

Preface

The rapid progress in current technology has placed increasing reliance on high performance materials that have to withstand severe service conditions and be cost effective at the same time. These challenging materials are often processed through powder metallurgy route. This has brought about in its wake several modifications of the traditional P/M processes and has also led to the development of certain radically new processes to meet the twin goals of high performance and production economy. The second International Conference on 'Powder Metallurgy and Related High Temperature Materials and the Trade Exhibition' held at ITT, Bombay during December 7-10, 1987 has focused attention on these innovations.

This conference is the fourth in the series of powder metallurgy conferences organised by the ITT Bombay, the earlier National conference on 'Powder Metallurgy Alloys' was held in 1980, International conference on 'Powder Metallurgy and Related High Temperature Materials' was held in 1983 and National conference 'Powder Metallurgy Opportunities for Engineering Industries' was held in 1985. The collaborative research programmes in powder metallurgy if ITT, Bombay with U.S.A. in particular National Science Foundation, Washington, D.C. and with U.S.S.R., in particular 'Byelorussian Powder Metallurgy Association', Minsk have greatly helped in the planning and preparation stages of the Conference. I wish to thank all speakers, session chairman, contributors and especially those who gave invited talks in their field of expertise. I gratefully acknowledge the conference sponsors, Board of Research in Nuclear Sciences, British India Steel Inc., Council of Scientific and Industrial Research, Defence Research and Development Organisation, Department of Science and Technology, Hind High Vacuum Co., Pvt. Ltd., Indian Space Research Organisation, Industrial Development Bank of India, Maduchitt Industries, Mahindra Sintered Products Ltd., Plasma Spray Processors, Sandvik Asia Lts., Sundaram Fasteners Ltd., and Vacuum Industries Inc. U.S.A. for their support. I wish to thank Dr. V.S. Arunachalam, Scientific Adviser to Minister of Defence, Government of India for his special talk entitled 'Modelling of pore closure'. I am thankful to the co-operation and contribution of the authorities of the Indian Institute of Technology, particularly Prof. B. Nag, Director, faculty, staff and students of the Department of Metallurgical Engineering and that of Powder Metallurgy Laboratory in particular. I am indeed grateful to the members of the International Liaison Committee and all those who have contributed directly or indirectly to the success of the Conference and publication of this volume of the proceedings.

The articles incorporated in this book are selected from the papers of the International Conference and the text is divided into 14 sections. These are powder preparation and characterization, sintering theories, mechanisms and practices, novel consolidation processes, rapid solidification, structure property evaluation, structural materials, carbides and wear resistant materials, special ceramics, nuclear materials, computer application in powder metallurgy, and composite materials. Section 13 and 14 summaries the panel discussions entitled 'High Strength Sintered Metallic Materials' and ' Structural Ceramics', Readers will find this book a valuable and stimulating source in their search for advancing the frontiers of high performance materials.

P. RAMAKRISHNAN

Dept. of Metallurgical Engineering
Indian Institute of Technology
Bombay 400 078, India