جامعة الأمير سلطان
PRINCE SULTAN
UNIVERSITY

Sustainable Development Report 2021-2022

Life Below Water

Life Below Water

Supporting aquatic ecosystems through education

Fresh-water ecosystems (community outreach)

Offer educational programs on fresh-water ecosystems (water irrigation practices, water management/conservation) for local or national communities

Course: CEE 442 Environmental Management

CEE 441 Energy Resources Management

CEE 442 Environmental Management

CEE 443 Leadership in Energy and Environmental Design (LEED)

CEE 444 Solid Waste Management

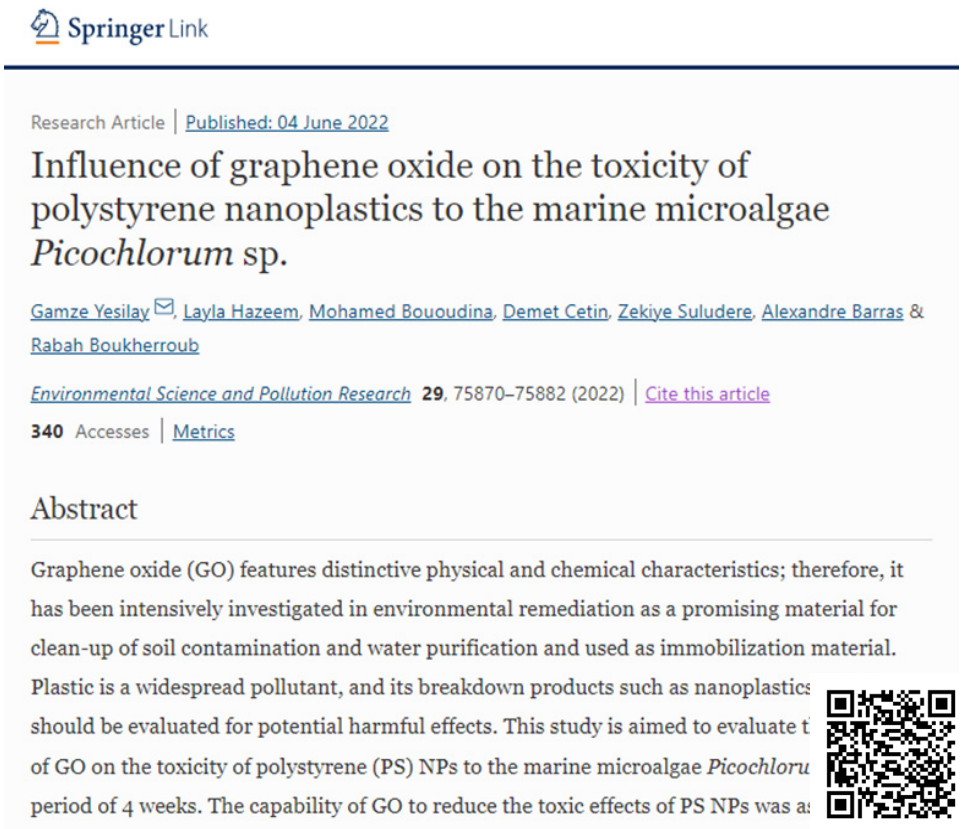
CEE 446 Air Pollution Management

CEE 447 Groundwater Engineering

Supporting aquatic ecosystems through action

Maintain ecosystems and their biodiversity

Work directly (research and/or engagement with industries) to maintain and extend existing ecosystems and their biodiversity, of both plants and animals, especially ecosystems under threat



Springer Link

Research Article | Published: 04 June 2022

Influence of graphene oxide on the toxicity of polystyrene nanoplastics to the marine microalgae *Picochlorum* sp.

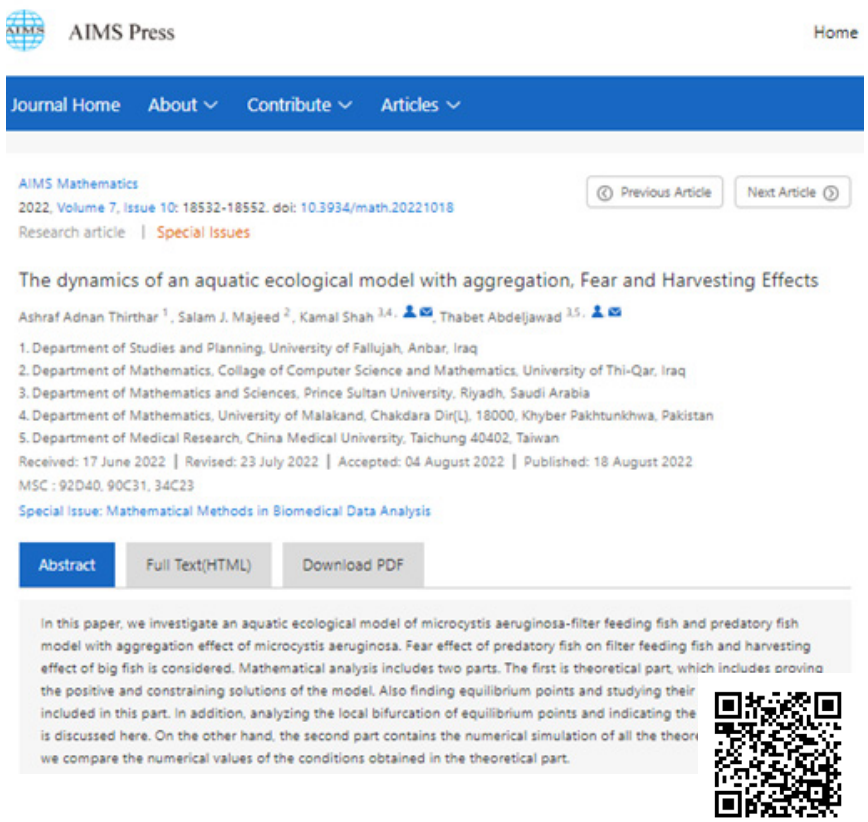
Gamze Yesilay, Layla Hazeem, Mohamed Bououdina, Demet Cetin, Zekiye Suludere, Alexandre Barras & Rabah Boukherroub

