4th International Conference on Civil Engineering and Materials Science (ICCEMS 2019)

IOP Conference Series: Materials Science and Engineering Volume 652

Bangkok, Thailand 17 – 19 May 2019

ISBN: 978-1-5108-9848-6 ISSN: 1757-8981 Printed from e-media with permission by:

Curran Associates, Inc. 57 Morehouse Lane Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

This work is licensed under a Creative Commons Attribution 3.0 International Licence. Licence details: http://creativecommons.org/licenses/by/3.0/.

No changes have been made to the content of these proceedings. There may be changes to pagination and minor adjustments for aesthetics.

Printed with permission by Curran Associates, Inc. (2020)

For permission requests, please contact the Institute of Physics at the address below.

Institute of Physics Dirac House, Temple Back Bristol BS1 6BE UK

Phone: 44 1 17 929 7481 Fax: 44 1 17 920 0979

techtracking@iop.org

Additional copies of this publication are available from:

Curran Associates, Inc. 57 Morehouse Lane Red Hook, NY 12571 USA Phone: 845-758-0400 Fax: 845-758-2633 Email: curran@proceedings.com Web: www.proceedings.com

Table of contents

Volume 652

4th International Conference on Civil Engineering and Materials Science (ICCEMS 2019)

17-19 May 2019, Bangkok, Thailand

Accepted papers received: 17 September 2019 Published online: 29 October 2019

Preface

Preface

Conference Committees

Peer review statement

Papers

Civil and Structural Engineering

Innovation diffusion process in the Australian construction industry

W Wipulanusat, K Panuwatwanich, R A Stewart and J Sunkpho.....1

Design and construction monitoring and deformation analysis of super-large deep foundation pit

Junshu Zhou and Guangxiu Fang.....7

The impact of the anchorage on the shear capacity of reinforced concrete beams

D Marcinczak and T Trapko.....14

Model for predicting cost of rural road projects in Thailand

Wai Phyo Lin and Wasaporn Techapeeraparnich.....20

Research on the Rural Housing Design to Explore the Rural Labors

Xiuli Sun, Chundong Ma and Cong Pang.....26

Implementation of certified intelligent building in Taiwan

Jung Shu Hsiao, Julie Chia-Ping Chen and Tsaih Lucky Shin-Jyun.....32

Preferred criteria in winning budget hotel interior design projects in China

H T Huang, C P Chen and S J Tsaih.....42

Statistical characterisation of expanded metal mesh strand, to propose a correlation between properties of parent material and finish product, EMM

Jaydeepsingh Solanki and Siddhartha Ghosh.....52

Variation Prognostic Model on Port Infrastructures: Employment of Principal Component Analysis for Factor Extraction Instigating Disparity on Planning and Implementation Phase

Maria Virginia Cabalag and Dr. Dante L. Silva.....60

Predicting the service life of buildings and facilities to minimize the risk of losses in the conditions of natural and technogenic emergency situations

Elena Smirnova and Sergey Savin.....66

<u>Marks rating system – an approach in condition assessment and prioritization of sewer</u> <u>rehabilitation – a case study</u>

Esam Hewayde.....72

Critical Criteria for Customer Satisfaction of Interior Design

Pen-Kai Wang and Yeng-Horng Perng.....81

Scour and potential earthquake damage on bridges

D F Vidriales, R Gómez and J A Escobar.....88

Investigation of infrastructure maintenance cost of intercity railway in Thailand

Geerati Kruajun and Boonchai Sangpetgnam.....95

Measurement of the displacement response of a structure using line detection

S W Kim, B G Jeon, D U Park and D W Yun....102

Construction and demolition waste aggregates: analysis of the physical and mechanical properties of mortars

G Calcado, L Alves, E Vazquez and R D Toledo Filho.....108

Development of construction blocks from alkaline activated basic oxygen furnace slag and Fly Ash

.N.T Sithole and TP Mashifana.....114

Materials Science and Engineering

Deformation of cantilever foundation pit engineering in sand ground: centrifuge model test

Q H Fu, L X Li and X H Chen....120

Evaluation on low temperature characteristics of SBS/CR modified asphalt binder under different aging conditions

