

Art of petrography: A valuable guide to petrologists

The DST-sponsored contact program on Art of petrography: A valuable guide to petrologists was conducted at Department of Geology, Faculty of Science, Banaras Hindu University (BHU), Varanasi between 19 September and 2 October 2000 under the able guidance of course Director Anand Mohan. There were 30 participants, out of whom 20 represented different universities and institutions like GSI, BSIP and NGRI. The inaugural lecture was delivered by S. K. Tandon (University of Delhi) on cathodoluminescence petrography. This was followed by the lectures of C. Lellanandam (Osmania University), R. S. Sharma (Rajasthan University) and Das Gupta (Jadavpur University) which dealt with primary and secondary textures, significance of coronas, symplectites, resorption and reaction textures, P-T path to derive the evolutionary history of the rock, phase rule and chemographic representation, etc. R. K. Lal (BHU), D. Mukhopadhyay (University of Calcutta) and A. K. Jain (Roorkee University) delivered lectures on time relationship between deformation, crystallization and metamorphic events, compatibility of textural features, their interpretation and derived P-T-t paths,

significance of microtexture/structure in rocks as shear sense indicators, concept of dynamic recrystallization and interpretation of history of deformation and metamorphism in rocks and structural petrography within the framework of microtectonics. Mallickarjun Joshi (BHU) talked on importance of petrological microscope, universal stage and its application to structural petrography. V. K. Gairola (BHU) discussed dynamic recrystallization and grain boundary migration in shear zones: an experimental approach. A few lectures were devoted to sedimentary petrography by B. K. Chatterjee and R. N. Tiwari (BHU) on sedimentary petrographic features and their significance, and terrigenous particles in sedimentary rocks: their petrographic characters and significance. Anand Mohan gave lectures on reaction terminology, encapsulation of relevant textural information for marking EPMA points and textures as indicators of changing P-T conditions.

Practical sessions were conducted with the help of the newly acquired microimage display system. All participants vividly carry in their memory the excellent slides of textures shown by different resource persons.

The participants also delivered lectures on their research work, which paved the way for mutual interaction among participants. Participants were also evaluated by the resource persons at the end of each session in the form of oral and written tests. This built up confidence among participants.

On the penultimate day of the course K. R. Gupta (ESS, DST, New Delhi) had an interaction session with the participants. Participants felt that in order to keep the subject of geology alive, interactive and intensive courses of this sort must be conducted from time to time for the benefit of younger generation. The participants opined also that a separate course of this type should be conducted for economic geology, igneous and metamorphic petrology clubbed together and sedimentary petrography separately.

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Application of stable isotope geochemistry in earth sciences: Present status and future needs*

The workshop on 'Application of Stable Isotope Geochemistry in Earth Sciences: Present Status and Future Needs', was organized with the intention of bringing together active researchers and users of stable isotope technique from different parts of India for deliberating on various applications of stable isotope geochemistry in earth

sciences, assessing the present status and future needs of stable isotope research in the country and eventually formulating a few major inter-institutional innovative and challenging research projects which need an extensive stable isotope database. Although the use of stable isotopes in various branches of earth sciences, e.g. mineral exploration, hydrology, oceanography, palaeoclimate, sedimentology, crust-mantle evolution, etc. has continuously increased within the country over the last decade, only limited facilities are available in one or two leading institutes. The lack of such facilities is seriously hampering quality isotope research in the country.

More than 40 scientists from universities, IITs, mass spectrometer manufacturing companies and various government organizations participated in the workshop. The workshop was spread over five sessions, namely sedimentary environment and palaeoclimate, isotope hydrology and environmental isotopes, crustal evolution and ore genesis, palaeoceanography and instrumentation and analytical techniques. K. Gopalan, National Geophysical Research Institute (NGRI), Hyderabad delivered the keynote address on 'Terminology and technology of isotopic measurements'.

Eleven papers were presented in the session 'Sedimentary environment and

*A report on the workshop on 'Application of Stable Isotope Geochemistry in Earth Sciences: Present Status and Future Needs', held on 26 and 27 July 2000, organized by the Department of Applied Geology, Indian School of Mines, Dhanbad and sponsored by DST.

