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## ANALYSIS OF THE IMPACT OF ECOLOGIC FACTORS ON THE FISH FAUNA OF THE RIVER TISZA

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### ABSTRACT

The conditions of existence of river organisms and the mapping of their habitats have been studied using the example of the Tisza River in Transcarpathia, which plays a key role in preserving biodiversity and the stability of natural environments. River ecosystems are important components of nature conservation practice, and their study contributes to understanding the impact of natural factors on the biotic component of river systems. The influence of hydrodynamic and hydrochemical indicators on river fauna, as well as the characteristics of fish migration under the influence of temperature changes and floods, have been investigated. The results of the research indicate a great diversity of fish species in the Tisza basin, including those listed in the Red Books. The methodology of the study, based on the analysis of normal living conditions and the use of geoinformation technologies, allows obtaining important data for further improvement of nature conservation measures in the region.

**Keywords:** analysis, impact, ecologic factors, fish species, river Tisza.

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## SOLAR ENERGY AND GEOGRAPHIC INFORMATION SYSTEMS: APPLICATION OF ROOFTOP PV SYSTEMS IN KÜTAHYA PROVINCE

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### ABSTRACT

In recent years, electricity generation from renewable sources has gained popularity. In particular, electricity generation based on solar energy is expected to be the most suitable solution to meet the energy needs of urban environments in the near future. While providing renewable-based energy to urban areas poses a major challenge, rooftop Photovoltaic (PV) systems that harness solar energy could pave the way to a more sustainable environment for cities. From an environmental perspective, every MWh of electricity generated from renewable sources reduces the introduction of large amounts of greenhouse gases into the atmosphere, thereby promoting a healthy environment and reducing global warming. Small-scale building-connected solar energy systems contribute significantly to the rapid growth of electricity generation potential from solar energy globally. This study aims to investigate the future of PV systems placed on roofs in the central housing sector of Kütahya, focusing especially on building roof areas. In this context, average solar radiation maps are provided to estimate the electricity generation potential of rooftop PV systems and evaluate the production potential. In addition, Geographic Information System (GIS) was used to evaluate the total roof area and solar potential of residential buildings in Kütahya province through spatial analysis. Finally, performance simulations were conducted, allowing solar potential prediction from annual solar irradiance, considering local building construction and PV design requirements. As a result of the analysis, it was determined that a total of 1979.7 MWh of electricity could be produced annually from a total roof area of 35121 m<sup>2</sup> from a group of faculty buildings in the university campus located in the Kirazpınar neighborhood of Kütahya center, and a recommendation was made to form a basis for future studies on the energy efficiency of different PV solar cells.

**Keywords:** Geographic Information Systems (GIS), Solar energy, PV systems, Environmental Sustainability.

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## ASSESSMENT OF WETLAND AREAS AT SHKODRA LAKE, ALBANIA SIDE

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### ABSTRACT

Shkodra Lake is an ecosystem of importance for Albania and the region, in terms of history, culture and nature. The lake, in addition to its size as the largest in Albania, has great values for biodiversity and economic development. Along its eastern shores there are many wetlands. These areas are quite rich in plant and animal species and a variety of habitats. At the same time, these habitats are important for the local community, where they live and develop a large part of their vital activity. The wetland part is always under the influence of the rise and fall of the lake level due to seasonal changes. This project focuses on the study of new development alternatives that are more sustainable from an environmental point of view in Shkodra Lake, with the possibility of development in a long time, based on local natural resources but not harming them is necessary. For many decades, wetland areas have been treated as spaces that need to be changed, without economic value, dangerous for people's health, etc. With this study, it is required to evaluate numerically and not only qualitatively from the economic point of view of the wetland areas, combining it with the natural values. This study, which includes different study disciplines, will help to better known wetland areas not only from the environmental, natural, but also economic value. Traditionally, the lake pollution has been extensively studied regarding physical and chemical characteristics. However, lately microbiological quality of the lake has come under greater focus owing to deleterious effects of pollution on human health. The bacterial pollution of the water of Shkodra Lake, Albania part is conditioned both from the untreated sewage wastewater and the contribution of bathing people. Out of large number of microbial parameters linked with human health, some significant contaminating indicators, namely, total *Coli form* (MPN/100ml), *Faecal coliform* (MPN/100ml), *Streptococcus faecalis* (MPN/100ml) have been identified and measured. The results taken by the analyses show that the bacterial pollution of the littoral waters of Lake Shkodra, surpasses the UNEP/WHO standards for the microbiological quality of bathing waters (100-1000 *E. coli*/100ml) in most of the sampling locations.

