

# Journal of Engineering and Natural Sciences Mühendislik ve Fen Bilimleri Dergisi

Volume 40

Number 4

**Year** 2022







#### **EDITOR-IN-CHIEF**

## Ahmet Selim DALKILIÇ

Department of Mechanical Engineering, Yıldız Technical University, İstanbul, Turkey

## **ASSOCIATE EDITORS**

## İhsan KAYA

Department of Industrial Engineering, Yıldız Technical University, İstanbul, Turkey

## **Nergis ARSU**

Department of Chemistry, Yıldız Technical University, İstanbul, Turkey

## **SECTION EDITORS**

#### Ali ERDOĞMUŞ

Department of Chemistry, Yıldız Technical University, İstanbul, Turkey

## Alper YILMAZ

Department of Bioengineering, Yıldız Technical University, İstanbul, Turkey

## Azmi Seyhun KIPÇAK

Department of Chemical Engineering, Yıldız Technical University, İstanbul, Turkey

## **Banu MANSUROĞLU**

Department of Moleculer Biology and Genetics, Yıldız Technical University, İstanbul, Turkey

## **Emel AKYOL**

Department of Chemical Engineering, Yıldız Technical University, İstanbul, Turkey

#### Eyüp DEBİK

Department of Environmental Engineering, Yıldız Technical University, İstanbul, Turkey

## Fatih AKYOL

Department of Metallurgical and Materials Engineering, Yıldız Technical University, İstanbul, Turkey

# Gülhayat GÖLBAŞI ŞİMŞEK

Department of Statistics, Yıldız Technical University, İstanbul, Turkey

#### Hakan YILMAZER

Department of Metallurgy and Malterials Engineering, Yıldız Technical University, İstanbul, Turkey

#### Hasan KÖTEN

Department of Mechanical Engineering, İstanbul Medeniyet University, İstanbul, Turkey

## Hayriye SUNDU PAMUK

Department of Physics, Kocaeli University, Kocaeli, Turkey

## **Mesut AKGÜN**

Department of Chemical Engineering, Yıldız Technical University, İstanbul, Turkey

## Metin TÜLÜ

Department of Chemistry, Yıldız Technical University, İstanbul, Turkey

## Muhammet Kasım ŞENER

Department of Chemistry, Yıldız Technical University, İstanbul, Turkey

#### Müslüm ARICI

Department of Mechanical Engineering, Kocaeli University, Kocaeli, Turkey

## **Nader JAVANI**

Department of Mechanical Engineering, Yıldız Technical University, İstanbul, Turkey

## Osman Nuri UÇAN

Department of Electrical and Electronics Engineering, Altınbaş University, İstanbul, Turkey

## Ömer Said TOKER

Department of Food Engineering, Yıldız Technical University, İstanbul, Turkey





# Necmiye Özlem ÜNVERDİ

Department of Electronics and Communication Engineering, Yıldız Technical University, İstanbul, Turkey Selçuk ÇEBİ

Department of Industrial Engineering, Yıldız Technical University, İstanbul, Turkey

#### Sevil YÜCEL

Department of Bioengineering, Yıldız Technical University, İstanbul, Turkey

## Vildan ÇETKİN

Department of Mathematics, Kocaeli University, Kocaeli, Turkey

## Yasemin BUDAMA KILINÇ

Department of Bioengineering, Yıldız Technical University, İstanbul, Turkey

## **REGIONAL EDITORS**

#### **Abdelraheem Mahmoud ALY**

South Valley University, Egypt

# Abdullahi YUSUF

Federal University Dutse, Nigeria; Biruni University Istanbul, Turkey

## **Adem KILICMAN**

Department of Mathematics, University Putra, Malaysia

## **Amin SHAHSAVAR**

Kermanshah University of Technology, Iran

## Chandramohan V.P.

National Institute of Technology Warangal, India

#### **Gobinath RAVINDAN**

SR University, India

## Hijaz AHMAD

University of Engineering and Technology Peshawar, Khyber Pakhtunkhwa, Pakistan

## Md. Sabir HOSSAIN

Chittagong University of Engineering and Technology, Bangladesh

## **Mohammad Reza SAFAEI**

Department of Civil and Environmental Engineering, Florida International University, USA

## Mostafa Safdari SHADLOO

Insa of Rouen, France

#### **Muthu Poosan MOOPANAR**

Department of Mathematics, National Institute of Technology, Warangal, India

#### Oscar CASTILLO

Tijuana Institute of Technology, Mathematics Division, Mexico

## **Pravin KATARE**

Marathwada Mitra Mandal's College of Engineering, India

## **Ravindar KUMAR**

Lovely Professional University, India

#### Sania QURESHI

Department of Basic Sciences and Related Studies, Mehran University of Engineering and Technology, Pakistan

## Siamak HOSEINZADEH

Department of Planning, Design, and Technology of Architecture, University of Roma, Italy

#### Shengda ZENG

School of Mathematics and Statistics, Yulin Normal University, Yulin, China;

Faculty of Mathematics and Computer Science, Jagiellonian University in Krakow, Krakow, Poland

#### Taha M. RABABAH

Department of Nutrition and Food Technology, Jordan University of Science and Technology, Jordan





## **ADVISORY EDITORS**

## Bestami ÖZKAYA

Department of Civil Engineering, Yıldız Technical University, İstanbul, Turkey

## Cengiz KAHRAMAN

Department of Industrial Engineering, İstanbul Technical University, İstanbul, Turkey

