

ISSN: 2186-2990

DOI: <http://dx.doi.org/10.21660/geomate>



Scopus

EBSCO

CENGAGE Learning



GIF  
GLOBAL IMPACT FACTOR



**VOLUME 12**  
**Issue 31 & 32**  
**March-April 2017**

# International Journal of GEOMATE

**(Geotechnique, Construction Materials and Environment)**



**Tsu, Japan**

**THE GEOMATE INTERNATIONAL SOCIETY**

<http://www.geomatejournal.com/>

# **INTERNATIONAL JOURNAL OF GEOMATE**

## **(Geotechnique, Construction Materials & Environment)**

### **ISSN: 2186-2982(Print), 2186-2990(Online)**

*International Journal of GEOMATE is Abstracted/Indexed in:* SCOPUS, Web of Science Emerging Sources Citation Index (ESCI), EBSCO, Global Impact Factor (GIF), Gale (a Cengage Learning Company), ULRICHSWEB, Global Serials Directory, etc.

Impact Factor (by GIF): 2015: 1.009; 2014: 0.987; 2013: 0.825; 2012: 0.714

Paper acceptance rate: 2015: 35.28%; 2014: 37.5%; 2013: 38.71%; 2012: 46.66%; 2011: 61.53%

#### Honorary Editor

Prof. Dr. Shoji Inoue, Professor Emeritus, Mie University, Japan

#### Editor-in-Chief:

Prof. Dr. Zakaria Hossain, Mie University, Japan

#### Assistant Chief Editor:

Dr. Jim Shiau, University of Southern Queensland, Australia

#### Associate Editors:

Prof. Dr. Fumio Tatsuoka, Tokyo University of Science, Japan

Prof. Dr. Sai Vanapalli, University of Ottawa, Canada

Prof. Dr. Ian Jefferson, University of Birmingham, United Kingdom

Prof. Dr. Mounir Bouassida, National School of Engineering of Tunis

Prof. Dr. Bujang B.K. Huat, University Putra Malaysia, Malaysia

Prof. Dr. Nemy Banthia, University of British Columbia, Canada

Prof. Dr. Toshinori Sakai, Mie University, Japan

Prof. Dr. A.S.M. Abdul Awal, University Technology Malaysia, Malaysia

Prof. Dr. Jing-Cai Jiang, University of Tokushima, Japan

Prof. Dr. Lilia Robles Austriaco, Angles University Foundation, Philippines

Prof. Dr. Muhammad Ibn Ibrahimy, International Islamic University, Malaysia

Prof. Dr. Shamsul I. Chowdhury, Roosevelt University, USA

Prof. Dr. Isabel Pinto, University of Coimbra, Portugal

Prof. Dr. Kaneco Satoshi, Mie University, Japan

Prof. Dr. Mohammad Shariful Islam, BUET, Bangladesh

Prof. Dr. Mark Jaksa, University of Adelaide, Australia

Prof. Dr. Kingshuk Roy, Nihon University, Japan

Prof. Dr. Md. Shahin Hossain, Islamic University of Technology, Bangladesh

Prof. Dr. Ranjith Pathegama Gamage, Monash University, Australia

Prof. Dr. Pedro Arrua, Universidad Tecnológica Nacional, Argentina

Prof. Dr. Miguel A. Pando, University of North Carolina, USA

Full list of sub-editors and editorial assistants are given in the web page.

-----  
Copyright © 2017 by International Journal of GEOMATE

All rights reserved. In principle, no part of this publication or the information contained herein may be reproduced in any form or by any means, translated in any language, stored in any data base or retrieval system, or transmitted in any form or by any means without prior permission in writing from the publisher.

Disclaimer: The editors and the publisher have tried their best effort to ensure integrate and the quality of this publication and information herein. However, they give no warranty of any kind, expressed or implied with regard to the material contained in this journal, and will not be liable in any event for the consequences of its use.

