
Book Review

Title: Sintering Theory and Practice
Author: Randall M. German
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This book is the most recent achievement of Professor Randall German in a series of monographs on the science and engineering of powders.

Sintering is one of the most important steps in powder metallurgy and ceramic processing. About 12,000 scientific papers related to sintering have been published during more than 50 years. However, the number of books exclusively devoted to sintering process is extremely limited (approximately ten). Along with this, until presently, there was not comprehensive published work combining both theoretical concepts and practical aspects. The book of Prof. German is a significant step in the development of this scientific-technological field. Indeed, there is no equivalent text in the world literature.

The book contains eleven chapters and a supplement (appendix) including data on materials constants and properties relevant to sintering studies. Each chapter is accompanied by an extensive list of publications which allow the interested reader to explore particular areas of interest in greater detail.

The areas reflected in the book include sintering measurement techniques, solid-state sintering fundamentals (incorporating analysis of mass-transport mechanisms, stages of sintering, and the analysis of sintering diagrams), microstructure and processing relations (such as powder characteristics and pore and grain structure), solid-state sintering of mixed powders, liquid-phase sintering, pressure-assisted sintering, novel sintering techniques (including infiltration sintering, reactive processing, and novel heating techniques such as induction, microwave, plasma, electric discharge, and laser heating), sintering atmospheres, sintering practice with various examples of sintering in certain powder systems, and the directions of future development in sintering theory and practice.

Overall the book is of a high quality, and the information is provided in a very readable format. This book should be an essential part of the bookshelf of undergraduate and graduate students specializing in powder technology. It is also useful for practicing engineers, and for all individuals involved in the science, technology, and applications of sintering.

Through the untiring effort and talent of Professor German we benefit from a comprehensive book that ranges from the fundamentals to the state-of-the-art of technology.