## **Erol TUTUMLUER**

Department of Civil Engineering, University of Illinois Urbana-CHampaign, USA

# Hari Mohan SRIVASTAVA

Department of Mathematics and Statistics, University of Victoria, Canada

## Mohsen SHEIKHOLESLAMI

Babol Noshirvani University of Technology, Iran

## Melike Elif BİLDİRİCİ

Department of Economics, Yıldız Technical University, İstanbul, Turkey

## **SECRETARY**

## Senol BiLGiN

Yıldız Technical University, İstanbul, Turkey

## Somchai WONGWISES

Department of Mechanical Engineering, King Mongkut's University of Technology, Thonburi, Thailand

## **Umut Rifat TUZKAYA**

Department of Industrial Engineering, Yıldız Technical University, İstanbul, Turkey

## Zekai ŞEN

İstanbul Medipol University, İstanbul, Turkey

#### Zeynep IŞIK

Department Civil Engineering, Yıldız Technical University, İstanbul, Turkey

# Abstracting and Indexing:

- Directory of Open Access Journals (DOAJ)
- EBSCO Host Online Research Databases
- Emerging Sources Citation Index (ESCI)

**Journal Description:** The journal is supported by Yıldız Technical University officially, and is a blind peer-reviewed free open-access journal, published quarterly (March-June-September-December).

Owner: Yıldız Technical University Editor-in-Chief: Ahmet Selim Dalkiliç Language of Publication: English

Frequency: 4 issues

Publication Type: Online e-version

Publisher: Kare Publishing





## **CONTENTS**

D	00	ea	rc	h	Λ	rt	ic	lo	_
K	es	ea	rc:	n	А	rt	IC:	œ	S

- Effects of accelerator type and dosage on the mechanical and durability properties of rapid-setting precast concrete

  Mustafa Tolga ÇÖĞÜRCÜ, Mehmet UZUN
- Modeling of copper removal from aqueous solutions by using carbon-based adsorbents derived from hazelnut and walnut shells by artificial neural network Nihan KAYA, Fatma ERDEM
- 705 Investigation of the effect of current density and PH on oil and grease removal from leather industry wastewaters by electrocoagulation method

  Züleyha BİNGÜL REÇBER, Fatma EKMEKYAPAR TORUN, Sinan KUL, Şahset İRDEMEZ
- 715 Using the Infrastructure Leakage Index (ILI) indicator for effective and sustainable leakage management: importance, advantages and challenges

  Salih YILMAZ, Mahmut FIRAT, Özgür ÖZDEMİR
- 724 Applicability of radial-based artificial neural networks (RBNN) on coliform calculation: A case of study

Bilge AYDIN ER, Aziz ŞİŞMAN, Yüksel ARDALI

- 732 Dilemmas between barley cultivars under salinity stress Elif KARLIK, Nermin GÖZÜKIRMIZI
- 742 Taguchi based GRA-PCA hybrid optimization for the forming of AL6061 alloy in automotive applications

  Dhulipalla SWAPNA, Chalamalasetti SRINIVASA RAO, Devarakonda SAMEER KUMAR, Sajja
  - RADHIKA
- 755 Treatment of dairy industry wastewater by variations of coagulation-flocculation and ozonation

  Elçin GÜNEŞ, Yalçın GÜNEŞ, Asude HANEDAR, Gül KAYKIOĞLU, Asl ÇELİK
- 762 Environmental monitoring of pesticide residues in surface waters of Buyuk Menderes River

Meltem KAÇIKOÇ, Mehmet CENSUR



neural network model

Tolga BARIŞIK, Ali Fuat GÜNERİ



772	Effect of large deflection on laminated composite plates Can GÖNENLİ, Hasan ÖZTÜRK, Oğuzhan DAŞ
787	Shear response and frictional properties of soil mixtures at different dry weight proportions Tanay KARADEMİR
797	Smart phone assisted paper-based biosensor system for hypoxanthine detection in fish meat samples Nimet YILDIRIM TİRGİL, Bülent ÖZCAN, Muhammed Ali BELİBAĞLI
806	Generalized Pythagorean fuzzy sets and new decision-making method  Murat KİRİŞÇİ
814	The effect on thermal efficiency of the height of a radiator above the floor Ali KİBAR
822	Design and development of a ball-screw and electrical motor driven industrial electromechanical cylinder  Mohammad Javad FOTUHI, Cenk KARAMAN, Zafer BİNGÜL
831	Virtual testing of aluminum and Nomex® honeycomb core structures using Is-dyna and Python/Seaborn  Alparslan SOLAK, Birgül AŞÇIOĞLU TEMİZTAŞ, Berna BOLAT
845	A theoretical evaluation on radiation shielding features of Van-Ercis, and Rize-İkizdere (Türkiye) obsidians by using Phy-X/PSD code Zeynep AYGUN, Murat AYGUN
855	Self adaptive penalty method coupled with metaheuristic algorithms to optimization of varying geometrical parameters in drilling for multi hole parts  Reddy SREENIVASULU, Goteti CHAITANYA
868	Change in highway transportation-induced carbon footprint of Kayseri province Fuat ÖZYONAR, Ömür GÖKKUŞ
877	BLEVE risk effect estimation using the Levenberg-Marquardt algorithm in an artificial