Publisher: The GEOMATE International Society

Place of publication: Tsu city, Mie, Japan

Contact: Editor-in-Chief, Dr. Zakaria Hossain, Professor, Graduate School of Bioresources,

Mie University, 1577 Kurimamachiya, Tsu city, Mie 514-8507, Japan

E-mail: editor@geomatejournal.com, URL: <http://www.geomatejournal.com/>

Tel & Fax: +81-59-231-9578

# **INTERNATIONAL JOURNAL OF GEOMATE**

## **(Geotechnique, Construction Materials & Environment)**

### **ISSN: 2186-2982(Print), 2186-2990(Online)**

Founded in 2011, *The "International Journal of GEOMATE"* is a Scientific Journal of the GEOMATE International Society that encompasses a broad area in Geotechnique, Construction Materials and Environment. The key objective of this journal is to promote interdisciplinary research from various regions of the globe. The editorial board of the journal is comprised of extensively qualified researchers, academicians, scientists from Japan and other countries of the world. It is peer-reviewed journal that is published quarterly. All articles published in this journal are available on line. Contributors may download the manuscript preparation template for submitting paper or contact to the Editors-in-Chief [editor@geomatejournal.com].

#### Aims and Scopes:

The journal aims to become an efficient mean of publishing and distributing high quality information from the researchers, scientists and engineers. The main scopes are as follows:

- Advances in Composite Materials
- Computational Mechanics
- Foundation and Retaining Walls
- Slope Stability
- Soil Dynamics
- Soil-Structure Interaction
- Pavement Technology
- Tunnels and Anchors
- Site Investigation and Rehabilitation
- Ecology and Land Development
- Water Resources Planning
- Environmental Management
- Earthquake and Tsunami Issues
- Safety and Reliability
- Geo-Hazard Mitigation
- Case History and Practical Experience
- Others

#### Review Policy:

- The paper which meets the editorial criteria will be assigned to at least two anonymous reviewers for peer-review.
- Authors may recommend some reviewers - however, Editors are entitled to consider them or not.
- The Editorial Board consists of an outstanding group that is responsible for the review process of the submitted manuscripts and will guarantee the quality of the publication.
- The manuscript will be published as soon as it is accepted and all the modifications recommended by the reviewers are made.
- The review procedure is as strict as in the most prestigious journals, but publication time is minimized.
- Based on the reviewers' comments, the Editors will make a decision on a paper as one of the following four conditions:
  1. Accept without revision
  2. Accept with minor revision
  3. Encourage to resubmit with major revision
  4. Reject

In case of acceptance with either minor or major revisions, the authors will be advised to revise the manuscript according to the reviewers' comments.

# **INTERNATIONAL JOURNAL OF GEOMATE**

## **(Geotechnique, Construction Materials & Environment)**

**ISSN: 2186-2982(Print), 2186-2990(Online)**

### **Instruction to Author:**

- The manuscript to be submitted should be prepared using the manuscripts submission template.
- Download the manuscript formatting template from download files menu.
- The manuscript to be submitted adheres to the rules and guidelines given in manuscript template.
- The manuscript should be written in English according to the manuscript template.
- The page limit is 8 pages for ordinary manuscript and 10 pages for invited manuscript.
- The references inside the text and in the bibliographic list should follow the formats as per the manuscript template.
- All figures, graphs and tables must follow the font-style of the text. Ensure clear and good quality picture in the first submission.
- Selected manuscript from "GEOMATE Conference Presentation" will be reprinted in the journal with nominal charges (40% discount of regular fees) based on the agreement of the authors.
- Accepted papers which were not presented in "GEOMATE Conference" need publication charges of 600 USD as regular fees. Any page or fraction thereof exceeding page limit will be charged 100 USD per page.
- This is required for its maintenance such as managing article submission and peer review, typesetting, tagging and indexing of articles, hosting articles on dedicated servers, supporting sales and marketing costs to ensure global dissemination via different databases, and permanently preserving the published journal article.
- Copyright: GEOMATE required to obtain copyright of papers from authors for the term of copyright by signing and returning the publishing agreement.

### **Manuscript Submission Method:**

- Submit full manuscript online using "Submission" menu. We accept online submission only.
- Copyright release form to be e-mailed separately along with manuscript submission. Download it from the "Download Files Menu".
- Abolition of printed version: Considering environmental conservation, the paper version has been discontinued since June 2016.
- For any questions: Contact us [editor@geomatejournal.com].

