternative Energy Sources and Biofuels*. It is known that an important application of iron-oxidizing microorganisms is for the electrical power generation in a microbial fuel cell named BioGenerator, where a symbiotic culture of *Leptospirillum ferriphilum* and *Ferroplasma* is used. In the recent article the authors for Canada reported that *F. acidiphilum* is a very promising organism for use in conjunction with chemolithotrophs such as *Leptospirillum* for bioleaching and also for electrical power generation. The issue of organic accumulation is effectively addressed by the mixotrophic growth of *F. acidiphilum*. In the same rubric are presented results indicating more perspectives for geothermal energy from Bulgarian mineral water sources. The major factors promoting geothermal development in Bulgaria are the long existing traditions in thermal water use, favorable climate, appropriate thermal water composition for therapy and SPA centers. The study confirms that the significance of geothermal energy from mineral waters in Bulgaria is underestimated and more efficient management of mineral water resources is necessary.

In the rubric *Technologies for Depollution* a prosperous environmental biotechnology providing the simultaneous degradation of organic waste and detoxification of toxic metals is presented. After theoretical substantiation, experimental confirmation of the removal of toxic divalent cations using dissimilatory sulfate reduction via anaerobic fermentation of ecologically hazardous model organic waste was carried out. The proposed approach can be used as a basis for development of new biotechnologies for the treatment of wastewater contaminated with divalent heavy metals with the simultaneous treatment of ecologically hazardous compounds.

A comprehensive review clarifying the role of microorganisms (bacteria, archaea, fungi) on the cellulose-degrading process of different cellulose containing matrices is published in the rubric *Microorganisms and Environment*. Various environmental and technological parameters – oxygen availability, temperature, pH, etc. are evaluated and compared. Numerous studies on the isolation of cellulolytic bacteria and fungi, their identification, enzymatic activities, and their ability to grow in the presence of lignocellulose and components of these industrial waste streams (phenolic compounds, sulfides, and dyes are presented, analyzed and discussed.

As for the moment the time of impending strong seismic event is unpredictable, during the last years a new global innovation is under development, namely the seismic early warning systems (SEWS). In the rubric *Remote Sensing of the Environment* a team from Bulgaria presents a methodology for construction of the seismic kinematic model related to threaten objects (in focus are the critical infrastructures). The methodology presented the physical basics and the theoretical considerations regarding the kinematics of the different types of seismic waves and their destructive potential. The functional algorithm, accuracy and reliability of the model of SEWS are also considered.

Nowadays, antimicrobial-resistant pathogens turn to be a serious threat to human and animal health. That is why preparation of metal nanoparticles incorporated in activated carbon composites provides a novel material with antibacterial activity for further development and optional application in hygiene devices and individual masks. The study, described in the rubric *Environmental Biotechnology* demonstrate the influence of the synthesis conditions (temperature, ratio of raw materials, time, etc.) on the structure of the obtained carbon materials being characterized by a structure with predomination of micro- and macro-pores. This allows an efficient absorption of bacteria and viruses from water and air.

In the rubric *Man and Biosphere* are reported data on the electrochemical activation of natural water or of NaCl solutions as a fast and effective method for the production of disinfectants. The obtained solutions possess high antimicrobial capacity against a vast number of Gram-negative and Gram-positive microbial species. The multidisciplinary team noticed that the anolyte obtained from tap water has also a remarkable biocidal ability.

New results on the radiation status of mineral waters in Bulgaria are presented in the rubric *Radiation Ecology*. Data obtained on the natural radioactivity levels showed that the annual effective dose of ingestion of the investigated mineral water is lower than the recommended value of 100 $\mu\text{Sv/y}$ as reported by WHO.

Dear readers, as you can see in the current issue we provide you with a number of experimental and overview scientific articles, which are on a variety of topics and we are sure will provoke your interest. Enjoy reading!

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Editor-in-Chief