

JSR A

JOURNAL OF
SCIENTIFIC REPORTS A

E-ISSN:2687-6167
Number 60
March 2025

Journal of Scientific Reports-A, March 2025, Number 60



Universitas Dharmaji
Jember Campus, Jember Road 11, KM. 41270 Jember
Phone : 0274-4411142
E-mail : jsra@gmail.com
jsra.com

Dharmaji University Press

gate of
SCIENCE



Owner

On Behalf of Kütahya Dumlupınar University
Prof. Dr. Süleyman KIZILTOPRAK (Rector),
On Behalf of Institute of Graduate Studies
Assoc. Prof. Dr. Eray ACAR (Director)

Editorial Board

Önder UYSAL	Kütahya Dumlupınar University
Fatih ŞEN	Kütahya Dumlupınar University
Oktay ŞAHBAZ	Kütahya Dumlupınar University
Nevzat BEYAZIT	Ondokuz Mayıs University
Onur KARAMAN	Akdeniz University
Cafer ÖZKUL	Kütahya Dumlupınar University
Levent URTEKİN	Ahi Evran University
Ümran ERÇETİN	Kütahya Dumlupınar University
Ceren KARAMAN	Akdeniz University
Durmuş ÖZDEMİR	Kütahya Dumlupınar University
Fatih Yavuz ILGIN	Erzincan Binali Yıldırım University
Güray KAYA	Kütahya Dumlupınar University
Pelin Çağım TOKAT BİRGİN	Kütahya Dumlupınar University
Özlem KAYA	Sivas Cumhuriyet University
Tayfun ŞENGÜL	Kütahya Dumlupınar University
Saadet ÇELİKÖZÜ	Kütahya Dumlupınar University
Mehmet Selçuk ERDOĞAN	Kütahya Dumlupınar University
Nataliia BALYTSKA	Zhytomyr State Technological University
Natalia ZUIEVSKA	National Technical University of Ukraine 'Igor Sikorsky Kyiv Polytechnic Institute'
Oksana VOVK	National Technical University of Ukraine 'Igor Sikorsky Kyiv Polytechnic Institute'
Nodor SULASHVILI	The University of Georgia
Csoknyai TAMAS	Budapest University of Technology and Economics
Tibor POOS	Budapest University of Technology and Economics
Saadet ÇELİKÖZÜ	Kütahya Dumlupınar University
Mehmet Selçuk ERDOĞAN	Kütahya Dumlupınar University
Sait ALTUN	Kütahya Dumlupınar University
Sevgi KARACA	Kütahya Dumlupınar University
Ramazan BAYAT	Kütahya Dumlupınar University
Muhammed BEKMEZCİ	Kütahya Dumlupınar University
Ayşenur AYGÜN	Kütahya Dumlupınar University
Safa DÖRTERLER	Kütahya Dumlupınar University
Seyfullah ARSLAN	Kütahya Dumlupınar University
Büşra TUTUMLU	Kütahya Dumlupınar University
Merve ARSLAN	Kütahya Dumlupınar University
Bahadır YÖRÜR	Kütahya Dumlupınar University

Sinem MAVİLER	Kütahya Dumlupınar University
Cemile Nur HEPGÜNEŞ	Kütahya Dumlupınar University
Anıl Orhan GÜRSOY	Kütahya Dumlupınar University
Nihal Yiğit ERTAŞ	Kütahya Dumlupınar University
Merve PAKSOY	Kütahya Dumlupınar University
Merve AKIN	Kütahya Dumlupınar University
Alper ÖZENGÜL	Kütahya Dumlupınar University
Ebru HALVACI	Kütahya Dumlupınar University
Damla İKBALLI	Kütahya Dumlupınar University

Journal of Scientific Reports-A started its publication life in 2000 as name of Journal of Science and Technology of Dumlupınar University and is a national peer-reviewed journal published regularly four times a year in March, June, September and December. The language of the journal is English. Articles submitted to the journal are evaluated by at least two referees who are experts in the subject and selected by the editorial board. All articles submitted to the journal are evaluated by the double-blind method. Articles submitted to our journal for review should not be previously published, accepted for publication and in the process of being evaluated for publication in another journal. All responsibility for the articles published in the journal belongs to the author(s).

The journal aims to share scientific studies carried out in the fields of science and engineering at national and international level with scientists and the public. Original research articles, review articles and short notes in science and engineering disciplines are accepted for the journal. Original research articles are expected to contain theoretical and experimental results and should not be published in other journals. In the review articles, it is expected that scientific, technological and current developments on a specific subject are reflected by using an extensive bibliography and made a satisfying evaluation of these. Short notes should be brief writings prepared to announce the first findings of an original study.

Editorial Policy

The journal is open access and the article evaluation period is between 1-2 months.

Correspondence Address: Kütahya Dumlupınar Üniversitesi Evliya Çelebi Yerleşkesi Fen Bilimleri Enstitüsü
43270 KÜTAHYA