**Membership Fees:** Regular Member 100USD/year; Life Member 900USD only.

### **Membership Benefits:**

- Receive Membership ID/Card
- Use M.G. or L.M.G. after your name (M=Member, G=Geomate, L=Life)
- Be involved in GEOMATE technical committees and activities
- Be up-to-date on the current development in the field
- Priority right to participate in international conferences with 20% discount
- 20% discount for Journal paper publication
- Vote in the election of GEOMATE officers
- Access to the Journal webpage

### **Membership Application (send the related items below using online form):**

- Full Name:
- Title/Position (check one):  Prof.  A/Prof.  Dr.  Mr.  Ms.
- Membership Category (check one):  Regular Member  Life Member  Others
- Address:
- Tel & Fax:
- E-mail (co-authors email separated by comma):
- Research Area (check one):  Geotechnique  Construction Materials  Environment  Others

# INTERNATIONAL JOURNAL OF GEOMATE

## (Geotechnique, Construction Materials & Environment)

### ISSN: 2186-2982(Print), 2186-2990(Online)

#### STATEMENT ON PUBLICATION ETHICS AND PUBLICATION MALPRACTICE (1/2)

The International Journal of GEOMATE is a double blind peer-reviewed journal. All parties involved in the act of publishing an article for this journal, i.e.: the editors, the author, the peer-reviewers and the publisher must follow the ethical behavior indicated in the COPE's Best Practice Guidelines for Journal Editors. In order to warrant high-quality scientific publications, public trust in scientific findings, and that people receive credit for their ideas, the ethical standards for publication are followed.

#### DUTIES OF EDITORS

Decision on the Publication of Article: Based on the double blind peer review of a paper, the Chief Editor and the Associate Editor are responsible for deciding which of the articles accepted for publication. Neither the Chief Editor nor the Associate Editor have the authority to influence the reviewers who are conducting the blind review of the articles submitted for peer review. The Chief Editor and the Associate Editor may be guided by the policies of the journal's Editorial Board and subjected to such legal requirements regarding libel, copyright infringement and plagiarism.

Honest Play: Manuscripts submitted to GEOMATE shall be exclusively evaluated based mainly on their intellectual quality and significance. GEOMATE will not give any consideration on authors' race, gender, sexual orientation, religious beliefs, ethnic origin, citizenship, or political philosophy.

Confidentiality: The Chief Editor, the Associate Editor and any editorial staff must not disclose any information about a submitted manuscript to anyone other than the corresponding author, reviewers, potential reviewers, other editorial advisers, and the publisher.

Disclosure and Conflicts of Interest: Unpublished materials disclosed in a submitted manuscript must not be used by anyone who has a view of the manuscript (while handling it) in his or her own research without the express written consent of the author.

#### DUTIES OF REVIEWERS

Contribution of Double Blind Peer Review: Any identifying information will be stripped out from the submitted paper so that the reviewers do not know any information about the authors and vice versa i.e.: reviewers' comments to the editors are confidential and before passing on to the authors, it will be made anonymous. The Double Blind Peer review assists the reviewers in making editorial decisions, while editorial communications with the author may also assist the author in improving the manuscript. The names of the reviewers known only to the Chief Editor and the Associate Editor and it remains strictly confidential to authors.

Punctuality: Any selected referee who feels unqualified to review the assigned manuscript or unable to provide a prompt review should notify the Chief Editor and the Associate Editor and excuse himself/herself from the review process.

Confidentiality: Private information or ideas obtained through double blind peer review must be kept confidential and not used for personal advantage. Manuscripts received for review must be treated as confidential documents. Without any authorization by the Chief Editor and the Associate Editor, the information of the submitted manuscript must not be shown to, or discussed with, others.

Standards of Objectivity: There shall be no personal criticism of the author. Reviewers should express their views clearly with supporting arguments and reviews should be conducted objectively.

Acknowledgment of Sources: Authors should cite relevant references and corresponding citation if any statement in the submitted paper had been previously published or reported elsewhere. Reviewers should identify relevant published work that has not been cited by the authors. If a reviewer finds any substantial similarity or overlap between the submitted manuscript and any other published works, s/he should inform to the Chief Editor/Associate Editor's.

Conflict of Interest: In any reviewers find that the submitted manuscript has conflicts of interest resulting from competitive, collaborative, or other relationships or connections with any of the authors, companies, or institutions, s/he should not review that manuscripts and notify to the Chief Editor/Associate Editor's promptly.

#### DUTIES OF AUTHORS

Reporting Standards: Authors of papers of original research should present an accurate account of the work performed as well as an objective discussion of its significance. Underlying data should be represented accurately in the paper. A manuscript should contain sufficient detail and references to permit others to replicate the work. Fraudulent or knowingly inaccurate statements constitute unethical behavior and are unacceptable.

