

Journal of Engineering and Natural Sciences Mühendislik ve Fen Bilimleri Dergisi

Volume 40

Number 1

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 BİLGİN

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

Research Articles

- 1 Evaluation of the performance of moment resisting steel frames under near field and far field earthquakes based on energy conception
 - Hadi FAGHIHMALEKI, Mohammad SAYADI
- 9 Bayesian estimation for topp-leone distribution using progressively censored data and asymmetric loss functions
 - İlhan USTA
- 27 Image processing based package volume measurement system using kinect sensor Hasan OCAK, Gürkan KÜÇÜKYILDIZ, Suat KARAKAYA
- 45 Comparison of post and iris substrate integrated waveguide band-pass filters for X-Band applications
 - Hammam BANDAR, Nurhan TÜRKER TOKAN
- 57 Studies on miscibility of polyetherimide/polystyrene blends
 Birol IŞIK, Fatih ÇAKAR, Özlem CANKURTARAN
- 63 Comparative solution approach with quadratic and genetic programming to multi-objective healthcare facility location problem

 Bahadır GÜLSÜN, Pınar MİÇ, Mert EDALI
- 79 Genocchi polynomial method for the multiterm variable-order fractional differential equations Sadiye Nergis TURAL POLAT, Arzu TURAN DINCEL
- The machine learning approach for predicting the number of intensive care, intubated patients and death: The COVID-19 pandemic in Turkey

 Pinar CİHAN
- Investigation of the machining performance of ferritic ductile cast iron in WEDM using response surface methodology

Kutay AYDIN, Levent UĞUR, Salih GÜVERCİN, Ferhat GÜL





- 108 Optimization of drones communication by using meta-heuristic optimization algorithms
 A. F. M. Shahen SHAH, Muhammet Ali KARABULUT
- 118 Waste sludge disintegration and bound water reduction by chemical oxidation:

 A comparative study

 Hanife SARI ERKAN
- Green synthesis of BT-Fe3O4 nanocomposite using Camellia sinensis leaves extract: Characterization, NPEO adsorption experiments, isotherms, and kinetics

 Pinar BELİBAĞLI, Yağmur UYSAL
- 144 A weather-based forecasting system for the solar power plants in the Konya region Cankat YAVUZ, Ahmet Reha BOTSALI
- A sine-cosine wavelet method for the approximation solutions of the fractional Bagley-Torvik equation

 Arzu TURAN DİNCEL
- 155 Strength and abrasion performance of recycled aggregate based geopolymer concrete

 Asfaw Mekonnen LAKEW, Mukhallad M. AL-MASHHADANI, Orhan CANPOLAT
- **A New Nonlinear Hybrid Technique with fixed and adaptive step-size approaches** *Amanullah SOOMRO, Sania QURESHI, Asif Ali SHAIKH*
- 179 A comprehensive survey of dual-generalized complex Fibonacci and Lucas numbers

 Nurten GÜRSES, Gülsüm Yeliz ŞENTÜRK, Salim YÜCE
- A new method for conversion between pythagorean fuzzy sets and intuitionistic fuzzy sets

 Gürkan IŞIK
- 196 Modeling and analysis of effective factors in the outsourcing of R&D projects by SEM and ISM approaches: A case study of "Iranian aviation industries organization" Ghasem TAGHIZADEH, Hassan TORABI, Morteza RAJABZADEH
- 208 Important factors affecting the transmission rate of COVID-19 in G20 and EU
 Ozan KOCADAĞLI, Ali Mertcan KÖSE, Neslihan GÖKMEN INAN, Ezgi ÖZER, Aylin YAMAN
 KOCADAĞLI. Ecem BOSTANCI