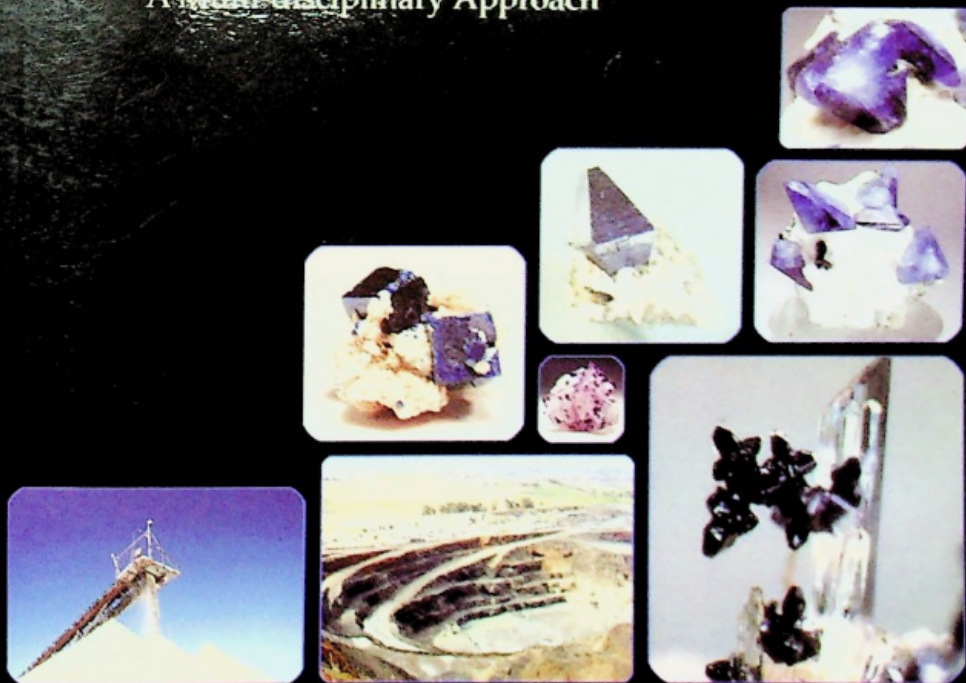




Proceedings
of
ERE 2007

2nd Annual Conference of Minerals for a Better Future"
A Multi-disciplinary Approach



2007

**Department of Earth Resources Engineering
Faculty of Engineering
University of Moratuwa**

Proceedings of ERE 2007

2nd Annual Conference on Minerals for a Better Future
– A Multidisciplinary Approach

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**Proceedings of the 2nd Annual Conference
on
Minerals for a Better Future
- A Multidisciplinary Approach**

2nd November 2007

**Department of Earth Resources Engineering
Faculty of Engineering
University of Moratuwa
Sri Lanka**

***In collaboration with*
Geological Survey and Mines Bureau
Dehiwala, Sri Lanka**

(All articles are refereed)

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WELCOME

It's a privilege to welcome you to the second annual conference jointly organized by the Department of Earth Resources Engineering, University of Moratuwa and Geological Survey and Mines Bureau (GSMB), on the theme of "Minerals for a Better Future".

Mineral resources are especially significant components of social wealth. However, the exploitation of these resources to alleviate poverty and thereby strengthening the civil society requires a delicate balancing of a number of issues, which include economic importance, mineral potential, responsible exploitation, social equity and environmental protection.

We sincerely hope this conference will contribute towards the renewal of vision and give insight into the future of a sustainable mining industry 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 mineral resources for a better tomorrow.

The of members of the editorial board of the conference proceedings and organizing committee deserve a special mention for their dedication and contribution to make this 2nd annual conference organized by the department, in collaboration with Geological Survey and Mines Bureau a successes. This gathering would not have been possible without the assistance and determined efforts of our sponsors.

