



Proceedings
of
ERE 2006

"1st conference on mining for Sustainable Development"
A multi disciplinary Approach



2006

Department of Earth Resources Engineering
Faculty of Engineering
University of Moratuwa

WELCOME

ERE 2006

Proceedings of the 1st Annual Conference
on
Mining for Sustainable development
– A Multidisciplinary Approach

17th October 2006

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

(All Articles are Refereed)

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1st Annual Conference on Mining for Sustainable Development

17th October 2006, University of Moratuwa.

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

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ISBN 955-9027-17-4

Cover page design – V Pandithasekara, A Silva and N Seneviratne

It's a privilege to welcome you all this 1st annual conference organized by the department of Earth Resources Engineering. It has been a long felt need to bring both academics and practicing mining engineers to a same platform to discuss the present and future of the mining industry in Sri Lanka. The department of Earth Resources Engineering takes pride in organizing and leading such an event to explore and revisit the needs of the civil society and to enhance the economic importance, mineral potential, responsible exploitation, social equity and environmental protection of the present day mining industry.

We sincerely hope that this conference will contribute towards the renewal of vision and insight into the future of sustainable mining engineering to foster creative solutions for the 21st century. Further it will provide an effective platform for identifying and exchanging ideas on current and potential future issues and developments in cultivating a sustainable mining environment in Sri Lanka.

The members of the scientific committee, organizing subcommittee and our sponsors deserve a special mention for their dedication and contribution to this 1st annual conference organized by the department, which together with the publishing of its proceedings would not have been possible without their assistance and determined efforts.

Dr. Shiromi Karunaratne

Conference Coordinator

ERE 2006

17th October 2006

MESSAGE FROM HEAD OF DEPARTMENT

I am very pleased to provide a message to the Proceedings of the First Annual Conference on Mining for Sustainable Development, published by the Department of Earth Resources Engineering, Faculty of Engineering, The University of Moratuwa, Sri Lanka.

Mining is an activity that provides us with almost all our material requirements for our lives on earth. With the natural resources limited in quantity, it is paramount that we think about mining in a sustainable context. This first Annual Conference on Mining for Sustainable Development 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. 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 mining and earth resources.

I wish to use this opportunity to present a brief overview about our Department also. 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 this year by introducing four new streams of study as Remote Sensing and GIS, Ocean Resources Engineering, Gemmology and Jewellery, and Geo-environmental 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.

We are grateful to the IRQUE Project for making available the funds for the 1st Annual Conference on Mining for Sustainable Development – A Multi-disciplinary Approach.

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

17th October 2006

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1st Annual Conference on Mining for Sustainable development – A Multidisciplinary Approach

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Prof. WLW Fernando
Prof. PGR Dharmaratne
Dr. UGA Puswewala
Mr. S Weerawarnakula
Dr. DMDOK Dissanayake
Dr. SCS Karunaratne (conference coordinator)
Dr. AMKB Abeysinghe
Dr. HS Welideniya
Dr. N Ratnayake
Mr. V Pandithasekara

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Dr. AMKB Abeysinghe
Dr. HS Welideniya
Dr. N Ratnayake
Mr. V Pandithasekara
Mr. SP Chaminda
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Dr. N. Ratnayake
Mr. SP Chaminda

CONFERENCE PROGRAM

Date: 17th October 2006

Venue: Civil Engineering Auditorium

- 9.00 – 9.30 Registration and poster display
- 9.30 – 9.40 Opening ceremony
- 9.40 – 9.45 Welcome address by the Head, Department of Earth Resources Engineering, University of Moratuwa
- 9.45 – 9.55 Address by the Vice Chancellor, University of Moratuwa
- 9.55–10.05 Address by the Dean, Faculty of Engineering, University of Moratuwa
- 10.05-10.35 **Key note address - Air Marshel Jayalath Weerakkody, CEO, Lanka Quarries Pvt Ltd,**
- 10.35- 10.50 Tea break

Morning session

Chair person – Prof. PGR Dharmaratne, Dept. Earth Resources Engineering

- 10.50-11.20 **Prof. WLW Fernando**, Senior Professor of Mining Engineering, University of Moratuwa, Department of Earth Resources Engineering; *Quartz Based Industries*
- 11.20- 11.50 **Eng. Karunasena Hettiarachchi**, Chairman, Central Environmental Authority; *Where Sri Lanka Going to Stand in the Global Environmental Crisis?*
- 11.50- 12.20 **Prof. S. Wijesekara**, Professor of Civil Engineering, University of Moratuwa; Chairman, Geological Survey and Mines Bureau; *Mining for Sustainable Development*
- 12.20 – 13.30 Lunch

Afternoon session

Chair person – Dr. DMDOK Dissanayake, Dept. Earth Resources Engineering

- 13.30 – 13.45 **Dasanayake ABN**; *Prospecting Geothermal Energy from hot water springs at Padiyatalawa.*
- 13.45 – 14.00 **Wedage WN**; *Problems of Ground Water in Connection with Abandoned Open Pit Mines.*
- 14.00 – 14.15 **Senanayake IP**; *Designing a Suitable mining Method and Processing Plant for Kukurampola Magnetite Ore Body.*
- 14.15 – 14.30 **Perera RSL**; *Characterizations of Tsunami Wave using Texture and Structure of Sediments from South Western Coast of Sri Lanka.*
- 14.30 – 14.45 Discussion time
- 14.45 – 15.00 **Rahubadda HI**; *Generation of a user friendly spatial information system for the rehabilitation and of small scale irrigation schemes in selected 5 divisional secretariat division in hambantota district.*
- 15.00 – 15.15 **Kalubowila KDLSSP**; *Quartzite mining and sand manufacturing*
- 15.15 – 15.30 **Hettiarachchi M**; *Sword ferns for phytoremediation of Chromium contaminated waters.*
- 15.30 – 15.45 **Sandanayake D.S.S**; *Prediction of the variation of aggregate properties in quarry mining based, on exploratory core samples.*
- 15.45 – 16.00 **Wickrama MADMG**; *Exploration of Illmenite potential in and around Kalu and Bentara River Mouths with special reference to the variation of TiO₂ content along a selected stretch of Kalu ganga.*
- 16.00 – 16.15 Discussion time
- 16.15 – 16.30 Closing Ceremony and vote of thanks
- 16.30 – Fellowship and Tea