ISSN 1304-7191 E-ISSN 1304-7205





Volume 41 Number 5 Year 2023



www.sigma.yildiz.edu.tr





## Volume 41 Number 5 Year 2023 - October

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

Ahmet Selim DALKILIÇ Department of Mechanical Engineering, Yıldız Technical University, İstanbul, Turkey

### **ASSOCIATE EDITORS**

**Ihsan 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 Enviromental 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





# Volume 41 Number 5 Year 2023 - October

#### 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 Enviromental 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





# Volume 41 Number 5 Year 2023 - October

#### **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

#### 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

## SECRETARY

Senol BiLGİN Yıldız Technical University, İstanbul, Turkey

#### Abstracting and Indexing:

- Directory of Open Access Journals (DOAJ)

- EBSCO Host Online Research Databases

- Emerging Sources Citation Index (ESCI)
- Scopus

**Journal Description:** The journal is supported by Yıldız Technical University officially, and is a blind peer-reviewed free open-access journal, published bimontly (February-April-June-August-October-December).

**Owner:** Yıldız Technical University

Editor-in-Chief: Ahmet Selim Dalkiliç

Language of Publication: English

Frequency: Bimontly (6 issues per year)

Publication Type: Online e-version

Publisher: Kare Publishing





Volume 41 Number 5 Year 2023 - October

### CONTENTS

#### **Research Articles**

- 885 The best journey in Turkish cuisine: Some Meat-based ethnic foods types and investigation of some water-soluble vitamins compositions by HPLC procedure Büşra YUSUFOĞLU, Mustafa YAMAN, Emine KARAKUŞ
- 892 A new IoT system for non-contact body temperature sensing and warning Fatma AYDIN AKGUN, Giray SOYTÜRK, Muhtalip DEDE
- 900 TRIZ approach to the relevant problem for the transport of assay tubes: A case study on family health centers in Amasya Erman ALBAYRAK, Hatice VURAL, Mehmet EKİCİ, Serpil EKİCİ
- 907 Effects of different cytoplasmic chaperones on outer membrane solubility in *Escherichia coli*; rOMP25 modeling *Kubra TRABZONLU, Tulin ARASOĞLU*
- **916 On orthogonal fuzzy b-metric-like spaces and their fixed point application** *Fahim UDDIN, Umar ISHTIAQ, Hassen AYDI, Khalil JAVED, Muhammad ARSHAD*
- **926 Observation of experts, attitudes through multi-criteria decision-making** *Asma MAHMOOD, Mujahid ABBAS, Ghulam MURTAZA*
- **938** The effect of production parameters of crab and shrimp based chitosan on the adsorption of aluminum and lead Zehra Özden ÖZYALÇIN, Azmi Seyhun KIPÇAK
- **947** A goal programming approach for the facility layout problem with ergonomic constraint *Aylin ADEM, Esra Duygu DURMAZ, Ramazan ŞAHİN, Metin DAĞDEVİREN*
- **958 Wong-Zakai approximation for stochastic models of smoking** Süleyman ŞENGÜL, Zafer BEKİRYAZICI, Mehmet MERDAN
- 969 Theoretical investigation of low GWP refrigerant mixtures as an alternative to R-134A in a domestic refrigerator Mohammad HASHEER SHAIK, Srinivas KOLLA, Bala Prasad KATURU, Yellapragada NAGA VENKATA SAIRAM





## Volume 41 Number 5 Year 2023 - October

- **980** Design optimization of railgun's electromagnetic force using surrogate modelling Habil Akansel AKYOL, Ahmet KIZILAY
- **992** On the matrix representation of Bezier curves and derivatives in E<sup>3</sup> *Şeyda KILIÇOĞLU, Süleyman ŞENYURT*
- 999 Determination of the breast cancer tumor diameter using a UWB microwave antenna system *Çetin KURNAZ, Fawzy ALSHARIF, Adnan Ahmad CHEEMA*
- **1013** Spinor representation of directional *q* -frame *Tülay ERİŞİR, Kemal EREN*
- **1019** Optimization of wear parameters & coefficient of friction of SiC and graphite reinforced hybrid aluminium composites Papabathina Mastan RAO, Murkonda VIJAYA, Kolla SRINIVAS, Deva Raj CHILAKALA, K. Lakshmi CHAITANYA, J. Rangaraya CHOWDARY, Bolleddu James VADAN
- **1029** Influence of silica nanoparticles on the stability of paraffin wax emulsion Aliu Pennah İBRAHİM, İlker ERDEM, Mehmet GÖNEN
- **1042** Rough convergent functions defined on amenable semigroups Erdinç DÜNDAR, Uğur ULUSU, Fatih NURAY

#### **Review Articles**

- **1047** An overview on current trends and future outlook of hydrogels in drug delivery *Esma HAMIDI, Roua ALHALOUSH, Şebnem ŞENOL, Emel AKYOL*
- **1062** A short review on magnesium alloys in multiple domains Yellapragada Naga Venkata SAIRAM, Tara Sasanka CHERUKURI, Hari Prasad KURRA

#### **Technical Note**

**1070** The quasicompact-open topology on *KC(X,Y) İsmail OSMANOĞLU*