

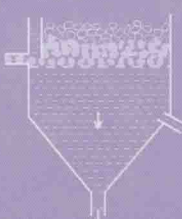


MINERAL BENEFICIATION

A CONCISE BASIC COURSE

D.V. SUBBA RAO

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A BALKEMA BOOK



Mineral Beneficiation

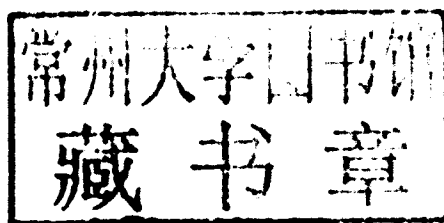
A Concise Basic Course

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Dedication



Late Seth Sriman Durgaprasadji Saraf
Founder, M/s Ferro Alloys Corp. Ltd, Shreeramnagar, A.P. India

who has given me the great opportunity of serving
students of Mineral Beneficiation in particular
and the Mineral Engineering Profession in general

Tributes to



Sri A.L. Mohan

Director, Infronics Systems India Ltd., Hyderabad, A.P. India

who lay the foundation for my professional growth

Preface

This book is the essence of thirty years of my experience as a teacher of undergraduate students of Mineral Beneficiation and ten years as a trainer of working Engineers of Kutch minerals, Essar Steels, Tega Industries, and Trimex Sands. During the first fifteen years, I experienced the difficulty of injecting the basic principles of Mineral Beneficiation into the minds of the students. I consulted with my colleagues and many engineers working in mineral beneficiation plants in search of a way out. I found that the explanation of basic principles given in various books available on the market lacks clarity in concepts because they were not written for this purpose.

Then a thought came into my mind to prepare notes exclusively on basic principles. An attempt was made in 1994, when I prepared the notes and conducted a short term course for my own students where all the basic principles were explained in just four days. The response was very good. During later years, the notes were revised by adding few additional points and conducting the course for five days for students as well as working engineers. The response was very encouraging.

Many engineers of mineral industries went through my notes, courtesy of my former students, and they were well appreciated. It was suggested that I should publish the book for the benefit of the Mineral Industries at large. This led me to write this book.

It is hoped that this small book will be of great use, not only for beginners but also for working engineers, erection engineers, designers, researchers and those who attend an interview at all levels. Any suggestions for improvement of this book will be appreciated, acknowledged and implemented in the right spirit.

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Foreword

I have great pleasure in writing the foreword for this book. Mr. D.V. Subba Rao and I are professional colleagues and have known each other for several years. His passion for Mineral Processing, in general, and teaching the fundamentals of the subject, in particular, are evident every time he steps into the classroom.

I have had the opportunity to see his teaching in action on several occasions. In fact, I attended a full training course given by him to the engineers of Tega Industries limited, Kolkata. The way the participants responded to him is amazing. He has an uncanny ability to break down complex concepts into easy-to-understand lessons.

In his book “COAL – ITS BENEFICIATION” (Subba Rao, 2003) he presents the concepts in simple way and includes lots of exercises to bring all the relevant concepts into one book to help students to grasp the principles and practicing engineers to apply the same for plant improvement studies.

The present book is his second book. I applaud the author for creating such a book, trying to bring out the fundamentals in the area of Mineral Beneficiation. In this book, Mr. Subba Rao has included everything he has learnt, whilst teaching and conducting short courses for plant engineers, and created an easy-to-understand way of presentation with illustrations which will provide proper fundamentals of the subject not only to the students but also to the practicing engineers. Throughout the book, an emphasis on making the mineral engineering a specialized subject in its own right is the central theme. I am sure that this book will win the approbation of students, practicing engineers, researchers, and all associated with mineral development including legends in the subject. I compliment Mr. Subba Rao for his dedicated service to the field of Mineral Processing.

If you are a student or practicing engineer searching for the fundamentals of Mineral Beneficiation/Processing to learn in the right way, this book is for you.

Dr. T.C. Rao
*Formerly Director
Regional Research Laboratory, Bhopal
Professor and Head of the Department of
Fuel and Mineral Engineering
Indian School of Mines, Dhanbad*

Acknowledgements

I am grateful to Dr. T.C. Rao, former Director, Regional Research Laboratory, Bhopal, and Professor and Head of the Department of Fuel and Mineral Engineering, Indian School of Mines, Dhanbad for continuous encouragement in writing this book.

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I am indebted to my colleagues Sri Y. Ramachandra Rao and Sri K. Satyanarayana, who helped me in various ways, including subject discussions and critical analysis and Sri A.K. Shrivastav and Sri K. Ganga Raju for their precious and supreme services rendered in bringing out this book.

I am thankful to FACOR management, in particular Sri R.K. Saraf (CMD), Dr. V. Subba Rao (Principal) and several other colleagues, both teaching and non-teaching, of S.D.S. Autonomous College for extending their cooperation in preparing this book. Special thanks go to Sri C. Raghu Kumar, one of my former students, who has taken lot of pains to help with this book.

It has been a pleasure to work with Taylor & Francis group and the cooperation of the editorial and production staff is much appreciated.

Finally, my deepest gratitude to my wife Mrs. Krishna Veni and daughters, Mrs. Radha Rani and Ms. Lalitha Rani for their unfailing emotional support in bringing out this book.

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