

### References

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## REPORT ON THE 4TH INTERNATIONAL CONFERENCE ON GAS HYDRATES

The fourth International Conference on Gas Hydrates was recently held at Yokohama, Japan, between 19-23 May 2002 following the earlier conferences held in USA (1993,1996,1999). The main objective of the conference was to bring together the International gas-hydrate workers and to facilitate research. This conference, the first of its kind held in Asia had attracted delegates from all over the world.

The conference was organized under the chairmanship of Prof. Dr. Y.H. Mori, Keio University, Yokohama, Japan, under the guidance of International Scientific Committee consisting of Drs. T. Austvik (Norway), P. Englezos (Canada), R. Matsumoto (Japan), J-P. Monfort (France), C.K. Paull (USA), J. Ripmeester (Canada) and D. Sloan Jr. (USA).

The conference was divided into several thematic sessions. The first session was devoted to the topic – exploration, resources and environment (oral presentations of 8 papers and posters of 47 papers). The posters were subgrouped into environmental issues, fluid migration and seep, marine hydrates, technology, permafrost and lake hydrates, and lastly CO<sub>2</sub> hydrates.

The key note lecture by Prof. R. Matsumoto on “Comparisons of marine and permafrost gas hydrates: examples from the Nankai and Mackenzie Delta” and on the topic of exploration, resources and environment by E. Jones, Lars Zuelsdorf, Fredrick Colwell and Mathew Davie, C.K. Paull, S.R. Dallimore, Y. Masuda and T.S. Collett, were very interesting and thought provoking. Excellent posters were displayed on Nankai Trough, using DTAG seismic survey in Nankai Trough (Shimizu), migration velocity analyses (Hato), distribution of BSR and possible fluid migration in Nankai Trough (Morita), high resolution 2D and 3D seismic surveys for methane hydrate exploration in eastern Nankai (Morita), velocity structure of double Gas hydrates related BSR within the eastern

Nankai accretionary prism, Japan.

A poster by Dr. Ussler's on gas hydrates was quite interesting for our future work in India on gas hydrates, wherein the process of estimating *in situ* sediment gas concentration in ODP holes by continuously monitoring temperature during core recovery was lucidly presented.

A session was devoted to topics on fundamentals: Thermodynamic aspects and kinetics (oral 8 papers and posters of 46 papers of which 25 on thermodynamic aspects and 21 on kinetics). Dr. Sloan's work on next generation of hydrates was quite interesting and informative. Similarly other posters by Dr. Ripmeester on the application of MRM (Magnetic Resonance Microimaging) to monitor the formation of gas hydrates. Dr. H. Kono gave a talk on the modelling of gas hydrate formation process by controlling interfacial boundary surfaces.

In the evening at a banquet talk, Dr. Raj Bishnoi, an eminent researcher from Canada, stressed the need of multidisciplinary research on gas hydrates. Following additional topics – Fundamentals covering structural studies and physical properties, multiphase mechanics and heat/mass transfer (oral 11 papers and poster 46 papers of which structural studies 12, physical properties 16, multiphase mechanics and heat/mass transfer 18) were also presented.

In the morning session, we were able to listen to more about the fundamentals; structural and physical properties, multiphase mechanics and heat/mass transfer aspects on gas hydrates. Important speakers of this session were Drs. Sloan, Ajay Mehta, and Markov.

Later Dr. Kuznetsov gave a talk on CODATA project activities which is purely on the information system on gas hydrates. Later Dr. Moon talked on computer modeling of gas hydrate formations, while Dr. L. Stern presented new insights into the phenomena of anomalous or self-preservation of gas hydrates.

Posters on hydrate formation and prevention in pipelines and hydrate based technologies (total of 30 posters of which 12 in hydrate formation and prevention in pipelines and 18 in hydrate based technologies, were displayed, while in oral category five presentations under hydrate formation and prevention in pipelines and 3 papers under hydrate based technologies). An interesting paper on the importance of hydrate phase measurements in flow assurance and energy storage was presented by Ramesh Kini of the Colorado School of Mines, USA, who described that gas hydrates were the major problem in flow assurance.

At the end of the conference, a tour to Nikko (a historical place where the first Shogun of Edo period is enshrined)

was organized. The entire conference material of both the oral and poster presentations (containing one keynote address and 204 general papers) from 19 countries were combinedly into a two proceedings volumes.

It is hoped that deliberations of this conference will give a new fillip to further research on gas hydrates in India by adopting an integrated and interdisciplinary approach.

It was decided to hold the next International Conference on Gas Hydrates in 2005 at Trondheim, Norway.

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## NINTH INTERNATIONAL PLATINUM SYMPOSIUM

The above symposium was held in Billings, Montana, USA, during 21-25, July 2002. It was jointly sponsored by IGCP 427 (Dynamic processes in ore-forming magmatic systems) and Stillwater Mining Co. Columbus, Nye and East Boulder and supported by Goldfield Exploration, Inc. Over 120 participants from as many as 20 different countries attended the symposium. Large contingents came from USA and Canada. From India, besides the reporter, there was only one other participant.

The symposium was declared open by the Chairman of the organizing committee, Prof. Roger W. Cooper, with a brief preamble. In all 138 papers were presented and the presentations were spread over the next 3½ days in 13 different sessions. 68 papers were presented orally and the remaining were poster presentations. As the very name suggests, over 90% of the papers were centred around geology, mineralogy, geochemistry, genesis and other aspects of PGE. Only a small number dealt with various aspects of host mafic-ultramafic rocks and other related mineral deposits. There were only five contributions dealing with Indian case studies. Three of them were based on the results of investigations of PGE mineralization associated with the Hanumalapur mafic-ultramafic complex (about 15 km south of Channagiri, Davangere District), which were being carried out jointly by T.T. Alapieti, T.C. Devaraju and R.J. Kaukonen. Of the two other presentations, one discussed details of PGE mineralization associated with Boula complex, Orissa (Aug'e, T.) (investigated jointly by GSI and BRGM) and the other dealt with Cr-spinel and whole rock

geochemistry of Nausahi complex (Mondal, S.K.). There were no keynote addresses preceding any of the sessions. A 500 page volume of Extended Abstracts and searchable CD-ROM was presented to each registrant. Copies of the volume are available for sale from the Chairman of the organizing committee, Prof. Roger Cooper, Department of Geology, Lamar University, Beaumont, TX - 77710, USA. A total of six field excursions, two preceding and three following the symposium were held in conjunction with the programme. Four of them were to nearby Stillwater Mine Complex. The fifth excursion was organized to show the PGE mineralized mafic intrusions around western Lake Superior, USA and Canada, specially Duluth, Beaver Bay, Thunder Bay and Coldwell complexes. Guides for all these excursions can also be obtained from Prof. Roger W. Cooper.

There was a contributory symposium dinner on 23rd July evening. Highlight of this well attended social programme was the keynote address by Dr. Charles G. Groat, Director, USGS, on the topic of "Global Mineral Resources Assessment". The occasion was also utilized for honouring Dr. Heikki Papunen with a Gold Medal for his valuable service, spread over many years, in bringing together on a common platform all the active workers of the world on the topic of PGE mineralization. Dr. Papunen gave an interesting historical account of how the holding of international platinum symposium had evolved over the years. The symposium concluded with a meeting involving all the participants to elicit opinions to prepare an acceptable