Jie Zhou, Xianhua Chen, Gang Xu and Hanyu Zhang.....126

Performance of GFRP bar anchored PBO-FRCM composite on one-way RC slabs under <u>flexure</u>

F Grzymski, T Trapko and M Musiał.....132

Study on Performance of Cement Mixing Pile in Marine and Continental Deposition Soft Soil Area

Han Xia, Guangyin Du, Jun Cai, Huangsong Pan and Da Qin.....138

Permeability of soil cement admixed with air foam

Sakulsaksri Chaiyasat.....144

Sparse modeling for the geotechnical observation data

T Kurita.....150

A review of the existing models to evaluate the ultimate bending moment of corroded reinforced concrete beam

H J Wang.....156

Analysis of corrosion performance of rebar in Red mud blended concrete

U Raghu Babu and B Kondraivendhan.....163

The Effect of Dynamic Vulcanization on the Mechanical and Thermal Properties of Stereocomplex PLLA/PDLA/rubber Blends

S Phattarateera and C Pattamaprom.....169

Structural and seismic performance of RC columns with L-shaped hoop details

Y H Choi, Y K Lee, Y J Chun, H S Kim and Y S Shin.....177

Effect of freeze-thaw cycling on fatigue behaviour in concrete

Andrew J. Boyd and Andrea Leone.....185

Analysis of Geometry Effect on Laterally-loaded Large Diameter Bored Pile Deflection in Soft Soil

K Tamara and T Ilyas.....191

Dynamic compliances of rigid foundation on layered poroelastic soils

Suraparb Keawsawasvong, Teerapong Senjuntichai and Rawiphas Plangmal.....196

Effect of time dependent corrosion rate on residual capacity of corroded RC beam

M Kioumarsi, MH Baghban and S Imperatore.....202

Lateral displacement capacity of reinforced concrete elements damaged by corrosion

S Imperatore and M Kioumarsi.....209

Material image segmentation based on feature similarity and non-spherical clustering

Huan Wang.....215

Development of new wood-concrete connectors

A. Khelil, C. Kiniagi and R. Boissière.....221

Effect of fiber reinforcement on tensile strength and flexibility of corn starch-based bioplastic

A.S. Jethoo.....226

Properties of Kenaf Fibers/Epoxy Biocomposites: Flexural Strength and Impact Strength

Hendra Suherman, Edri Azwar, Duskiardi, Yovial and Edi Septe.....231

Research of Concrete Durability in Compressed Elements with Different Types of Confinement Reinforcements

Anatoly L. Krishan, Elvira P. Chernyshova and Vladislav E. Chernyshov.....236

Compressed Concrete Filled Steel Tube Elements with Confinement Reinforcement of Concrete Core

Chernyshova Elvira P., Chernyshov Vladislav E. and Sabirov Rustam R.....241

Synthesis of hydrophilic silica nanoparticle and its application as self-cleaning coating for solar cell panels

S Boonsong, N Sowasod, T Muangnapoh, J Wongchaipanich, W Jarunsrirat and W Tanthapanichakoon.....247

The Potential of Enzyme in Reducing the Maturation Time and the Use of Ammonia in Concentrated Natural Rubber Latex

Jiraporn Wongkhat and Cattaleeya Pattamaprom.....252

Identification of limiting deep drawing ratio using the energy criterion of fracture

Kyaw Zayar Soe and S I Feoktistov.....257

A straightforward moment method to estimate the load and resistance factors

X Y Zhang.....263

Property assessment of concretes with graphene oxide mixed cement

Arash Radman and Nazanin Joorabchi.....270

Effect of curing temperature and particle size distribution on unconfined compressive strength of raw and treated fly ash-lime modified phosphogypsum waste

T Mashifana, F Okonta and F Ntuli.....276

<u>Stabilization of gold mine tailings: The effect of hydrated lime on the unconfined</u> <u>compressive strength</u>

