vote of thanks, emphasized that the Institute is ready and capable of undertaking industry related palynological work and expressed the hope for greater and long-term association with industry

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DST-Sponsored Advanced Training Programme on Modelling of Magmatic and Allied Processes

A DST-sponsored Advanced Training Programme on Modeling of Magmatic and Allied Processes was organized by the Department of Geology, Kumaon University, at Nainital during 28 September to 11 October 2007 A total of twenty young researchers in the subject field from NIO, Goa WIHG, Dehradun NGRR Hyderabad Bangalore University, BHU Varanasi, Allahabad University, Gauhati University, Dibrugarh University, Annamalai Universitry, Bundelkhand University and Kumaun University Nainital have undergone the training, which included research scholars, teachers and geoscientists from various scientific and academic oiganizations During the two week training period, a total ot fourteen resource persons, dealt upon a wide range of topics pertaining to various principles associated with magmatic processes and modern concepts and techniques related to modeling of such

Prof R S Sharma, INSA Honorary Scientist, from the University of Rajasthan, Jaipur, dealt upon different topics related to exhumation and tracking of the *Himalayan rocks m the subduction-colhsion* zones, thermodynamical principles required for a geologist, phase equilibria relevant to igneous rocks, the processes and mechanisms involved in magma genesis within crust and mantle, and the various aspects of granitoid rocks and their origin in the light of field, laboratory and experimental studies

Dr K Vijaya Kumar from the School of Earth Sciences, S R TM University, Nanded, dealt upon the geochemistry of magmatic systems, geochemical inversion aspects of cumulate rocks, the geochemical consequences of dynamic melting of the upper mantle and the various ways of modeling mantle melting mechanisms The various fundamental aspects associated with all the above topics were lucidly explained by Dr Kumar through well structured presentations

Dr H Thomas, from the Department of Applied Geology, Dr H S G University, Sagar, lucidly explained the wide range of microtextures displayed by magmatic rocks as well as migmatites

Dr Sandeep Singh, from 11T Roorkee, in his delivery related to isotopes in geochronology and genesis of igneous rocks, touched upon the various fundamental aspects and others like blocking and closure temperatures, BABI, etc

There were two resource persons from the Wadia Institute of Himalayan Geology viz, Dr D R Rao and Dr Rajesh Sharma Dr Rao in one of his delivery detailed upon the techniques and applications of EPMA, while in another, various computer applications that are currently used for studying hard rocks were detailed to the participants The deliveries were followed by demonstrations of various programs like 'afu', BGT, AMPH, ITHERM, ISOCHRON, EPSND, GCD-kit etc Dr Sharma, in one of his lecture, dwelt upon the principles of fluid inclusion studies, and its application as a tool for understanding hydrothermal systems while in another, he dealt upon the nature of the hydrothermal fluids of magmatic origin, followed by demonstration of the FLINCOR piogram

Dr Pankaj Kr Snvastava, from the Department of Geology, University of Jammu, delivered a wonderful presentation *on silicate melt inclusions (M 1) and its* application to petrogenesis, touching upon aspects like classification of M I , entrapment mechanisms, identification in plutonic rocks, chemical analysis procedures, sample preparation, etc

Prof. J P Shnvastava, from the Department of Geology, University of Delhi, detailed upon igneous textures, processes and pathways, besides devoting two of his lectures to the corrosion mechanism in natural and borosilicate nuclear waste glasses for long-term performances assessments in geological repository and study of dissolution mechanism on AVS nuclear waste simulated glass Ms Nishi Rani, research scholar from the same department, gave an overview of various geochemical codes, demonstrating examples like Tact, Act 2, EQ 3/6, PHREEQC, etc

Dr OPPandey, from N G R I, Hyderabad, detailed upon the heat flow aspects and magmatic activities in the various cratonic regions of the Indian hthosphere, touching upon various aspects like mathematical equations applied for temperature-depth calculations, calculation of heat production, and the various causes attributed for the unusual and thin Indian lithosphenc plate

Amongst the four internally drawn resource persons, there were deliveries from Prof Santosh Kumar, the course coordinator, and Dr PD Pant, both from the Geology Department, along with Prof D N Pant and J S Rautela, both being from the Mathematics Department Prof Santosh Kumar dealt upon the concepts and models of magmatic processes, modal and textural analysis, semi-quantitative assessment of crystal fractionation, commghng and mixing aspects of mafic and felsic magmas, modeling the redox series of felsic igneous system and its relations to mineralization as well as the various phase relations that exists in igneous rocks Dr P D Pant detailed upon the geology of the Nainital area with respect to igneous and associated litho types

