

Journal of Materials and Engineering Structures

ISSN - Online : 2170-127X

Mouloud Mammeri University of Tizi-Ouzou

جامعة مولود معمري تizi-ouzou

جامعة مولود معمري تيزى-عزو



*Volume 7, Issue 2
June, 2020*

**RESEARCH REVIEW of
Sciences and Technologies**



RESEARCH REVIEW OF SCIENCES AND TECHNOLOGIES

EDITEUR

Université Mouloud MAMMERI de Tizi-Ouzou

BP 17 RP 15000, Tizi-Ouzou

Tél : 026 21 89 95 - 026 21 53 14 - 026 41 07 78

Fax : 026 21 29 68

Courriel : univ_tizi@ummto.dz

Site internet : <http://www.ummto.dz>

Responsables de la rédaction

Pr. Farid ASMA, Responsable des revues en ligne, Research Review of Sciences and Technologies, Editeur en Chef, UMMTO, Algérie

Pr. Hocine HAMMOUM, Editeur en Chef , UMMTO, Algérie

Assistants éditoriaux / Editorial Assistants

Melle. Djamilia MANSOUR, Assistante informatique, conception et réalisation

Mr. Said CHEKLAT, Assistant informatique, réseau et design

Email: rrst@ummto.dz

<http://revue.ummto.dz>

**RESEARCH REVIEW of
Sciences and Technologies**

JOURNAL OF MATERIALS AND ENGINEERING

STRUCTURES « JMES »

COMITÉ EDITORIAL/EDITORIAL BOARD

Editeurs en Chef/Editors in Chief

- Pr. Farid ASMA, Université Mouloud Mammeri de Tizi-Ouzou, Algeria
- Pr. Hocine HAMMOUM, Université Mouloud Mammeri de Tizi-Ouzou, Algeria

Comité Scientifique /Scientific Committee

- Pr. Laurent BLERON, Ecole Nationale Supérieure d'Arts et Métiers, France
- Pr. Hélène DUMONTET, Université Pierre et Marie Curie de Paris 6, France
- Pr. Fekri MEFTAH, Université de Cergy-Pontoise, France
- Dr. Marc OUDJENE, Université de Lorraine, France
- Pr. Khemais SAANOUNI, Université de Technologie de Troyes, France
- Pr. Redouane ZITOUNE, Université de Toulouse, France
- Dr. Mohamed SONEBI, Queen's University, Belfast, Northern Ireland, UK
- Pr. Khalil El-Hami, University of Hassan 1, Faculty of Khouribga, Morocco
- Pr. Hakim S. Abdelgader, Department of Civil Engineering, Tripoli University, Tripoli, Libya
- Pr. Kamal Mohammedi, M. Bougara University, Boumerdès MESOnexusteam/LEMI, Algeria
- Dr. Muhammad Mubaraki, Jazan University, Saudi Arabia
- Pr. Jamal KhatibFaculty of Science and Engineering, University of Wolverhampton, United Kingdom
- Dr. Ahmed Benamar, Université du Havre LOMC UMR 6294 CNRS, France
- Pr. Abdenour Alliche, Université Paris 6, France
- Pr. Ouali Amiri, Université de Nantes, France
- Dr. Taghreed Khaleefa Mohammed Ali, Koyauniversity, Iraq
- Prof. Dr. A.S.M. Abdul Awal, Universiti Tun Hussein Onn Malaysia (UTHM), Malaysia
- Dr. Mena Souliman, University of Texas at Tyler, United States
- Prof. Prasanta Sahoo, Jadavpur University Department of Mechanical Engineering Kolkata 700032, India
- Dr. Hossam El-Din Sallam, Jazan University, Saudi Arabia
- Dr. Tarek MERZOUKI, Université de Versailles Saint Quentin en Yvelines Laboratoire Ingénierie des Systèmes de Versailles, France
- Dr. HDR Badis HADDAG, Laboratoire LEM3 – UMR CNRS 7239 Institut Mines-Telecom, InSIC 27 voie de l'Innovation, 88100 St-Dié – France

Assistants éditoriaux / Editorial Assistants

- Melle. Djamil MANSOUR
- Mr. Said CHEKLAT

Email: jmes@ummto.dz

Site : <http://revue.ummto.dz/index.php/JMES>

Journal of Materials and Engineering Structures

Vol. 7, No. 2, June (2020)

Table of Contents

The effect of metal corrosion on the structural reliability of the Pre-Engineered steel frame <i>Ngoc-Long TRAN, Ha T, NGUYEN</i>	155
Upgrading of Deficient Disturbed Regions in Precast RC beams with Near Surface Mounted (NSM) Steel Bars <i>Qasim Muhammed SHAKIR, Ruqyia ALLIWE</i>	167
Proposal of the Multi-modal N2-SSI method to study higher modes effect on the nonlinear response of SSI system <i>Meriem ZOUTAT, Mohammed MEKKI, Sidi mohammed ELACHACHI</i>	185
Experimental Behavior and Analysis of Hybrid Low-High Strength Reinforced Concrete Columns <i>Taghreed Khaleefa MOHAMMED ALI</i>	203
The rheological properties of modified self-compacting cementitious paste <i>Farih MESSAOUDI, Hafida MAROUF, Mohammed SONEBI, Abdelaziz SEMCHA</i>	215
Durability of self-compacting concretes made with the natural pozzolan and siliceous fines <i>Kada AYED, D.E. KERDAL, N. LEKLOU</i>	227
Two-dimensional fracture analysis of FGM under mechanical loading <i>Imène HEBBAR, Abdelkader BOULENOUAR, Yazid AIT FERHAT</i>	241
Effect of limestone fines on the mechanical properties and durability of mortar made with crushed sand <i>El-Hadj MEZIANE, Said KENAI, Bensaid BOULEKBACHE, Abdelkader BOUGARA</i>	253
Experimental Study of Physical, Fresh-State and Strength Parameters of Concrete incorporating Wood Waste Ash as a Cementitious Material <i>Muhammad Saleem RAZA, Kunal RAI, Danish KUMAR, Mutahar ALI</i>	267
Mechanical and Durability Characteristics of High Performance Concrete Using Copper Slag as Fine Aggregate <i>Raghbir SINGH, Rizwan Ahmad KHAN</i>	277
Investigation on cyclic behaviour of FRC beams incorporating copper slag as sustainable waste <i>C. VIJAYAPRABHA, D. BRINDHA</i>	293
Selection of the best alternative for a road project to replace a section in a flood-prone area using GIS and AMC tools <i>Mohamed ZAOUI, Slimane HIMOURI, Tahar KADRI, Charef BENAOUINA</i>	307

ISSN 2170-127X



This work is licensed under a [Creative Commons Attribution-ShareAlike 4.0 International License](#).
Based on a work at <http://revue.ummt.dz>.