E-mail: joursra@gmail.com

Phone: 0 274 443 19 42

Webpage: gsjsra.com

Fax: 0 274 265 20 60

Section Editors

Civil Engineering Prof. Dr. M. Çağatay KARABÖRK	Kütahya Dumlupınar University
Mechanical Engineering Prof. Dr. Ramazan KÖSE	Kütahya Dumlupınar University
Electrical-Electronics Engineering Assoc. Prof. Kadir VARDAR	Kütahya Dumlupınar University
Computer Engineering Assoc. Prof. Doğan AYDIN	Kütahya Dumlupınar University
Industrial Engineering Assist. Prof. Üyesi Kerem CİDDİ	Kütahya Dumlupınar University
Mining Engineering Assist. Prof. Uğur DEMİR	Kütahya Dumlupınar University
Geology Engineering Assist. Prof. Muzaffer ÖZBURAN	Kütahya Dumlupınar University
Metallurgical and Materials Engineering Prof. Dr. İskender IŞIK	Kütahya Dumlupınar University
Food Engineering Prof. Dr. Muhammet DÖNMEZ	Kütahya Dumlupınar University
Environmental Engineering Prof. Dr. Nevzat BEYAZIT	Ondokuz Mayıs University
Mathematics Assist. Prof. Cansu KESKİN	Kütahya Dumlupınar University
Physics Prof. Dr. Huriye Sanem AYDOĞU	Kütahya Dumlupınar University
Chemistry Prof. Dr. Bülent ZEYBEK	Kütahya Dumlupınar University
Biology Assist. Prof. Nüket Akalın BİNGÖL	Kütahya Dumlupınar University
Biochemistry Assoc. Prof. Derya KOYUNCU ZEYBEK	Kütahya Dumlupınar University
Occupational Health and Safety Prof. Dr. Cem ŞENSÖĞÜT	Kütahya Dumlupınar University
Software Engineering Assist. Prof. Şerif Ali SADIK	Kütahya Dumlupınar University

Advisory Board

Şükrü ASLAN	Sivas Cumhuriyet University/ Turkey
Erdal ÇELİK	Ankara Yıldırım Beyazıt University/ Turkey
Cemal PARLAK	Ege University/ Turkey
Muhammet DÖNMEZ	Kütahya Dumlupınar University/ Turkey
İhsan ÖZKAN	Konya Technical University/ Turkey
Ercan ARPAZ	Kocaeli University/ Turkey
Yavuz GÜL	Sivas Cumhuriyet University/ Turkey
Ataç BAŞÇETİN	İstanbul Technical University/ Turkey
Taner ERDOĞAN	Kocaeli University/ Turkey
Derek ABBOTT	University of Adelaide/ Australia
Kristian ALMSTRUP	Copenhagen University Hospital/ Denmark
Josette Camilleri	University of Birmingham/ UK
Yan-Ru LOU	Fudan University/ China
Ken HAENEN	Hasselt University/ Belgium
Fanming JIN	Shanghai Jiao Tong University/ China
Suneel KODAMBAKA	Florida International University/ USA
Hyoyoung LEE	Sungkyunkwan University/ Republic of Korea
Vinod TIWARI	Banaras Hindu University/ India
Sabine WURMEHL	Leibniz Institute/ Germany
Kai XIAO	Oak Ridge National Laboratory/ USA
Shahid ADEEL	Government College University/ Pakistan
J. Marty ANDERIES	Arizona State University/ USA
Ayaga BAWAH	University of Ghana/ Ghana
Lilong CHAI	University of Georgia/ USA
Idiano D'ADAMO	Sapienza University of Rome/ Italy
Sanjit DEB	Texas Tech University/ USA
Caroline HACHEM-VERMETTE	University of Calgary/ Canada
Marlia Mohd HANAFIAH	The National University of Malaysia/ Malaysia
Nick HOLDEN	University College Dublin/ Ireland
Chang-Wei HU	Sichuan University/ China
Masashi KATO	Nagoya University/ Japan
Tafadzwanashe MABHAUDHI	University of KwaZulu-Natal/ South Africa
Mubarak MUJAWAR	Universiti Teknologi Brunei/ Brunei
Nidhi NAGABHATLA	United Nations University CRIS/ Belgium
Gunnar SEIDE	Maastricht University/ Netherlands
Jonathan Wong	Hong Kong Baptist University/ Hong Kong
Yenchun Jim WU	National Waiwan Normal University/ Taiwan
Jie ZHUANG	University of Tennessee/ USA

JOURNAL OF SCIENTIFIC REPORTS-A
E-ISSN: 2687-6167

CONTENTS

RESEARCH ARTICLES

- MiR-3605, miR-511 and miR-6788: Potential diagnostic and prognostic biomarkers for squamous cell carcinoma of the lung* 1-9
Medi KORİ*
- Comparison of the effects of features and classifiers on performance in the cardiovascular disease detection system* 10-18
İzzet EMİR*, Yıldız AYDIN
- Model-based nonlinear control applications with kinematic and dynamic analysis of 4 DoF SCARA robot manipulator* 19-37
Halit TİRSİ, Kamil ÇETİN*
- Improving DWDM system performance through EDFA and DCF strategies* 38-45
Fırat Ertaç DURAK*
- Innovative thermodynamic integration: kalina, orc and rankine cycles to obtain sustainable energy from gas turbine waste heat* 46-62
Ahmet ELBİR*
- Optimizing logistics warehouse space utilization with minimum total transportation* 63-78
Bahadır ÖZTÜRK, Tuğba SARAÇ*
- Error performance of zero-forcing beamforming with signal space diversity over correlated and uncorrelated Rician fading channels* 79-88
Hilal USLU*, Mustafa Anıl REŞAT, Serdar ÖZYURT
- Analysis of patient demographics and test results using data mining methods and thyroid cancer examination* 89-98
Şükrü KİTİŞ*
- Feldspar flocculation performance using cationic and anionic flocculants in dual* 99-106

system: evaluation by turbidity, settling rate and flocculation efficiency
Özlem KAYA*, Ahmet ÖZKAN

Determining alternative patch sizes for rectangular microstrip antennas using DE and PSO algorithms 107-125
Bahadır HİÇDURMAZ*

REVIEW ARTICLE

Nanofluids and engineering applications: A review 126-149
Hasan D. YILDIZAY*, Muhammed BEKMEZCİ, Fatih ŞEN