palaeoclimate'. P. P. Chakrabarty (Indian School of Mines (ISM), Dhanbad) discussed about 'Stable isotopes in Chattisgarh basin: Implications to sequence stratigraphy and Precambrian/Cambrian boundary'. Parthasarathi Ghosh (Indian Statistical Institute (ISI), Calcutta) presented a paper on 'Variations in atmospheric CO₂ between Permian and Cretaceous: Clues from the isotopic compositions of pedogenic carbonates'. S. Banerjee, (Indian Institute of Technology (IIT), Mumbai) presented his findings on 'Carbonate bed decoupling by using isotope data in Rohtas limestone'. D. M. Banerjee (Delhi University) discussed about 'Stable isotope studies of Proterozoic sediments from Vindhyan and Nagaur basins'. Natabar Sharma (MS University, Vadodara) presented a paper on 'Stable isotope studies on buried and surface soils'. A Sarkar (ISM) discussed about 'Carbon isotopes across the P/T boundary of continental Gondwana and climate-extinction connection'. S. Balakrishnan (Pondicherry University) discussed the possibility of working on 'Geochemical studies on Mesozoic-Cenozoic sediments of the Cauvery Basin occurring in the Pondicherry-Ariyalur areas'. Amitava Chakrabarty (IIT, Kharagpur) indicated the potential of 'Stable isotope studies of carbonates and water from Hooghly Estuary, West Bengal'. Joygopal Ghosh (Geochronology Division, Geological Survey of India (GSI), Calcutta) discussed about the 'Use of organic carbon isotope ratio

in Gondwana stratigraphy'. Prashenjit Ghosh (Physical Research Laboratory (PRL), Ahmedabad) presented his findings on 'Stable isotope studies of Siwalik palaeosols'. A. K. Mittal (KDMIPE, ONGC) discussed about the 'Application of stable carbon isotope in hydrocarbon exploration'.

Three papers were presented in the session on 'Isotope hydrology and environmental isotopes'. P. Nagabhushanam (NGRI) discussed about the 'Use of stable isotopes in elucidating palaeoclimatic signatures in Neyveli groundwater basin and source of seepage in coal mines'. K. K. Sharma (Wadia Institute of Himalayan Geology, Dehra Dun) presented new data on 'Stable isotope systematics of surface water bodies in the NW Himalaya'. S. K. Gupta (PRL) deliberated on 'Isotope hydrology research at PRL'.

Three papers were presented in the session on 'Crustal evolution and ore genesis'. Biswajit Mishra (IIT, Kharagpur) discussed about 'Quantification of water-rock ratio in relation to hydrothermal mineralization from stable isotope studies'. S. P. Venkata Dasu (AMSE Wing, GSI, Bangalore) presented 'New S-isotopic data and ore petrology of some polymetallic-Au prospects of India'. D. Asthana's (ISM) topic of discussion was 'Can stable isotope be useful in delineating slab melting process in early Proterozoic?'

The 'Palaeoceanography' session was brief. Ajai Rai (Allahabad University)

reported his findings on 'Neogene stable isotope record of foraminifers in the SE Indian ocean and its palaeoceanographic implication'. Devesh K. Sinha (BHU, Varanasi) discussed about 'Neogene ocean circulation changes in the Indo-Pacific based on planktic foraminiferal biogeography and stable isotope analyses'.

During the session on 'Instrumentation and analytical techniques', A. G. Datar (IR Technology, Mumbai) provided an overview on 'Recent developments in stable isotope ratio mass spectrometry'. S. Das Sharma (NGRI) talked on 'Stable isotopes at NGRI' and B. R. Venkatesh (AMSE Wing, GSI, Bangalore) discussed on the intricacies of the 'Extraction of SO₂ from sulphides/sulphates and measurements of sulphur isotopes'.

The participants at the workshop thought it fit to formulate and launch a coordinated national programme on 'Tracking the evolution of earth's crust, ocean and climate: Experimenting with stable isotope tracers'. The workshop concluded with a hope that more scientists and researchers of stable isotopes would be involved in the national programme and explore and identify a suitable place for establishing the national facility.

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SCIENTIFIC CORRESPONDENCE

Immediate type hypersensitivity reaction: An immunological marker for microfilariae negative individuals with hydrocele

Filarial infection caused by *Wuchereria bancrofti* brings out a spectrum of clinical and parasitological symptoms in people living in the endemic regions. Two common symptoms of the chronic disease are elephantiasis of legs and hydrocele of testicles in humans. There are usually more cases of hydrocele than elephantiasis in most endemic communities and in fact the prevalence

of hydrocele has been proposed as a diagnostic index in predicting infection prevalence or identifying communities at risk for filariasis¹. The symptomatic filariae patients, especially those with elephantiasis, are in general microfilariae (MF) negatives. However, individuals with hydrocele can often be MF positives². Filarial infection similar to other helminthiasis induces a strong

IgE response in endemic individuals^{3,4}. IgE-mediated allergic disorders such as immediate type hypersensitive (ITH) reactions were also observed in endemic population^{4,5}. The extent of ITH reaction measured as skin test positivity was earlier reported by us using the soluble extract of infective larvae (L3) of *W. bancrofti* or a defined filarial allergen Sd 30 (mol wt 30 kDa) exhibiting prote-