

## CHAPTER 21

### GEOLOGY

#### Doctoral Theses

200. BAJPAI (Shilpa)  
**Early Pliocene Planktic Foraminifera from Car Nicobar Island, Northeast Indian Ocean, their Biostratigraphy and Paleocyanographic Implications.**  
Supervisor : Prof. V.Sharma  
Th 17987

#### *Abstract*

Planktic foraminifera from the early pilocene sequence of Car Nicobar island in the northeast Indain ocean are quantitatively studied. Quantitative slides are prepared by picking all planktic foraminifera from an aliquot containing about 400 specimens Seventy samples belonging to three stratigraphic sections have been used in the study for foraminiferal biostratigraphy and paleocyanography. 48 species of planktic froaminifera belonging to 15 genera have been identified and documented. Systematics of each identified species is briefly described. Stratigraphically important foraminifera from the sections revealed that biostratigraphically the sequence is divisible into three zones, viz, Globorotalia tumida tumida zone, Spaeroidinella dehiscens zone and Globorotalia margaritae zone.

#### *Contents*

1. Introduction and previous work. 2. Study area, materials and methods. 3. Systematics. 4. Biostratigraphy. 5. Depth stratification of planktic foraminifera: Stable isotopic evidence. 6. Paleocyanography. Summary and conclusion.

201. DEOL (Swati)  
**Geological Environment of Gold-Sulfide Mineralization at Bhukia-Jagpura Area, Southern Rajasthan.**  
Supervisors : Prof. Mihir Deb and Dr. A Chattopadhyay  
Th 17993

*Abstract*

The present study incorporates most of the standard scientific methodologies, including petrological and geochemical studies of ore and host rocks and their structural analysis. The contribution is an endeavor to record and intergrate all pertinent geological features and eventually develop it into a possible genetic model of ore formation. Analysis of the fluid properties has been attempted the results of microthermometric experiments carried out on wafers from Bhukia, Gundlapara and Jagpura as well as syntectonic granitic body has been discussed. P-T estimates based on the microthermometric data as well as the nature and characteristics of the involved fluids have also been dealt.

*Contents*

1. Introduction. 2. Geologic Setting. 3. Nature of mineralization. 4. Petrography and mineral chemistry of country rocks and host rocks. 5. Petrography, mineral chemistry and LA-ICPMS study of ores. 6. Geochemistry including isotopic studies. 7. Metamorphism. 8. Fluid inclusion study. 9. Summary and conclusions.

202. LUKRAM INGOCHA MEETEI  
**Evolution of Late Quaternary Valley-Fill Deposits in the Middle Part of Teesta Valley in Sikkim and Darjeeling Himalaya, India.**  
 Supervisor : Prof. S K Tandon  
 Th 17991

*Abstract*

In this work, a part of the Himalayan mountain vally system in Sikkim and Darjeeling region, which is tectonically active as well as influenced by the south west Asian monsoon and high altitude glaciers, has been studied. Research in the field of quaternary geology mainly in the characterization of valley fill deposits, neotectonics and active tectonics, seismic activities, morphological studies to understand the imprints of both climate and tectonics has been attempted.

*Contents*

1. Introduction. 2. Methodology. 3. Window-I. 4. Window-II. 5. Window-III. 6. Discussion and conclusion.

203. MISHRA (Mukesh Kumar)  
**Geochemistry, Petrogenesis and U-Pb Zircon Geochronology of Basement Granitoids and Gneisses of Central Indian Tectonic Zone (CITZ), Central Indian Shield.**  
 Supervisor : Prof. Talat Ahmad  
 Th 18231

*Abstract*

Tirodi Gneissic complex (TGC) is an important lithological unit of the Central Indian Tectonic Zone (CITZ) that lies north of the Central Indian Shear (CIS). TGC constitutes the basement for supra-crustals of the CITZ and occurs intimately with Sausar group of rocks. The basement gneisses consists of common grey-pink gneisses, migmatitic and banded gneisses with rare augen gneisses at places and intruded by aplite, quartz veins, and amphibolites. In addition there are massive pinkish granitic and pegmatite veins, probably representing the last phase of magmatic activity.

