

Challenge Journal of **CONCRETE RESEARCH LETTERS**

Vol.11 No.3 (2020)

acoustic emission artificial neural network
compressive strength concrete
corrosion cracking curing ductility
durability energy absorption ferrocement
flaky aggregate fly ash fracture mortar
palm oil fuel ash reinforced concrete
scrap self-compacting concrete silica fume
strengthening superplasticizer tensile strength
waste disposal water absorption workability



TULPAR
ACADEMIC PUBLISHING

ISSN 2548-0928



Challenge Journal

OF CONCRETE RESEARCH LETTERS

EDITOR IN CHIEF

Prof. Dr. Mohamed Abdelkader ISMAIL

Miami College of Henan University, China

EDITORIAL BOARD

Prof. Dr. Abdullah SAAND	<i>Quaid-e-Awam University of Engineering, Pakistan</i>
Prof. Dr. Alexander-Dimitrios George TSONOS	<i>Aristotle University of Thessaloniki, Greece</i>
Prof. Dr. Ashraf Ragab MOHAMED	<i>Alexandria University, Egypt</i>
Prof. Dr. Ayman NASSIF	<i>University of Portsmouth, United Kingdom</i>
Prof. Dr. Gamal Elsayed ABDELAZIZ	<i>Benha University, Egypt</i>
Prof. Dr. Han Seung LEE	<i>Hanyang University, Republic of Korea</i>
Prof. Dr. Zubair AHMED	<i>Mehran University, Pakistan</i>
Prof. Dr. Jiwei CAI	<i>Henan University, China</i>
Assoc. Prof. Dr. Meral OLTULU	<i>Atatürk University, Turkey</i>
Dr. Aamer Rafique BHUTTA	<i>Universiti Teknologi Malaysia, Malaysia</i>
Dr. Khairunisa MUTHUSAMY	<i>Universiti Malaysia Pahang, Malaysia</i>
Dr. Mahmoud SAYED AHMED	<i>Ryerson University, Canada</i>
Dr. Jitendra Kumar SINGH	<i>Hanyang University, Republic of Korea</i>
Dr. Saleh Omar BAMAGA	<i>University of Bisha, Saudi Arabia</i>
Dr. Türkay KOTAN	<i>Erzurum Technical University, Turkey</i>

E-mail: cjcr1@challengejournal.com

Web page: cjcr1.challengejournal.com

TULPAR Academic Publishing
www.tulparpublishing.com





CONTENTS

Research Articles

- | | |
|---|--------------|
| Effect of catalysts amount on mechanical properties of polymer concrete | 46-52 |
| <i>Ferit Cakir, Pinar Yildirim, Mustafa Gündoğdu</i> | |
| <hr/> | |
| Analytical and experimental study on shear performance of RCC beam elements reinforced with PSWC rebars: a comparative study | 53-68 |
| <i>Shoib Bashir Wani, Sarvat Gull, Ishfaq Amin, Ayaz Mohmood</i> | |
| <hr/> | |
| Fracture patterns and mechanical properties of GFRP bars as internal reinforcement in concrete structures | 69-74 |
| <i>Mehmet Canbaz, Uğur Albayrak</i> | |
| <hr/> | |
| Comparative study of optimum cost design of reinforced concrete retaining wall via metaheuristics | 75-81 |
| <i>Aylin Ece Kayabekir, Melda Yücel, Gebrail Bekdaş, Sinan Melih Nigdeli</i> | |
-