The two lesource persons drawn from the Mathematics Department, detailed upon the use of mathematical and statistical principles that are helpful in modeling and simulation techniques While Dr Pant dealt *upon the use of matrix algebra, Mr Rautela* dealt upon various numerical analysis procedures, the method of least squares, convex functions and their applications to important processes like the multiphase Rayleigh fractionation associated with fractional crystallization

Apart from the hectic classroom theoretical lectures, the participants were also exposed to the application part of different softwares like GPP, TEA, etc m the departmental computer lab, and familiarization with the fluid inclusion

studies lab During one of the Sundays, the participants were taken on a field trip, along the Naimtal-Bhimtal stretch, where various important himalayan geological aspects like the MBT, etc can be observed There was also an official visit to the Aryabhatta Research Institute of Observational Sciences (ARIES), located atop the Manora Peak, about 9 kilometres from Naimtal, where the participants were detailed upon the various existing astronomical and astrophysical facilities as well as the range of activities carried out there

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A New Method for Determining the Geometry of Rupture Zone in Areas known to be Seismically Active

Attention of our readers is invited to a paper entitled 'Strong Motion Compatible Source Geometry' authored by S TG Raghu Kanth (rk@ntg ernet m) and R N Iyengar (rm@civil use ernet m) which has appeared in the latest issue of Journal of Geophysical Research (v 113, B04309) which appears to have an important bearing on the identification of source region of earthquake in general and NE Himalaya in paiticular Source determination is usually carried out using travel time methods with the help of teleseismic data The present paper details a method using strong motion accelerograph records available in the near source region The results presented seem to identify with a fair degree of accuracy source region at depth involving severe rupture on a rugged surface The authors outline their model based on instrumental data available from four earthquakes Chi-Chi, Imperial Valley, San Fernando and Uttarakashi The approach and results outlined appear to be of great practical utility in the assessment of natural hazards, since it leads to generation of time histories in the near source region By combining known geological data of active faults with such a source mechanism model engineers can avoid the use of approximate empirical attenuation relations for estimating ground motion parameters at important project sites -*BPR*

Metamorphic History of Granulites and Associated Rocks from Varsha Nadu in Tamil Nadu

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Extended Abstract

Varsha Nadu is part of the 550 Ma Southern Granulite Terrain The area is essentially composed of charnockites, gneisses with abundant meta-sedimentary swathes of pelitic and calc-silicate rocks with late intrusive of alkali gabbros, syenites, granites and carbonatite-alkah gabbro The Kambam fault trending N20°E occurs in between the lofty hill ranges of Kodaikanal, Cardamon, and Varsha Nadu in a way connects them The linear trends are N40°W, N20°E to N60°E They exhibit complex pattern with dome and basin structures Rock types include charnockites, gneisses, pyroxene granulites with abundant meta-sedimentary swathes of pelitic, calc-silicate rocks with late syenite, granite and carbonatite-pyroxemte intrusions Shears traversed at different stages and affected all the lithologies except granites Late N-S shears are seen along broad fold closures and represented by growth of garnets along axial planes The NE linears in the area are offset by the NW shears The dextral displacement of the NW shear probably suggest the re-activation of earlier linears The E-W shears displace the NNE, NE, NW shears The Kambam shear trends N15°E to N20°E in the southern part and N40°E- N50°E in the northern part This might be due to repeated dextral offsetting of the N10°E by E-W shears In southern extremity, it hosts a carbonatite-pyroxemte body The abundant magnetite grains in the carbonatites show crude alignment parallel to N20°E The late E-W and N-S shears, cut across the magnetite grains Number of isoclinal folds with their axial plane trending N10°E, remains parallel to Kambam fault inferring that Kambam fault has formed at an early stage but reactivated at later stage The calc-silicate rocks contain exotic blocks of pyroxemte, quartzo-feldspathic gneisses Since they occur over larger area, they can be termed as melange structures The rafts and detached folds of quartzo-feldspathic gneiss contain high grade metamorphic gneissic fabric

The peak metamorphic temperatures obtained are in the range of 9 6-7 1 Khar, 780-715°C whereas P-T values 6-5 kbar, 731 to 605°C represent decompression The metasediments give P-T values 10 kbar and 950°C representing peak metamorphic conditions