T Mashifana, N Sithole and E Mkhonto.....283

Silicon and aluminium leaching kinetics from acidic gold mine tailings

T Falayi, T Mashifana and F Ntuli.....291

Durability of desilicated fly ash lime composites

T Falayi, N.T Sithole and F Okonta.....298

Manufacturing Science

Reuse of pulverized fired clay brick wastes as cement substitute in mortar for sustainable construction

Oluwarotimi Olofinnade, Anthony Ede, Julius Ndambuki, David Omole, Precious Francis, Cynthia Chigere and Kehinde Oyeyemi.....304

Sustainable utilization of crushed waste glass as sand replacement for production of ecofriendly interlocking paving stones

Oluwarotimi Olofinnade, Anthony Ede, Julius Ndambuki, David Omole, Kayode Jolayemi, Kehinde Oyeyemi, Adekunle Ajao and Anietie Ukoh.....310

Evaluation of performance of foam produced with different methodologies for use in foam concrete production

S S Sahu and I S R Gandhi.....316

New texture with black grey color of fired clay wall tiles produced from rice husk ash, brown glass cullet, and local plastic clay

W Ubolrat and P Duangkamol.....322

<u>Flow-Induced Vibration Response of the Chenderoh Dam Bottom Outlet Section Due to</u> the Effects of Water Spilling

Mohamad Hazwan Mohd Ghazali, Ahmad Zhafran Ahmad Mazlan, Muhammad Aqil Azman, Mohd Hafiz Zawawi and Mohd Rashid Mohd Radzi.....329

A case study on the plan for soil reinforcement by TCS in south korea

Seokhyun Seo, Wondong Kang, Jungsang Lee and Euiyoup Jung.....335

Process Modelling and Economic Evaluation for NanoLignin Production

Udari Prasadini Perera, Mei Ling Foo, Khang Wei Tan and Irene Mei Leng Chew.....343

Oil Well Cement for high temperature-A review

Pankaj Munjal, Kong Kian Hau, Abhinav Prabhakar and Cheng Chuen Hon Arthur.....348

Performance of Alum Sludge as partial replacement for cement adding superplasticizer

Gunalaan Vasudevan.....354

Interactive system to control the kinematic error of a five-axis milling machine

Supatpong Narmnark and Stanislav S. Makhanov.....361

Design and Manufacturing of a 3D Printer for Teaching and Research

Dr. Rafiq Noorani, Michael Lynch, Patrick Hodgkiss, Matt Fumo and Christopher Burke.....367

Milling of Precision Gear-shaped Parts

Yanqing Wu and Jinghua Chen.....373

Utilization of fly ash: basic oxygen furnace slag as a raw material in geopolymerization

T Mashifana and N Sithole.....378

Alkaline solidification of gold mine tailings for production of lightweight masonry blocks

.N.T Sithole and TP Mashifana.....386

Computer-aided Design and Manufacturing

Applications of UAS-obtained thermal images for vegetation coverage ratio monitoring of mudstone areas

Chien-Yuan Chen and Chai-Li Lin.....392

Detecting device and technology of pavement texture depth based on high precision 3D laser scanning technology

Jia Liang, Xingyu Gu, Hanyu Deng and Fujian Ni.....398

The dilemma and situation of detention pond in terms of extreme climate - a case study of Baoyeli detention pond

Min-chia Hsueh and Yao-shun Hsueh.....405

Research on Wire-Broken Monitoring of Bridge cable based on Acoustic Emission technique

Zhiqin Zhu, Dawei Wang, Chen Liu and Bingjian Wang.....413

Key factors affecting the rent of office buildings: case study on Taipei 101

Lin Tse-Hsiung and Yeng-Horng Perng.....420

Exploration of key commercial space design indicators

Mu-Fa Lin and Yeng-Horng Perng.....426

Voids distribution of pavement filters subjected to permeating fines: a coupled DEMstatistical inference

Sandun M. Dassanayake, Ahmad Mousa and Daniel Kong.....433

Earthquake Hazard Safety Assessment of Buildings via Smartphone App: A Comparative Study

Ehsan Harirchian and Tom Lahmer.....439

Coping with the Information Age: Development of a Data Flow Diagram-Based Knowledge Management System for Mitigating Delays for Construction

Roderick N. Macariola and Dr. Dante L. Silva.....445