Dr. Shiromi Karunaratne

Conference Coordinator

ERE 2007

2nd November 2007

MESSAGE FROM HEAD OF DEPARTMENT

I am very pleased to provide a message to the Proceedings of the ERE 2007 - Second Annual Conference jointly organized by the Department of Earth Resources Engineering, Faculty of Engineering, The University of Moratuwa and the Geological Survey and Mines Bureau (GSMB). The theme of the conference is "Minerals for a Better Future - A Multi-Disciplinary Approach".

Minerals provide us with most of our material requirements for our lives on earth. Thus mineral processing is a very important area for sustainable development and for exploration of new frontiers in technology. This Annual Conference on Minerals for a Better Future organized by our Department and the GSMB is an attempt to focus attention on this very important topic, and create awareness among the industry, academia and policy-makers on this aspect. This volume of proceedings carries publications resulting from the research and project works of the departmental staff and students, as well as other invited research papers concerning the fields of minerals and mining.

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 Department also offers two part time courses in Gemmology and Geology at certificate level.

The key areas covered by the Earth Resources Engineering Degree course are Mineral Exploration, Mining Engineering, and Mineral Processing. The Department has expanded its curriculum recently by introducing three new minors as Remote Sensing and GIS, Ocean Resources Engineering, and Gemmology and Jewellery under the study stream of Earth Resources Engineering, in addition to the pre-existing stream of Mining and Minerals Engineering. The expansion of the curriculum was carried out using the funds made available by the World Bank funded project for Improvement of Relevance and Quality of Undergraduate Education (IRQUE).

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.

& 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.

We are grateful to the IRQUE Project the GSMB and Maga Engineering (Pte) Ltd for making available funds for the ERE 2007 - 2nd Annual Conference under the theme Minerals for a Better Future - A Multi-Disciplinary Approach.

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

2nd November 2007

MESSAGE FROM THE CHAIRMAN OF THE GEOLOGICAL SURVEY AND MINES BUREAU

Geological Survey and Mines Bureau (GSMB) is the state agency enacted by the Mines and Minerals Act No. 33 of 1992, to ensure the environmentally friendly and sustainable mineral exploitation in the country. Under the mandate the GSMB is presently involved in mineral associated resource identification and assessment, exploitation and value addition, licensing and regulation, environmental protection and rehabilitation, along with awareness enhancement.

The theme of the collaborative conference "Minerals for a Better Future" is quite relevant, important and timely for the GSMB to effectively carryout the responsibilities entrusted by the government. The GSMB as a policy, promotes collaborative scientific works of this nature with the learned personnel and the universities in particular and this in my opinion generate immense benefits to the industry, the academia and the general public. The theme is very vital because GSMB with the guidance of the Honourable Minister of Environment Patalee Champika Ranawaka has embarked upon the tasks of reviewing the mineral policy of the country, the possibilities of value addition and evaluation of the present industrial setup, the technological needs and changes that are appropriate, mapping and estimating the availability of minerals, placing safety and public concern standards and guidelines, changes to the regulations, identifying alternatives to minerals such as river sand, etc. Though one might try to look at the load of work ahead of us and indicate the aspirations are ambitious, the GSMB along with our Minister, feels that this could be done effectively and efficiently with coordinated efforts of the mineral industry, the academia and the GSMB. To make our aspirations a reality, it is necessary to have a strong link with the Universities and it is my sincere hope that our links would grow day by day and form strength to strength by carrying out continuous collaborative events.

Therefore, this initiative by the University of Moratuwa and especially the Department of Earth Resources Engineering is commendable. My sincere congratulations are to the vice chancellor, the deputy vice chancellor, the dean faculty of engineering, the head of the department of earth resources and the staff.

The deliberations at this conference will provide an excellent opportunity to the paper presenters, professionals, entrepreneurs, and others to share their knowledge and lead to a suitable framework pertaining to our Minerals.

I am certain that this conference will be a great success.