*Contents*

1. Introduction. 2. Field observation and petrography. 3. Analytical techniques, methodology and results. 4. Major element geochemistry of TGC. 5. Trace element including rare earth geochemistry and tectonic interpretation. 6. Isotopic studies of granitoids of TGC. 7. Discussion and conclusion.

204. NISHI RANI  
**Alteration Studies on Nuclear Waste and Natural Glasses for Long-Term Performance Assessment in Geological Repository.**  
 Supervisor : Prof. J P Shrivastava  
 Th 17990

*Abstract*

The experimental study on Indian simulated waste glasses and natural analogue is attempted and performed under high temperatures to generate near hydrothermal or hydrothermal like conditions in a Parr reactor to understand chemico-mineralogical changes occurring at or near to the surface. Also focuses on the mineralogy and chemistry of neo-formed alteration products. Study on the formation of alteration phases in terms of its mechanism and kinetics is attempted to understand long-term alteration behaviour of waste loaded AVS, barium borosilicate and obsidian glasses.

1. Introduction. 2. Computational chemistry. 3. Material and methods. 4. Advance vitrification system-AVS glass. 5. Barium borosilicate glass. 6. Obsidian: A natural analogue. 7. Discussion. 8. Conclusion.

205. SEYED MOHAMMAD TAJBAKSHH  
**Tectono-Geomorphic and Climatic Controls on Erosion in Lesser Himalaya (Sikkim and Garhwal).**  
 Supervisor : Prof. C S Dubey  
 Th 17988

*Abstract*

This study deals with Sikkim and Garhwal Himalaya region in the east and west of Nepal that bear massive topography and experiences extensive annual precipitation to investigate the interactions and possible feedbacks between geomorphic, climatic, and tectonic processes especially in along strike variation and asymmetric development of Himalaya.

*Contents*

1. Introduction. 2. Geology and structures. 3. Morphometric indicators of active tectonics. 4. Exhumation and incision rate. 5. Erosion rate and modeling. 6. Tectonic control on pattern of orographic precipitation. 7. Conclusion

206. SINGH (Ningthoujam P)  
**Origin and Tectonic Evolution of Manipur Ophiolite Complex in Indo-Myanmar Subduction Zone.**  
 Supervisor : Prof. C S Dubey  
 Th 17989

*Abstract*

The study deals with the origin and tectonic evolution of Manipur ophiolite complex(MOC), which exposed in Manipur as a part of Manipur-Nagaland ophiolite belt(MNOB). The complex is confined within the eastern sector of Indo-Myanmar ranges and constitutes part of the Aarkan-Yoma fold belt separating northeastern India from Myanmar. MOC is exposed in the eastern Manipur in Indo-Myanmar border and the main ophiolitic body is stretch of about 100 km in the NNE-SSW trend.

1. Introduction. 2. Geology and tectonic setting. 3. Petrology and Geochemistry of ultramafic rocks of Manipur ophiolite complex. 4. Origin and serpentinization geodynamics of Manipur ophiolite complex. 5. Petrogenesis of mafic rocks of Manipur ophiolite complex. 6. Tectonic evolution of Manipur ophiolite complex. 7. Conclusions.

207. SITANSHU

**Tectonic Geomorphology of the Yamuna and Markanda River Systems with Special Reference to their Mountain Exits.**

Supervisors : Prof. S K Tandon and Prof. A M Bhola

Th 17992

*Abstract*

In this study, the focus is mainly on the deformed part of the foreland, particularly the mountain front and the river exits which constitutes the interface between the undeformed plains to the south and the deformed outermost sub\_Himalayan hills to the north. This work is towards understanding the effects of neo-tectonics on the geomorphic development of the mountain front, the adjoining hills, valleys and the river exits.

*Contents*

1. Introduction. 2. Methodology. 3. Tectonic geomorphology: A review. 4. Structural analysis. 5. Morpho-tectonic analysis. 6. Analysis of geomorphic indices. 7. Discussion and conclusion.