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Progress in Powder Metallurgy Elsevier Inc. Chapters
Of Volume 2.- Ferrous Powder Metallurgy.- Some Aspects of the Sintering of Iron Powder.- The Mechanism of Sintering of?-Iron.- Alpha and Gamma Phase Sintering of Carbonyl and Other Iron Powders.- Investigation of the Activated Sintering of Iron Powder.- The Use of Byproduct Steel Powder from Ball-Bearing Production in Powder Metallurgy.- The Corrosion Resistance of Sintered Austenitic Stainless Steel.- Dispersion Strengthening.- Dispersion-Strengthened Nickel by Compaction and Rolling of Powder Produced by Pressure Hydrometallurgy.- On the Mechanisms of Plastic Deformation of SAP-Type Alloys.

Modern Developments in Powder Metallurgy Elsevier Inc. Chapters
Ferrous powder metallurgy (PM) makes up the majority of powder metallurgy products with regard to tonnage. Improving performance is the main trend for pressed and sintered parts, in particular the introduction of cost-effective alloy elements such as Cr and Mn. Furthermore, much can be gained in ferrous PM by elaborate secondary operations. In metal injection moulding (MIM) products, there is a clear trend towards increasingly complex shapes and microsized parts. PM tool steels offer a much finer and fully isotropic microstructure compared to their wrought counterparts and the carbide content may be much higher, resulting in excellent application properties.
Advances in Powder Metallurgy & Particulate Materials - 2009 Elsevier Inc. Chapters
Annotation Contents1 INTRODUCTION; 2 METAL POWDER

PRODUCTION; 3 METAL POWDER CHARACTERISTICS; 4 METAL POWDER TRE-AMENT; 5 METAL POWDER COMPACT-ION; 6 SINTERING; 7 HOT CONSOLIDATION; 8 SECONDARY TREATMENT; 9 POWDER INJECTION MOULDING; 10 QUALITY CONTROL OF POWDER METALLURGY MATERIALS.

Sintering of Advanced Materials Elsevier

Volume is indexed by Thomson Reuters BCI (WoS). Powder metallurgy is one of the leading processes used for forming engineering components. The technology, as developed at the beginning of the 20th century, has since advanced significantly from both the materials and energy-conservation points of view. Novel, and automated, equipment has played a significant role in enhancing the growth of the powder metallurgy industry. The present work includes, in addition to the editor□s introductory paper, eleven invited papers from organizations of international repute. In brief, the book presents expert assessments from the major metal-powder and powder-metallurgy equipment-makers in the world. This distinguishes it from other works, which are contributed mainly by academics. The book concentrates on particular topics of interest and does not attempt to be comprehensive.

Advances in Powder Metallurgy Springer Science & Business Media

Sintering is a method for manufacturing components from ceramic or metal powders by heating the powder until the particles adhere to form the component required. The resulting products are characterised by an enhanced density and strength, and are used in a wide range of industries. Sintering of advanced materials: fundamentals and processes reviews important developments in this technology and its applications Part one discusses the fundamentals of sintering with chapters on topics such as the thermodynamics of sintering, kinetics and mechanisms of densification, the kinetics of microstructural change and liquid phase sintering. Part two reviews advanced sintering processes including atmospheric sintering, vacuum sintering, microwave sintering, field/current assisted sintering and photonic sintering. Finally, Part three covers sintering of aluminium, titanium and their alloys, refractory metals, ultrahard materials, thin films, ultrafine and nanosized particles for advanced materials. With its distinguished editor and international team of contributors, Sintering of advanced materials: fundamentals and processes reviews the latest advances in sintering and is a standard reference for researchers and engineers involved in the processing of ceramics, powder metallurgy, net-shape manufacturing and those using advanced materials in such sectors as electronics, automotive and aerospace engineering. Explores the thermodynamics of sintering including sinter bonding and densification Chapters review a variety of sintering methods including atmosphere, vacuum, liquid phase and microwave sintering Discusses sintering of a variety of materials featuring refractory metals, super hard materials and functionally graded materials