Professor N.T.S. Wijsekera
Chairman, Geological Survey and Mines Bureau

2nd November 2007



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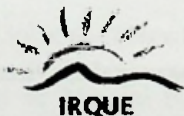
Department of Earth Resources Engineering,
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IN COLLABORATION WITH



Geological Survey and Mines Bureau, Sri Lanka

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Improvement of Relevance and Quality of
Undergraduate Education
(World Bank funded Project)



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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 Chairman, Geological survey and Mines Bureau.
- 9.20 - 9.30 Address by the Dean, Faculty of Engineering, University of Moratuwa
- 9.30 - 9.40 Address by the Vice Chancellor, University of Moratuwa
- 9.40 - 10.25 Key note address -Hon. Minister Patalee Champika Ranawaka, Minister of Environmental and Natural Resources
(topic - Minerals for a better future; Value addition of minerals and the future of the mining and minerals industry in Sri Lanka)
- 10.25 - 10.45 Tea break
- 10.45 - 11.15 Sponsor Presentations - Maga Engineering Pvt Ltd

Morning session

Chair person - Dr. DMDOK Dissanayake, Director - Geological Survey and Mines Bureau

Theme - RS and GIS applications for the advancement of the mineral Industry - Initiatives by the Geological Survey and Mines Bureau

- 11.15- 11.25 Remote Sensing and GIS Approach for Tsunami Damage Assessment - A Case Study - Premadasa WN, Jayalath SDLD, Weerakoon HMAB and Dissanayake DMDOK
- 11.25 - 12.45 Application of Simulation Methods to Understand Tsunami Processes Around the Coastal Region of Sri Lanka - Rathnayake RMMT, Nilminie WNRPN, Senanayake DS and Rathnayake NP
- 11.45 - 11.55 Coastal Erosion in South Western Part of Sri Lanka from December 2006 to June 2007 - Hansi MKTN, Lokukankanamage DMG, Ranasinghe GP, Witharana GH and Rathnayake NP
- 12.05 - 12.15 Offshore Sand Exploration Around Kaluthara-Beruwala Area - Gunasinghe AWDC, Chandana NHS, Ranaweera DHD, Vijitha AVP and Rathnayake NP
- 12.15 - 12.30 Discussion
- 12.30 13.30 LUNCH

Afternoon session

Chair person - Dr. Vasantha Siriwardhana - Environmental Engineering Consultant - EML Consultants Pvt. Ltd

Theme - Mining and Mineral industry Vs Environmental protection in Sri Lanka; are we ready for the future challenges?

- 13.30 - 13.40 Nutrients, Fe and Bacterial Removal in Sub Surface Flow Constructed Wetlands Treating Polluted Mine Water - Dharmasiri KLGNC, Yalini A, Jeewantha DLC and Karunarathne S
- 13.40 - 13.50 Alternative for River Sand - Ekanayaka EMTM, Jayawardene MN, Kannangara KKDM, Puswewala UGA, Rathnayake NP, Chaminda SP and Vijitha AVP
- 14.50 - 15.00 Ground Vibration and Air Blast Overpressure Assessment using Scaled Distance - Sivarajan V, Kumara KLDS, Hearath HMSD, Nanayakare NWP, Walideniya HS and Weerawarnakula S
- 15.00 - 15.10 Stability of Mica, K-Feldspar and Apatite in Water, Organic Matters and Citric Acid - Amaraweera THNG, Pitawala HMTGA and Fernando GWAR
- 15.10 - 15.30 Discussion
- 15.30 - 15.45 Tea break

