

ISERME 2020

International Symposium on
Earth Resources Management
& Environment

22nd December 2020
Colombo



SYMPOSIUM PROCEEDINGS

Organized By

Department of Earth Resources Engineering
University of Moratuwa, Sri Lanka

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Sri Lanka

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ISSN 2630-7677

Proceedings of International Symposium on Earth Resources Management & Environment
22nd December 2020, Colombo, Sri Lanka

Published by the Department of Earth Resources Engineering
Faculty of Engineering
University of Moratuwa, Katubedda, Sri Lanka

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Message from Dr. G.V.I. Samaradivakara - Symposium Chair

Welcome to the fourth International Symposium on Earth Resources Management and Environment [ISERME 2020], organized by the Department of Earth Resources Engineering, University of Moratuwa, Sri Lanka.



A revolutionary change in the departmental research culture took place fifteen years back, and in 2005 with the implementation of World Bank funded project for Improving Relevance and Quality of Undergraduate Education [IRQUE]. We are grateful the “IRQUE” Project for encouraging and funding the department to organize the first annual research conference in 2006, which eventually evolved up to an International Symposium in 2017.

Since 2016, the department has been networking with the international Mining Engineers and Earth Scientists in organizing this symposium annually.

This year, we had scheduled to hold this symposium in Hokkaido, Japan based on the collaboration that we have with Hokkaido University. We are so grateful Professor Satoru Kawasaki of Division of Sustainable Resources Engineering, Faculty of Engineering, Hokkaido University for his excellent support given in planning this. However, as per unexpected circumstances aroused due to spreading viral, we had to decide Colombo as destination for this year symposium.

On behalf of the Department of Earth Resources Engineering, I wish to extend my sincere thanks to Professor N.D. Gunawardena, Vice-Chancellor of the University of Moratuwa and Professor N.K. Wickramarachchi, Dean-Faculty of Engineering of the University of Moratuwa for granting their kind permissions for this symposium.

I greatly appreciate Professor Mrs. Dileeka Dias, Dean-Faculty of Graduate Studies of the University of Moratuwa for providing “Zoom Room” facility in the Faculty for hosting this Symposium online. The external reviewers of the symposium are appreciated for their timely given insightful reviews. Thanks are also extended to all the authors for their excellent submissions made to this symposium.

I’m certain that this symposium will continue to network with all the researchers in the fields of Mining and Earth Resources Engineering.

I also look forward to meeting with all of you again at ISERME 2021, with a wider participation of international researchers having similar research interests, in the coming year.

I wish you all, a productive and enjoyable Symposium!

Dr. G.V.I. Samaradivakara - Symposium Chair - ISERME 2020

Head - Department of Earth Resources Engineering, University of Moratuwa

16th December 2020

Message from Eng. P.V.A. Hemalal - Symposium Secretary

It is with great pleasure I fulfill the responsibility of coordinating the activities leading to ISERME-2020 the theme “Earth Resources Management and Environment” as the coordinator. The symposium is no doubt the greatest annual academic event of the Department of Earth Resources Engineering of the University of Moratuwa. I consider it an honor to play a pivot role in organizing activities leading to this great event, networking with many organizations and individuals.



The event brings together many academics, students, industry leaders, alumni and well wishers and is graced by the Eng. U.S. Karunaratne, Chairman, Central Engineering Consultancy Bureau, as the chief guest and Eng. Manju Gunawardena, Chief Executive Officer, Ceylon Graphene Technology (Pvt.) Ltd., the key-note speaker.

This forum provides an ideal opportunity for the students to mix along with the senior industry professionals and industrialists and learn firsthand the new trends of development in the industry and in academia elsewhere and, sharpen one’s skills to suit the changing circumstances. In an informal setting, the academics will also have a chance to feel the pulse of the industry and exchange views which will help guide future research.

I hope that the theme is an inspiration to the young professionals to chart their future role as there is still a lot to be done to tap the vast potential of industrial minerals in the country and accordingly plan their future and make themselves ready to undertake the future management of country’s mineral resources raising the stature of the industry to greater heights.

I sincerely thank all the academic colleagues for the valuable advice offered, non-academic staff members and the student body effectively fulfilling the individual tasks undertaken to make the event a success. This event would not have been possible without the financial assistance of the sponsors.

Eng. P. V. A. Hemalal
Senior Lecturer – Symposium Secretary
ISERME 2020
22nd September 2020

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Table of Contents

Session I: Mining and Geomechanics

Fragmentation Optimization in Aggregate Quarrying in Sri Lanka	2
Technical, Socio-environmental & Procedural Limitations in Sri Lankan Quarry Industry from the Mining Engineer's Perspective	10
An Investigation of Industrial Mineral Mining Methods in Sri Lanka	18
Mining-induced Subsidence Prediction by Displacement Discontinuity Method	19

Session II: Mineral Exploration, Groundwater Studies, Ocean Resources Engineering and Petroleum Engineering

Analyzing the Groundwater Characteristics Using Numerical Models for Groundwater Management in Attanagalu Oya Basin	28
Rare Earth Elements Exploration in River Sediments (Belihul Oya and Samanala Wewa Areas, Sri Lanka)	36
Mineralogical Exploration for Rare Earth Element Potential in Kalutara Coastal Areas	42
Developing a Casing Program for the Extraction of Petroleum in Mannar Basin, Sri Lanka	51
Assessment of Rare Earth Element Potential in Intrusive Rocks Special Reference to Massenna Zircon Granite	60
REE Potential in Carbonatite Deposits: A Case Study of Eppawala Carbonatite	68

Session III: Mineral Processing and Environmental Engineering

Remote Sensing Analysis of Urban Heat Island Effect in Colombo City from 2001-2019	70
Feasibility of Extraction of Cerium dioxide (CeO ₂) from Monazite at Pulmoddai	78
Monitoring Beach Profile Changes and Modelling Nourishment Scenarios for Ratmalana Beach	86
Heavy Mineral Sands In Kirinda Area, Deposit Characteristics and Extraction Potential	96
Selective Precipitation of Lanthanum and Neodymium oxides from Pulmoddai monazite, Sri Lanka	103
Adaptation to Future Flooding in a Lowland City, A case of Jakarta City	104
Estimation of the Number of SARS-CoV-2 Infections in a Sewershed Based on Wastewater-based Epidemiology	109