

potential are the Barberskrans, Nieuwefontein, Loxton, Davidskolk, Oukloof and Hoedemaker. Of these deposits, six are large with > 3 million tonnes (MT) of ore and the rest contain between 0.5 and 1 MT of ore. Although these would have been marginally exploitable during the 1980's, the current low prices of these metals, together with substantial rise in capital and operating costs, mitigate against any development in short to medium term.

The volume contains numerous well drawn line-drawings of maps, sections and chemical plots, and a few high contrast field photographs and ore textures. It includes four appendices that present data on U-Mo concentrations at reconnaissance sites, location of different sites investigated in the regional target area and their lithostratigraphy, results of XRF-based extensive geochemical analyses (U, Mo, As, Cu, V, Co, Pb, Zn, Ni, Zr, Th, Rb, Sr, Y, Nb and

Ba in ppm) on 980 samples and references for palaeocurrent data, besides an index of 26 pages. It gives a step by step account of the entire gamut of exploration for sandstone-hosted Mo-(U) mineralisation. The authors as well as the Council for Geoscience - Geological Survey of South Africa are to be complimented for the present publication that is of interest to all exploration geologists in general, and those working for Mo and U in particular. The memoir is available in the library of the Geological Society of India for reference purposes.

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REPORT ON THE INTERNATIONAL SYMPOSIUM ON "ASSEMBLY AND BREAKUP OF RODINIA AND GONDWANA AND GROWTH OF ASIA", HELD AT OSAKA CITY UNIVERSITY, JAPAN

The international symposium on the "Assembly and Breakup of Rodinia and Gondwana and Growth of Asia" was held at Osaka City University, Japan from 26th October to 30 October 2001. The symposium was organized under the aegis of UNESCO-IUGS-IGCP projects 386/411/440, International Association for Gondwana Research (IAGR) and Osaka City University (OCU). Three hundred participants covering thirty two countries attended the symposium. The symposium was divided into following thematic sessions:

- Gondwana and Rodinia assembly and breakup (IGCP 368, 440, 418).
- Orogenic processes and growth of Asia (IGCP 411, 420).
- Island arc process and continental growth.
- Basin development and in relation to Rodinia-Gondwana-Asia tectonics (IGCP 4199).
- Metamorphic and magmatic process in relation to Rodinia-Gondwana-Asia tectonics.
- Mineralisation and mineral resources in relation to Rodinia-Gondwana-Asia tectonics.
- Global environment changes in relation to Rodinia-Gondwana-Asia tectonics.
- Quaternary stratigraphy of Asia and pacific region (INQUA).

- Environment, natural disaster and urban geology of Gondwana countries.

Earth system science is witnessing revolutionary changes in understanding the dynamic correlation among lithosphere, hydrosphere and biosphere through the recent advances made in tracing the history of supercontinents, their amalgamation, evolution and dispersion. The assembly, disruption and reassembly of supercontinental configurations can be traced from Rodinia (existed at 1.0 Ga) and its rifting during Neoproterozoic resulted in the formation of Gondwana at 0.55 Ga. Tectonic forces of rifting and assembly of continents between 1.0 and 0.55 Ga caused marked changes in the conditions of lithosphere, biosphere and hydrosphere. Rodinia was assembled through the dispersion of an older, Mesoproterozoic supercontinent. South East Asia represents a collage of Gondwana derived blocks, which travelled far. These jigsaw puzzles have controlled the distribution of earth resources, zones of natural hazards and global environmental changes among various other fundamental earth resources.

Several Indian earth scientists including Dr. S.K. Acharyya, D.G., GSI; Prof. S. Acharya, Ex-Vice Chancellor, Utkal University, Bhubaneswar; Prof. D. Mukhopadhyay, Kolkata; Prof. N.K. Mahalik, Orissa; Dr. T.K. Biswal, IIT

Bombay; Prof. A.B. Roy, Udaipur, Rajasthan; Prof. A.T. Rao, Andhra University; Dr. R.N. Hota, Orissa and scientists of National Geophysical Research Institute, Hyderabad attended the symposium.

The untiring efforts of Prof. M. Yoshida, Prof. A. Yao, Prof. M. Santosh, Prof. W. Maejima, Miss Kiyoko Kuwahara of Osaka City University, Japan ensured the success of the symposium.

On this occasion a special volume of "Gondwana Research" on "Assembly and Breakup of Rodinia and Gondwana and Growth of Asia" was brought out, assembling

some three hundred contributions which were presented in the symposium. The volume was edited by Prof. M. Santosh of India, presently working in Japan.

This symposium, it is hoped will give a new fillip to further research on the evolution of Gondwana by adopting an integrated and interdisciplinary approach.

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REPORT ON THE INTERNATIONAL SYMPOSIUM ON FORAMINIFERA (FORAMS-2002), PERTH, AUSTRALIA

An international conference of micropalaeontologists working on foraminifera is held every four years. This year it was organized by David Haig and Steffen Revets at the University of Western Australia, Perth from 4-8 February 2002. More than a hundred papers and nearly seventy five posters were presented by micropalaeontologists from over thirty countries. The symposium also included a mid-conference field excursion to Rottnest Island and a post-conference seven-day trip to Shark Bay.

If the papers presented in the symposium are any indication of the current trends in foraminiferal research, the thrust areas of research are experimental studies in foraminifera, environmental proxies, molecular taxonomy and phylogeny, deep-sea foraminifera and sequence stratigraphic modelling using foraminifera. A number of researchers highlighted the importance of *in situ* or cultural studies on foraminifera as related to their growth and calcification, feeding, respiration, symbiosis, life-cycle, reproduction and microhabitat characterization. Some of the findings on biomineralization process in foraminifera are likely to have implications in palaeoceanographic interpretation of stable isotope and trace element data. A workshop on experimental approaches to Foraminiferal Biology also underscored the importance of understanding the isotopic and elemental signatures in foraminiferal shells in view of the non-equilibrium composition, ontogenetic variation, distribution coefficients different from inorganic calcite and variability between and within the species.

The little known foraminifera from marsh, mangrove and deep-sea have caught attention of workers in the past few years. Some of them are trying to understand the biological aspects of deep-sea foraminifera using tracer experiments

and find that benthic foraminifera are important remineralizers of organic matter. Molecular taxonomy and phylogeny of foraminifera, though still confined to a few laboratories, are generating lot of interests among the foraminiferologists. Their agreements and conflicts with classical approach were debated. The intriguing observations are report of foraminiferal DNA from a soft-walled granuloreticulosean from Australian rainforest and similar sequence from some lake sediments which otherwise contained no evidence of the presence of foraminifera by traditional microscopic methods. The cryptic species are being examined using molecular approach. The symposium also deliberated on the use of foraminifera as environmental tracers and pollution monitoring. A workshop on this topic stressed close interaction between geologists and governmental agencies and the need to educate the government officials and NGO's on what foraminiferologists can deliver in pollution monitoring.

There were plenary lectures of topical interests including those on molecular techniques in foraminiferal studies, the biometry of foraminiferal shells, benthic foraminiferal ecology, foraminifera in sequence stratigraphy and foraminifera as environmental tracers. As a mark of bicentennial celebration of the birth of Alcide d'Orbigny, an excellent lecture was aptly delivered by Marie-Therese Venec-Peyre on "Beyond Frontiers of Time: The Scientific and Cultural Heritage of Alcide d'Orbigny". The next symposium is planned to be held in 2006 in Brazil.

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