Evening Session

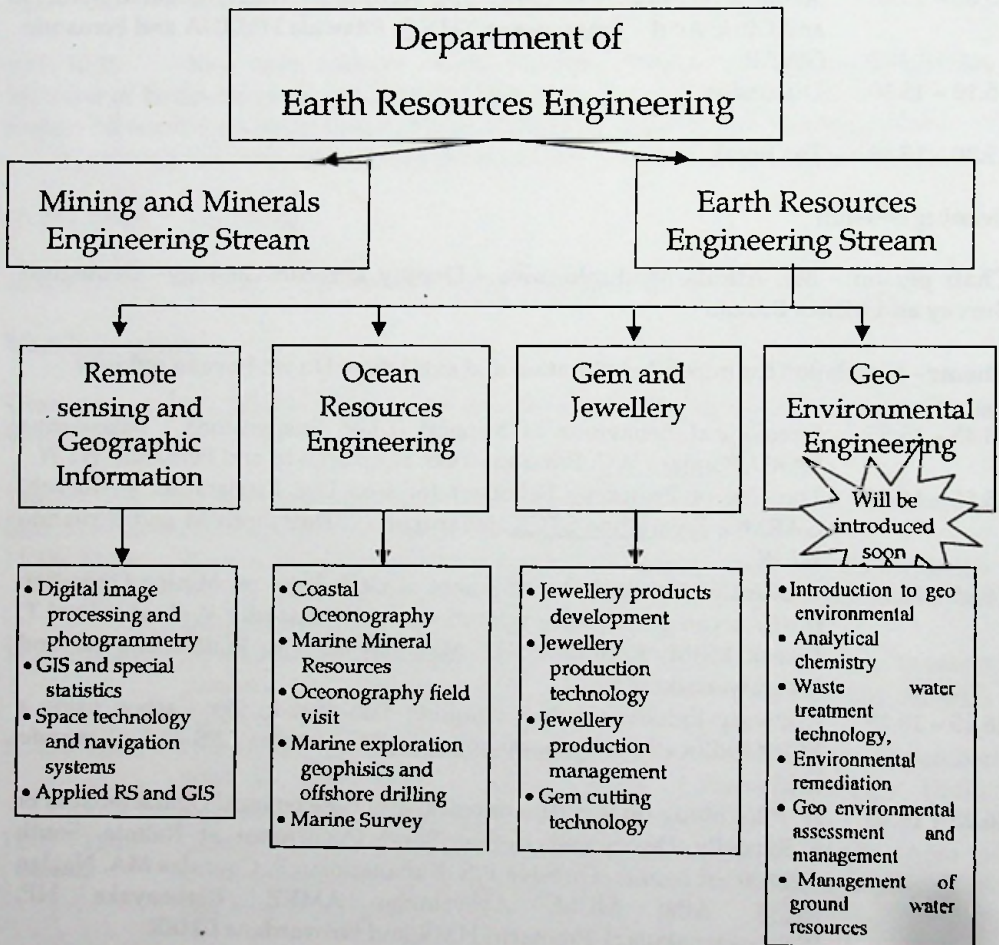
Chair person - Mr. Athula Mudunkotuwa - Deputy Director-Geology- Geological Survey and Mines Bureau

Theme - Legislation for mineral exploration and extraction; Do we have to rethink?

- 15.45 - 15.55 Rheological Behaviour of Mineral (Clay) Suspensions - Balasooriya BARD, Kumara WC, Prasanna TGS, Sasekaran M and Fernando WLW
- 15.55 - 16.05 The Use of Prototype Pelletizer for Iron Ore Preparation - Arachchi GARMG, Jayarathna STCK, Jeyarupan G, Thusyanth M and Fernando WLW
- 16.05 - 16.15 Cost estimation and Development of Cash Flow on Mining Operation (IML/A category quarry operation) - Amirthasothy V, Arulvadiivel T, Fareez MRM, Kommala KD, Madanayake TA, Walideniya HS and Weerawarnakula S
- 16.15 - 16.25 Recovery Enhancement of Graphite Tub-dust to 99+ Carbon using a Mill Modification - Samarakkody SATI, Rohitha LPS and Fernando WLW
- 16.25 - 16.45 A Pilot Study on the Mineralogical and Geochemical Characteristics of a Recently Discovered In-Situ Beryl Occurrence at Kaltota, South Central Sri Lanka - De Silva PJS, Kuhananthan P, Consalas MA, Nazlan MZM, Aflal MCM, Abeysinghe AMKB, Rathnayake NP, Weerawarnakula S, Premasiri HMR and Siriwardana CHER
- 16.45 - 17.00 Discussion
- 17.00-17.30 Closing Ceremony and vote of thanks



Recently the Department of Earth Resources Engineering introduced three new minor study streams with new subjects under Earth Resources Engineering Study Stream



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