



ERE 2009

Proceedings
of
4th Annual Conference

"Towards the Sustainable Management of Earth Resources"
A Multi-disciplinary Approach



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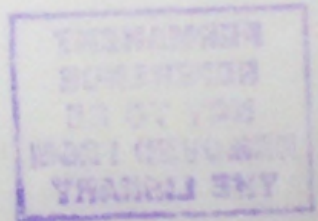
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© 2009 Department of Earth Resources Engineering

It's a privilege to welcome you to the fourth annual conference organized by the Department of Earth Resources Engineering, University of Moratuwa, on the theme of "Towards the Sustainable Management of Earth Resources".

The Earth is a repository of materials which have diverse application for human life. Effective resource management requires consideration of the sustainability of the resource and the environmental impact associated with its exploitation. Environmental impact also needs to be minimized and managed. It is notable that several commonly used metals are predicated to last only into the first half of the present century. Working towards this goal is probably the most important contribution that an Earth Resources Engineer of the twenty-first century can make to the sustainable management of the environment as a whole.

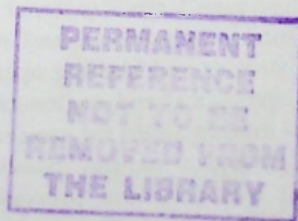
We sincerely hope this conference will contribute towards the renewal of vision and give insight into the future to manage the available earth resources in Sri Lanka to foster creative solutions for the 21st century. Further, we believe that this conference will provide a forum for identifying and exchanging ideas on current and potential future issues and developments in the wise use of earth resources for a better tomorrow.

I would like to make this an opportunity to thank all the members of the editorial board of the conference proceedings and also the organizing committee for their dedication and contribution to make this 4th annual conference organized by the Department of Earth Resources Engineering a success. This gathering would not have been possible without the generous assistance and determined efforts of our sponsors.

Dr. Shiromi Karunaratne

Conference Coordinator
ERE 2009

29th May 2009



MESSAGE FROM HEAD OF DEPARTMENT

I am very pleased to provide a message to the Proceedings of the ERE 2009 – Fourth Annual Conference organized by the Department of Earth Resources Engineering, Faculty of Engineering, The University of Moratuwa with the generous sponsorship of World Bank funded project for Improvement of Relevance and Quality of Undergraduate Education (IRQUE), Maga Engineering Pte Ltd and Geological Survey and Mines Bureau (GSMB). The theme of the conference is “Towards the Sustainable Management of Earth Resources - A Multi-Disciplinary Approach”.

Earth Resources provide us with most of our material requirements for our lives on earth. Thus mining and mineral processing is a very important area for sustainable development and for exploration of new frontiers in technology. This Annual Conference on the Sustainable Management of Earth Resources organized by our Department is an attempt to focus attention on this very important topic, and create awareness among the industry, academia and policy-makers on this aspect.

I wish to use this opportunity to present a brief overview about our Department. The Department presently offers a four-year full time degree course in Earth Resources Engineering. M.Sc., M.Phil and Ph.D degrees by research are also available for deserving graduates in collaboration with relevant industries. The key areas covered by the Earth Resources Engineering Degree course are Mineral Exploration, Mining Engineering, and Mineral Processing. The Department also offers two part time courses in Gemmology and Geology at certificate level.

The Department offers the industry and other external organizations many services, such as the designing and planning of underground mines and quarries and bulk material handling, designing of drilling and blasting operations, environmental impact assessments, site investigations, geological and engineering geological mapping, slope stability assessment, geophysical investigations for groundwater and minerals, resource management using RS & GIS, geological natural disaster management, designing of mineral processing plants, heat treatment and processing of precious stones, gem identification and valuation, and industrial waste water treatment.

Prof. U.G.A. Puswewala
Head, Department of Earth Resources Engineering

29th May 2009



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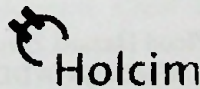
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CONFERENCE PROGRAM

- 8.45 - 9.00 Registration
- 9.00 - 9.10 Opening ceremony
- 9.10 - 9.15 Welcome address by the Head, Department of Earth Resources Engineering, University of Moratuwa
- 9.15 - 9.20 Address by the Dean, Faculty of Engineering, University of Moratuwa
- 9.20 - 9.30 Address by the Vice Chancellor, University of Moratuwa
- 9.30 - 9.50 Address by Guest of Honour - Mr. Mahesh Fernando, Surveyor General, Survey Department of Sri Lanka
- 9.50 - 10.35 Key note address - Eng. HDS De Alwis, President-Elect, The Institution of Engineers, Sri Lanka (IESL)
(topic - Towards Sustainable Management of Earth Resources)
- 10.35 - 11.00 Tea break

