PREFACE

The Himalaya-Karakoram-Tibet region is the most fascinating and unique tectonic domain on Earth and is characterized by numerous geodynamic processes. The orogen has developed as a result of the interaction between the Indian and Asian plates during the past 150 million years. The Tibetan Plateau, popularly known as the "roof of the world," is marked by doubling of crust and subduction-related magmatism, and is currently undergoing an eastward extrusion along major strike-slip and normal faults, east-west extension and devastating earthquakes.

The juncture of the Tibet plateau and the zone of crustal shortening (the Himalayas) is marked by the Karakoram fault and the Shyok and Indus Tsangpo Suture Zones, where the Neo-Tethyan oceanic lithosphere of the Indian Plate was subducted beneath the Asian Plate. The subduction of this ocean is manifested in the evolution of the Dras and Shyok volcanic arcs, imbrication of sections of the oceanic lithosphere of about 140-120 Ma, and deposition of trench sediments. All this is followed sequentially by emplacement and intrusion of calc-alkaline and Andean-type Trans-Himalayan batholiths from Pakistan to the easternmost parts of the Himalaya in Arunachal Pradesh. Once the Tethyan Ocean closed along the suture zones, immense crustal shortening followed within the Himalayan Collision zone to the south, with (i) continental subduction ca. 57 Ma along the northern edge producing ultrahigh pressure metamorphic terrain in Pakistan, India and Nepal, (ii) intense remobilization, Cenozoic progressive regional metamorphism and leucogranite generation from the Proterozoic continental crust within the Himalayan Metamorphic Belt (HMB), (iii) emplacement of the HMB nappes along the Lesser Himalayan Proterozoic Sedimentary Belt adjacent to the Main Central Thrust (MCT), (iv) cooling and exhumation of the terrain due to tectonics and/or monsoon precipitation and ensuing erosion, (v) deposition and evolution of the Himalayan foreland basins, and (vi) ongoing crustal deformation along major tectonic boundaries resulting in the present-day seismicity.

The Himalayan orogen is also the cradle for new geodynamic concepts such as the proposed role of deformation processes in the inversion of prograde metamorphic isograds including ductile shearing, leucogranite generation, monsoon-controlled erosion and channel flow. For the uplift of convergent orogenic belts, exhumation processes are linked with erosion and/or tectonic activity for unroofing the deeply-buried sequences, where one of the mechanisms may dominate over the other. In mountainous and humid active convergence zones, surface erosion processes require concomitant removal of eroded detritus through an efficient fluvial drainage system, which is an effective alternative to tectonic exhumation in the modification of structural and internal deformation patterns

Since the inception of the Himalayan-Karakoram-Tibet Workshop in 1985, this platform has become an important focus of discussion among active researchers from the countries of the mountain chain as well as international groups. The present workshop, the 23rd in the series, is being held in the cold desert heartland of Ladakh, located on the Indus Tsangpo Suture Zone and the extensive Andean-type Ladakh Batholith, emplaced around 60 Ma at around 10 km depth.

Ladakh, the cold desert, consists of the two districts of Leh and Kargil in State of Jammu and Kashmir. Leh with an area of 45110 km^2 makes it the largest district in the country in terms of area. The Leh district has international borders with Pakistan and China in the north and is bounded by Lahul and Spiti region of Himachal Pradesh in southeast. Ladakh lies on the rain shadow side of the Himalayan region and has both arctic and desert climatic conditions, which in combination with the high altitude, poor oxygen and vegetation, low humidity as well as high solar radiation, make the region inhospitable. In the background, the nine-story Leh Palace is a distinguished historical monument of the 17th century Tibetan architecture and is said to have inspired the famous Potala Palace of Lahasa.

In ancient times, the present Leh district was a part of Greater Ladakh from Kailash Mansarover to Swaat (Dardistan) and was neither under the Domain of Tibet nor under its influence. Lying on the ancient trade silk route between Tibet and Central Asia, with the majestic Leh Palace in the background, beautiful Leh is an ideal setting for this workshop from the geological, historical, cultural, religious and adventure points of view.

This volume of Himalayan Journal of Science contains one hundred and twenty four extended abstracts, which will be the subject of discussion during three-day presentation during the workshop. One hundred and forty scholars have responded to our call for the workshop, while about 120 delegates are likely to participate in the workshop.Out of these, 40 delegates will join us to the Field Excursion through the fabulous geology of the Indian and Asian plate margins.

The Organizing Committee expresses its deep sense of gratitude to many organizations for their generous financial support of this workshop and also travel assistance for many participants. The Editorial Board of the Himalayan Journal of Sciences has been most cooperative in their timely publication of this volume. Finally, the workshop could not have been held without the unwavering support of the Indian Institute of Technology Roorkee.

Organizing Committee of the
23rd Himalayan-Karakoram-Tibet Workshop

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