Data Access and Retention: Authors may be asked to provide the raw data in connection with a paper for editorial review, and should be prepared to provide such data for public access or for access to the readers of the journal.

Originality and Plagiarism: The authors should ensure that they have written entirely original works, and if the authors have used the work and/or words of others, this must be appropriately cited or quoted. All papers published by International Journal of GEOMATE are committed to publishing only original material, i.e., material that has neither been published elsewhere, nor is under review elsewhere. Paper that are found to have been plagiarized from a manuscript by other authors, whether published or unpublished, will incur plagiarism sanctions.

# INTERNATIONAL JOURNAL OF GEOMATE

## (Geotechnique, Construction Materials & Environment)

### ISSN: 2186-2982(Print), 2186-2990(Online)

#### STATEMENT ON PUBLICATION ETHICS AND PUBLICATION MALPRACTICE (2/2)

Acknowledgment of Sources: Proper acknowledgment of the work of others must always be given. Authors should cite publications that have been influential in determining the nature of the reported work.

Manipulation of Citations: Submitted papers that are found to include citations whose primary purpose is to increase the number of citations to a given author's work, or to articles published in a particular journal, will incur sanctions for manipulation of citations.

Falsification and Fabrication: Submitted papers that are found to have either falsified or fabricated numerical/experimental results, including the manipulation of images, will incur data fabrication and falsification sanctions.

Authorship: The authorship of a paper should be limited to those who have made a significant contribution to the conception, design, execution, or interpretation of the reported study. All those who have made significant contributions should be listed as co-authors. Where there are others who have participated in certain substantive aspects of the research project, they should be acknowledged or listed as contributors.

Scientific Contribution: All listed authors must have made a significant scientific contribution to the research in the manuscript and approved all its claims. It is important to list everyone who made a significant scientific contribution, including students and laboratory technicians.

Corresponding Author: Corresponding Author is the author responsible for communicating with the journal for publication. The corresponding author should ensure that all appropriate co-authors and no inappropriate co-authors are included on the paper, and that all co-authors have seen and approved the final version of the paper and have agreed to its submission for publication.

Acknowledgment of Funding Sources: Funding sources for the research reported in the manuscript should be duly acknowledged after the conclusion and before the list of references.

Disclosure and Conflicts of Interest: All sources of financial support for the project or any substantive conflict of interest that might be interpreted to influence the results of the paper should be disclosed.

Fundamental Errors in Published Works: It is the author's responsibility to promptly notify the Chief Editor/Associate Editor if s/he discovers a significant error or inaccuracy in his/her own published work to retract or correct the paper.

Redundant, Concurrent or Multiple Publications: An author should not in general publish manuscripts describing essentially the same research in more than one journal or primary publication. Manuscripts that are found to have been published elsewhere, or to be under review elsewhere, will incur duplicate submission/publication sanctions. If authors have used their own previously published work, or work that is currently under review, as the basis for a submitted manuscript, they are required to cite the previous work and indicate how their submitted manuscript offers novel contributions beyond those of the previous work. Submitting the same manuscript to more than one journal concurrently constitutes unethical publishing behavior and is unacceptable. Redundant publications involve the inappropriate division of study outcomes into several articles.

#### SANCTIONS

In the event that there are documented violations of any of the above mentioned policies in any journal, regardless of whether or not the violations occurred in a journal published by GEOMATE, the following sanctions will be applied:

- *Immediate rejection of the infringing manuscript.*
- *Immediate rejection of every other manuscript submitted to GEOMATE by any of the authors of the infringing manuscript.*
- *Prohibition against all of the authors for any new submissions to GEOMATE, either individually or in combination with other authors of the infringing manuscript, as well as in combination with any other authors. This prohibition will be imposed for a minimum of five years.*
- *Prohibition against all of the authors from serving on the Editorial Board of the International Journal of GEOMATE*

In cases where the violations of the above policies are found to be particularly outrageous, the publisher reserves the right to impose additional sanctions beyond those described above.