Morning session

Chair person - Mr. Mahesh Fernando, Surveyor General, Survey Department of Sri Lanka

Theme - RS and GIS applications for the advancement of the mining and mineral Industry

- 11.00- 11.10 ✓ Development of Oceanographic Information Dissemination System; an Application of Web GIS - Senevirathne AMNKB, Pathirage PU, Wijerathne HKP, Kuhatheepan S1, Kuperajah N, Rajapaksha JK and Abeysinghe AMKB
- 11.10 - 11.20 ✓ Development of a Flood Hazard Zonation Map for "Kalu Ganga" Basin by GIS Modelling - Welivitiya WDDP, Jayasingha JMHCb, Musheen MK, Saputhanthri SV, Samaranyake TDNT, Seneviratne A, Dissanayake DMDOK
- 11.20 - 11.40 ✓ Editing a Digital Elevation Model to Achieve a Correct Stream Network: An Application to Kalu-ganga River in Sri Lanka - Nandalal HK and Ratnayake UR
- 11.40 - 11.50 Hydrological Analysis of Sooriyawewa Area using Remote Sensing and GIS Techniques - Senanayake IP, Dissanayake DMDOK and Puswewala UGA
- 11.50 - 12.15 Discussion
- 12.15-13.15 LUNCH**

Afternoon session

Chair person - Mr. GVSK Kumarasiri - DGM- Construction, Maga Engineering Pte Limited

Theme - Mining and Mineral processing in Sri Lanka; are we ready for the future challenges?

- 13.15 - 13.25 Design and Fabrication of Cable Bolt for Excavation in a Fractured Rock - Dhanawardana YLC, Siriwardana HDPM, Henderson SH, Kumara HMCP, Indika KAS, Dharmaratne PGR, Welideniya HS and Rohitha LPS
- 13.25 - 13.35 Calcite and Dolomite Mineralization in the area around Balangoda and Critical Analysis of Mining Methods and Utilization of the Deposits - Jayatissa MDCP, Urapola MOA, Perera PAAP, Manojh Kumar M. Chandrakumara GAK, Weerawarnakula S, Abeysinghe AMKB
- 13.35 - 13.45 Effects of Discontinuity Strike and Dip Orientation in Tunneling - Selvasekaran R, Appuhami KAIS, Kumarasiri SAJ, Fernandopulle SN, Lakmal HMAG and Dharmaratne PGR
- 13.45 - 13.55 Determination of Uniaxial Compressive Strength Using Point Load Index of High Grade Metamorphic Rocks from Western Sri Lanka - Thushanthan K, Udayantha BVM, Chathuranga SAKS, Dissanayaka VAKA, Karunananthasivam L, Jayasekara J M E P K, Pusawela UGA, Samaradivakara GVI
- 13.55 - 14.05 Ventilation of Underground Workings and Improvement of Comfort Levels - Hewage SC, Rajapakse RAAC, Rathnayake RMD, Prasanna EAP, Dissanayake DMAK, Dharmaratne PGR , Welideniya HS and Rohitha LPS

14.05 - 14.15 Discussion

14.15 - 14.45 Tea break

Evening Session

Chair person - Mr. K Suntharakingam, Chief Consult Engineer, Environmental Engineering Consultants

Theme - Environmental aspects of resource exploitation

- 14.45 - 14.55 Selection of an Effective Substrate to Treat Gray Water in Horizontal Flow Constructed Wetlands - Thirukumaran AK, Ehamparam S, Darmini S and Karunarathne S
- 14.55 - 15.05 Operational Hydrodynamic Numerical Model Covering Sri Lanka Waters - Girihagama RWRHMLNK, Dissanayake DMSS, Wijerathne EMS and Rathnayake NP
- 15.05 - 15.15 Impacts of Salt Water Intrusion on Construction Aggregates of Kalu Ganga Estuary - Silva KBA, Kumara IGIK, Rathnayake NP
- 15.15 - 15.25 Discussion
- 15.25-16.00 Closing Ceremony and vote of thanks
- 16.00 End

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on

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