**Key words:** biodiversity, pollution, microbiological quality, total coliform, *E. coli*.

## EFFECT OF Zr AND Bi DOPANTS ON THE ENERGY EFFICIENCY OF dssc TiO<sub>2</sub> SOLAR CELLS

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### ABSTRACT

Research into alternative energy sources has gained popularity in recent years due to the increasing demand for energy as the world's population grows and fossil fuels become scarcer. For this reason, energy has become one of the most important areas of scientific research in recent times. Although studies have been carried out on this subject in our country, more comprehensive research is needed to bring it to an adequate level. This study, which was carried out to increase the use of renewable energy, is aimed to contribute to the protection of the world and the environment. The aim of this study is to obtain doped TiO<sub>2</sub> dye-sensitised solar cells to obtain high-efficiency, low-cost solar cells that generate electrical energy using solar energy, which is an important resource. Bismuth and Zirconium were doped at 1% and 3% in the study. Characterisations were carried out by XRD, SEM, EDS. Band gap and efficiency measurements of photo anodes were performed. The band gap increased with the addition of Bi and Zr.

**Keywords:** effect, Zr, Bi, dopants, energy, dssc TiO<sub>2</sub>, solar cells.

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## NOVEL CNT SUPPORTED RU-CO CATALYST FOR DETECTION OF THREONINE IN ITS NATURAL ENVIRONMENT

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### ABSTRACT

In this study, catalysts consisting of ruthenium (Ru95%) and cobalt (Co5%) supported on carbon nanotubes (CNTs) were prepared using the NaBH<sub>4</sub> reduction method. After the Ru-Co/CNT catalysts were prepared, an efficient and sensitive electrochemical sensor was developed using glassy carbon electrode (GCE) modified with Ru-Co/CNT catalysts. The electrochemical behavior of Ru-Co/CNT-modified GCE electrodes was investigated using cyclic voltammetry (CV) and electrochemical impedance spectroscopy (EIS). Electrochemical results show that the GCE electrode modified with Ru-Co/CNT has a sensitivity of 0.009 mA/cm<sup>2</sup>.mM, limit of detection (LOD) 0.06 μM a limit of quantification of (LOQ) 0.18 μM for threonine. In conclusion, the results show that the Ru-Co/CNT-modified GCE electrode has been synthesized for the first time in the literature and is a promising catalyst for the sensitive detection of threonine.

**Keywords:** threonine, ruthenium, cobalt, carbon nanotube, amino acid.

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## **PREECLAMPSIA, COMPLICATIONS, CHALLENGES, THE SITUATION OF PREECLAMPSIA DURING 2019-2021 AT MATERNITY HOSPITAL "QUEEN GERALDINE"**

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### **ABSTRACT**

Preeclampsia is a pregnancy-related hypertensive disorder characterized by high blood pressure and often proteinuria after 20 weeks of gestation. It poses significant risks to both the mother and fetus, and if untreated, can lead to severe complications or even be life-threatening. Preeclampsia is a complex condition with significant maternal and fetal risks. Early detection, understanding its underlying mechanisms, and addressing disparities in health care access are critical to improving outcomes. Ongoing research and advancements in prenatal care are essential to better manage and eventually prevent this condition.

**Key words:** preeclampsia, complications, challenges, atmaternity.