# **INTERNATIONAL JOURNAL OF GEOMATE**

## **(Geotechnique, Construction Materials & Environment)**

**ISSN: 2186-2982(Print), 2186-2990(Online)**

*Volume 12, Issues 31*

PULL-OUT STRENGTH OF AN EXPANSION STUD ANCHOR IN CARBON FIBER REINFORCED CONCRETE by Gilford B. Estores and Bernardo A. Lejano	1-8
STRENGTH AND PERMEABILITY CHARACTERISTICS OF ROAD BASE MATERIALS BLENDED WITH FLY ASH AND BOTTOM ASH by Jonathan R. Dungca and Julie Ann L. Jao	9-15
UTILIZATION OF AGGREGATE QUARRY WASTE IN CONSTRUCTION INDUSTRY by Mary Ann Q. Adajar, Euclid de Guzman, Ryan Ho, Cesar Palma Jr. III and Dennis Sindico	16-22
DEM MODELLING OF GEOCELL-STABILISED SUB-BALLAST UNDER CYCLIC LOADING by Ngoc Trung Ngo, Cholachat Rujikiatkamjorn and Buddhima Indraratna	23-29
APPLICATION OF GROUND SPRING MODEL IN EXCAVATION SUPPORTED BY DEEP CEMENT MIXING by Siriwan Waichita, Pornkasem Jongpradist and Chanchai Submaneewong	30-36
OPTIMIZATION OF COMPRESSIVE STRENGTH OF CONCRETE WITH PIG-HAIR FIBERS AS FIBER REINFORCEMENT AND GREEN MUSSEL SHELLS AS PARTIAL CEMENT SUBSTITUTE by Bernardo A. Lejano and Jayvee L. Gagan	37-44
USING FLOATING WETLAND TREATMENT SYSTEMS TO REDUCE STORMWATER POLLUTION FROM URBAN DEVELOPMENTS by Peter Schwammberger, Chris Walker and Terry Lucke	45-50
TUNNELING SIMULATION IN SOFT GROUND USING SHELL ELEMENTS AND GROUTING LAYER by Prateep Lueprasert, Pornkasem Jongpradist and Suchatvee Suwansawat	51-57
3D-FEM ANALYSIS OF SHIELD TUNNEL CONSTRUCTION WITH GROUND-SPRING MODEL by Pattanasak Chaipanna and Pornkasem Jongpradist	58-62
INVESTIGATION ON TUNNEL RESPONSES DUE TO ADJACENT LOADED PILE BY 3D FINITE ELEMENT ANALYSIS by Narunat Heama, Pornkasem Jongpradist, Prateep Lueprasert and Suchatvee Suwansawat	63-70
EVALUATION OF POROSITY IN BIOGROUTED SAND USING MICROFOCUS X-RAY CT by Shumpei Mitsuyama, Kazunori Nakashima and Satoru Kawasaki	71-76
ARTIFICIAL NEURAL NETWORK PERMEABILITY MODELING OF SOIL BLENDED WITH FLY ASH by Jonathan R. Dungca and Joenel G. Galupino	77-82
UNIAXIAL COMPRESSION TEST OF UNSATURATED MASADO UNDER CONSTANT DEGREE OF SATURATION CONDITION AND ITS MODELING by Yuhei Kurimoto, Seiji Kobayashi, Takashi Tsunemoto and Feng Zhang	83-87
CONSTITUTIVE MODELING OF COAL ASH USING MODIFIED CAM CLAY MODEL by Erica Elice Saloma Uy and Jonathan R. Dungca	88-94
ARTIFICIAL SLUDGE BASED ON COMPOSITIONAL INFORMATION OF A NATURAL SEA SLUDGE by Hirosuke Hirano, Takeshi Toyama, Nobuyuki Nishimiya, Davin H. E. Setiamarga, Shugo Morita, Yuto Uragaki and Kyoichi Okamoto	95-99
COLONIZATION AND MORPHOLOGICAL CHANGES OF A SEDGE RESTRICTING REGENERATION AFTER WIND DAMAGE IN A NATURAL FOREST by Teruo Arase, Tetsuo Okano and Tetsuoh Shiota	100-104
3-D NUMERICAL ANALYSIS OF CONSOLIDATION EFFECT ON PILED RAFT FOUNDATION IN BANGKOK SUBSOIL CONDITION by Kongpop Watcharasawe, Pastsakorn Kitiyodom and Pornkasem Jongpradist	105-111
ASSESSMENT OF STRESS-STRAIN BEHAVIOR OF ENERGY PILES INSTALLED IN SAND by Anant Aishwarya Dubey and Suresh Kumar	112-120

**INTERNATIONAL JOURNAL OF GEOMATE**  
**(Geotechnique, Construction Materials & Environment)**  
**ISSN: 2186-2982(Print), 2186-2990(Online)**

