Foreword

With an ever-increasing demand for minerals coupled with rapid depletion of high and medium grade ores, it has become imperative to find out better ways and means of recovering minerals from complex and disseminated ore deposits which are not amenable to conventional beneficiation techniques. Recent developments in mineral processing include bacterial leaching of ores, in particular, the genetic manipulation of micro-organisms for hydrometallurgical processing, the development of specific reagents for mineral flotation and flocculation, the recent techniques of particulate and surface characterization and the computer-aided design and optimization of mineral processing circuits. An Indo-US Science and Technology Initiative (STI) programme in mineral engineering covering some of the above topics was initiated in 1986 jointly sponsored by the Department of Science and Technology (DST) in India and the National Science Foundation (NSF) in USA.

In conjunction with the meeting of the Indo-US STI programme, an Indo-US Seminar on "Special Topics in Mineral Processing" was also organised by the Tata Research Development and Design Centre, Pune on 30 December 1987 to 1 January 1988, under the joint sponsorship of DST, the Department of Mines, New Delhi and the National Science Foundation. Twelve eminent scientists who are associated with the STI programme presented indepth review papers on some of the recent advances in mineral processing in four technical sessions, namely, bacterial leaching of ores, mathematical modelling and simulation of mineral processing unit operations, surface chemistry-based separation techniques for ore beneficiation and characterization of particulate systems. There were also sixteen research papers presented in a poster session during the seminar. The seminar provided a forum to about hundred scientists and engineers from research establishments, academic institutions and the industry to discuss some of the more critical problems presently faced by the mineral industry worldwide.

The present volume containing the original research papers presented during the seminar represent some of the important topics of current research in the area of mineral processing in the country.

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