Environmental Science and Pollution Research **29**, 75870–75882 (2022) | Cite this article

340 Accesses | Metrics

Abstract

Graphene oxide (GO) features distinctive physical and chemical characteristics; therefore, it has been intensively investigated in environmental remediation as a promising material for clean-up of soil contamination and water purification and used as immobilization material. Plastic is a widespread pollutant, and its breakdown products such as nanoplastics should be evaluated for potential harmful effects. This study is aimed to evaluate t of GO on the toxicity of polystyrene (PS) NPs to the marine microalgae *Picochloru* period of 4 weeks. The capability of GO to reduce the toxic effects of PS NPs was a



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AIMS Mathematics

2022, Volume 7, Issue 10: 18532-18552. doi: 10.3934/math.20221018

Research article | Special Issues

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The dynamics of an aquatic ecological model with aggregation, Fear and Harvesting Effects

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Special Issue: Mathematical Methods in Biomedical Data Analysis

Abstract | Full Text(HTML) | Download PDF

In this paper, we investigate an aquatic ecological model of microcystis aeruginosa-filter feeding fish and predatory fish model with aggregation effect of microcystis aeruginosa. Fear effect of predatory fish on filter feeding fish and harvesting effect of big fish is considered. Mathematical analysis includes two parts. The first is theoretical part, which includes proving the positive and constraining solutions of the model. Also finding equilibrium points and studying their included in this part. In addition, analyzing the local bifurcation of equilibrium points and indicating the is discussed here. On the other hand, the second part contains the numerical simulation of all the theor we compare the numerical values of the conditions obtained in the theoretical part.

Technologies towards aquatic ecosystem damage prevention

Work directly (research and/or engagement with industries) on technologies or practices that enable marine industry **to minimise or prevent damage to aquatic ecosystems.**

Hindawi
Journal of Nanomaterials
Volume 2022, Article ID 1458442, 14 pages
https://doi.org/10.1155/2022/1458442

Hindawi

Research Article

Efficient Removal of Cd (II) from Aquatic Media by Heteronanostructure $MgO@TiO_2@g\text{-}C_3N_4$

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$MgO@TiO_2@g\text{-}C_3N_4$ heteronanostructure was synthesized using a simple ultrasonication technique and assessed potentially to remove Cd (II) from aqueous environments. X-ray diffraction analysis confirms composite formation with mean crystallite size in the range of 4-17 nm while transmission electron microscopy analysis reveals nanosheet-like nanoparticles with the homogeneous elemental distribution. N_2 adsorption-desorption measurements indicate the formation of a mesoporous structure with a BET surface area of about 107 m^2/g. Fourier-transformed infrared elucidates the presence of O–H, amino groups, triazine, Ti–O vibrations modes. At the same time, X-ray photoelectron spectroscopy analysis manifests the presence of Mg, C C elements. For aqueous Cd (II) ions, the $MgO@TiO_2@g\text{-}C_3N_4$ nanostructure displays a superior adsorption efficien 99.94% Cd (II) elimination with an optimum adsorption capacity of 515.86 mg/g in a short duration of 16 min. demonstrates the capability of using the $MgO@TiO_2@g\text{-}C_3N_4$ nanostructure as an efficient and reusable adsorbent fo of Cd (II) ions in wastewater treatment and potentially for the removal of other heavy metal ions.

SUSTAINABLE DEVELOPMENT GOALS

PSU's commitment to SDG 2030

PSU is committed to United Nations Sustainable Development Goals (SDGs) through effective institutional resource management, innovative teaching and learning, research, national and international partnerships, continuous studies, and outreach. PSU shall undertake the following activities: form higher and steering committees, evaluate each SDG, formulate and develop related SDG policies, conduct awareness campaigns to the PSU community, establish a sustainability office, identify the SDGs related to each college, program, and course, and lab centers at PSU, and mplement sustainability-related initiatives.

Vision

Prince Sultan University strives to support Saudi Arabia's Vision 2030 and the United Nations Sustainable Development Goals (SDGs) by paving the way for higher education in KSA and Middle East.

Mission

Supporting the Saudi Arabia's Vision 2030 and the PSU's strategic directions, PSU aligns its mission with SDGs by providing quality education, sustainability initiatives, life long learning, scientific research, and community service.

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