*Volume 12, Issues 31*

FLOW PROPERTIES AND STRENGTH BEHAVIOUR OF MASONRY MORTAR INCORPORATING HIGH VOLUME FLY ASH by Balamohan Balakrishnan, A. S. M. Abdul Awal, Abdul Halid B. Abdullah and M. Z. Hossain	121-126
EVALUATION THE PERFORMANCE OF LAKE WATER USED AS HEAT SOURCE FOR HEAT PUMP SYSTEM IN A TYPICAL JAPANESE RESIDENT BUILDING by Liwei Wen	127-133
GEOPHYSICAL AND HYDROCHEMICAL APPROACH FOR SEAWATER INTRUSION IN NORTH SEMARANG, CENTRAL JAVA, INDONESIA by Supriyadi, Khumaedi and Andya Satya Purnomo Putro	134-140
UTILIZATION OF BANTAK AND MERAPI VOLCANIC ASH FOR POROUS PAVING BLOCK AS DRAINAGE CONTROL IN THE PRAMBANAN TEMPLE YARD by Ahmad Rifa'i and Noriyuki Yasufuku	141-146
ON THE CONSTRUCTION OF THE NODAL EXACT FINITE ELEMENT MODEL FOR AXIALLY LOADED PILE IN ELASTO-PLASTIC SOIL by Chinnapat Buachart and Chayanon Hansapinyo	147-152



# INTERNATIONAL JOURNAL OF GEOMATE

## (Geotechnique, Construction Materials & Environment)

ISSN: 2186-2982(Print), 2186-2990(Online)

### Volume 12, Issues 32

POTENTIAL FOR SILICA-BASED SOLIDIFICATION MATERIALS AS SOIL IMPROVING AGENTS by Shinya Inazumi, Takashi Shinsaka, Ryo Hashimoto and Yoshihiro Nakagishi	1-4
SOIL BEARING CAPACITY REFERENCE FOR METRO MANILA, PHILIPPINES by Jonathan R. Dungca, Ismael Concepcion Jr., Moises Christian Mickhail Limyuen, Terence Oliver See and Marion Ryan Vicencio	5-11
ASSESSMENT OF CRITICAL-STATE SHEAR STRENGTH PROPERTIES OF COPPER TAILINGS by Erica Elice Saloma Uy and Mary Ann Q. Adajar	12-18
METHODS OF SUPPRESSING COLONIZING SEDGE TO HELP TO ESTABLISH TREE SEEDLINGS IN A NATURAL FOREST by Teruo Arase, Tetsuo Okano and Tetsuoh Shirota	19-24
EFFECTS OF VERTICAL WALL BARRIER ON THE RIGID PAVEMENT DEFLECTION OF FULL SCALE 1-PILE ROW NAILED-SLAB SYSTEM ON SOFT SUB GRADE by Anas Puri, Bambang Suhendro and Ahmad Rifa'i	25-29
AN EVALUATION OF OSMOTIC TECHNIQUE UNDER ULTRAVIOLET GERMICIDAL IRRADIATION EXPOSURE by Mohd Yuhyi Mohd Tadza, Nurhidayah Mahazam and Snehasis Tripathy	30-36
REMOVAL OF ORGANIC MATTER IN WASTEWATERS OF A MILK FACTORY AND A HOSPITAL USING A CUBIC LATTICE BASED ROTATING BIOLOGICAL CONTACTOR IN VIETNAM by Tatsuhide Hamasaki, Phan Do Hung and Hiroshi Tsuno	37-42
INFLUENCE OF WEATHERING OF BOTTOM ASH ON THE LEACHING BEHAVIOR OF CESIUM by Yasumasa Tojo, Saori Iwamoto, Mikako Ishii, Toshihiko Matsuto and Takayuki Matsuo	43-49
IMPACT ON AIR QUALITY BY INCREASE IN AIR POLLUTANT EMISSIONS FROM THERMAL POWER PLANTS by Akira Kondo, Hikari Shimadera and Mai Chinzaka	50-56
OCEAN DECONTAMINATION: HIGH ABILITY REMOVAL METHOD TO RADIOACTIVE CESIUM FROM OCEAN SLUDGE BY USING MICRO BUBBLES AND ACTIVATING MICROORGANISMS by Kyoichi Okamoto, Takeshi Toyama and Tomoe Komoriya	57-62
AIR PRESSURE DISTRIBUTION INDUCED BY RAINFALL INFILTRATION IN SOIL/WATER/AIR COUPLED SIMULATION by Katsuyuki Kawai, Takuya Kawakatsu and Ayumi Teraoka	63-69
A STUDY ON GROUND IMPROVEMENT TECHNIQUE WITH IN-SITU MICROORGANISMS ISOLATED FROM JAPAN by Rusutsu Ito and Toshiro Hata	70-75
CYCLIC LATERAL RESPONSE OF MODEL PILE GROUPS FOR WIND TURBINES IN CLAY SOIL by Weresak Raongjant and Meng Jing	76-81
A STUDY ON THE USE OF POLYURETHANE FOR ROAD FLOOD DAMAGE CONTROL by Safawati Mohd Radzi, Abdul Naser Abdul Ghani, Muhd Shahril Nizam Ismail, Ahmad Hilmy Abdul Hamid and Khalid Ahmad	82-87
A STUDY OF RESTRAINT TECHNIQUES FOR CEMENT TREATED SOIL'S DETERIORATION BY MICROBIAL FUNCTIONS by Kazuki Mihara and Toshiro Hata	88-93
EFFECTS OF TEMPERATURE ON ELASTIC STIFFNESS OF A HDPE GEOGRID AND ITS MODEL SIMULATION by Thitapan Chantachot, Warat Kongkitkul and Fumio Tatsuoka	94-100
REMOVING FLUORIDE FROM A HOT SPRING USING AN ELECTROLYSIS SYSTEM by Yuki Imai, Shiori Yanagawa, Misa Konishi and Tomonori Kawakami	101-106
USE OF CBR MOULD FOR EVALUATION OF CONSTRAINED MODULUS-BULK STRESS RELATIONS OF PAVEMENT STRUCTURE MATERIALS by Sawanya Dararat and Warat Kongkitkul	107-113
EVALUATING THE DYNAMICS OF ALIEN SPECIES (POACEAE) USED FOR EROSION CONTROL ON SAKURAJIMA VOLCANO by Taizo Uchida, Jun Tanaka, Kentaro Kondo, Daisuke Hayasaka, Yuki Tomoguchi, Teruo Arase and Tetsuo Okano	114-120

**INTERNATIONAL JOURNAL OF GEOMATE**  
**(Geotechnique, Construction Materials & Environment)**  
**ISSN: 2186-2982(Print), 2186-2990(Online)**

*Volume 12, Issues 32*

EFFECT OF ADDITION OF BACTERIA ON THE REMOVAL OF RADIOACTIVE CESIUM FROM OCEAN SLUDGE IN A CIRCULATION TYPE PURIFICATION SYSTEM by Tomoe Komoriya, Kyoichi Okamoto and Takashi Toyama	121-126
A MESOSCALE INVESTIGATION ON THE SIZE EFFECT OF THE FRACTURE CHARACTERISTICS IN CONCRETE by N. Aissaoui and M. Matallah	127-133
EFFECT OF PILE CONNECTIONS ON THE PERFORMANCE OF THE NAILED SLAB SYSTEM ON THE EXPANSIVE SOIL by Willis Diana, Hary Christady Hardyatmo and Bambang Suhendro	134-141
DIGITAL IMAGE AND REMOTE SENSING IMAGE AS A DATA FOR AN IDENTIFICATION OF A QUALITY OF A NON-POINT SOURCE POLLUTANT IN CILIWUNG RIVER, INDONESIA by Riki Mukhaiyar	142-151
SEISMIC MICROZONATION STUDIES CONSIDERING LOCAL SITE EFFECTS FOR YOGYAKARTA CITY, INDONESIA by Teuku Faisal Fathani and Wahyu Wilopo	152-160
EVALUATION OF TIME RATE OF SWELLING PRESSURE DEVELOPMENT DUE TO THE PRESENCE OF SULFATE IN CLAYEY SOILS STABILIZED WITH LIME by Pakbaz, M. S. and Keshani A.	161-165
MECHANICAL PROPERTIES AND THERMAL BEHAVIOUR OF TWO-STAGE CONCRETE CONTAINING PALM OIL FUEL ASH by A.S.M. Abdul Awal, Mohd Haziman Wan Ibrahim, Ahmad Zurisman Mohd Ali and M. Zakaria Hossain	166-175