Advanced Techniques in Powder Metallurgy Metal Powder Industry

Powder metallurgy (PM) is a popular metal forming technology used to produce dense and precision components. Different powder and component forming routes can be used to create an end product with specific properties for a particular application or industry. Advances in powder metallurgy explores a range of materials and techniques used for powder metallurgy and the use of this technology across a variety of application areas. Part one discusses the forming and shaping of metal powders and includes chapters on atomisation techniques, electrolysis and plasma synthesis of metallic nanopowders. Part two goes on to highlight specific materials and their properties including advanced powdered steel alloys, porous metals and titanium alloys. Part three reviews the manufacture and densification of PM components and explores joining techniques, process optimisation in powder component manufacturing and non-destructive evaluation of PM parts. Finally, part four focusses on the applications of PM in the automotive industry and the use of PM in the production of cutting tools and biomaterials. Advances in powder metallurgy is a standard reference for structural engineers and component manufacturers in the metal forming industry, professionals working in industries that use PM components and academics with a research interest in the field. Discusses the forming and shaping of metal powders and includes chapters on atomisation techniques Highlights specific materials and their properties including advanced powdered steel alloys, porous metals and titanium alloys Reviews the manufacture and densification of PM components and explores joining techniques

Progress in Powder Metallurgy Springer

Of Volume 3.- Nuclear Applications.- Activated Sintering of Uranium Monocarbide.- The Use of Uranium Aluminide Powders in Nuclear Reactor Fuel Elements.- Powder Metallurgy of Al-Al2O3 Composites (SAP) for Nuclear Applications.- Hot-Pressing of Electrolytic Grade CR Beryllium.- An Experimental Study Concerning Some Effects Occurring During Skeleton Infiltration with Liquid Metals.- Cemented Carbide, Friction, Thermoelectric, Porous, and Heavy Metal Materials.- Cemented Titanium Carbide Cutting Tools.- Investigations of Some Hard Alloys in the Boron-Silicon-Carbon System.- The Elastic Modulus of.

Advances in Powder Metallurgy & Particulate Materials, 2006 Springer Science & Business Media

Fossil fuels will eventually be replaced by renewables. Currently, the most feasible and efficient way of utilising renewable energy is to convert it to electricity. In response to this change, fossil energy-based pyrometallurgical processes will inevitably shift to electricity driven processes. This chapter considers the feasibility of direct conversion of mineral to metal powder using a new electrochemical method, the FFC Cambridge process (Fray, Farthing and Chen). The discussion will be on the background of electrometallurgy and powder metallurgy, the principles of the new process and its application for metal powder production, and the direct route from oxide precursors to alloyed powders.

Modern Developments in Powder Metallurgy Elsevier

Five years ago, the worldwide powder metallurgy fraternity gathered in New York City to attend the first international conference devoted entirely to powder metal lurgy to take place in the United States. It was a tentative venture, entered into by the sponsors with no idea as to whether it would fail or succeed. The only assurances we had were that the metal-powder producing and consuming industries were rapidly expanding and that powder metallurgy was truly becoming one of the international sciences. The 1960 Conference was successful not only in terms of attendance and interest, but also in terms of knowledge gained. The literature had been enriched by the contributions of its participants to foster and encourage this type of world wide exchange. Thus, another such conference was held in 1965-expanded in scope and supplemented by an exhibition of the latest advances in raw materials, processing equipment, and finished products of powder metallurgy. On behalf of the Conference sponsors-the Metal Powder Industries Federa tion, the American Powder Metallurgy Institute, and the Metallurgical Society of AIME-I thank all those who participated and who helped make the 1965 Interna tional Powder Metallurgy Conference a rewarding experience and memorable event in our industry's history. Support of the National Science Foundation, which made it possible for several speakers from abroad to participate in the

program, is gratefully acknowledged.

Modern Developments in Powder Metallurgy Springer Science & Business Media

Aluminum P/M parts can be production sintered in various types of furnaces and atmospheres. Selection of sintering furnace depends upon economic considerations and production rates desired. Batch furnaces have lowest investment costs and are adequate for low to medium production whereas continuous furnaces are more costly but provide higher production rates. strong, well-sintered P/M parts can be obtained in atmos pheres of nitrogen, dissociated ammonia and in vacuum. Atmos phere selection depends upon facilities available within individual plants plus property requirements. Highest strengths are produced in nitrogen followed by vacuum and dissociated ammonia. Repro ducible dimensions can be achieved with proper attention to com pact density, sintering temperature, dew point and atmosphere. REFERENCES 1. J. H. Dudas and W. A. Dean, "'llie Production of Precision Aluminum P/M Parts," International Journal of Powder Metallurgy, Vol. 5, April, 1969. 2. P. F. Mathews, "Effects of Processing Variables on the Properties of Sintered Aluminum Compacts,!! International Journal of Powder Metallurgy, Vol. 4, October, 1968. 3. J. H. Dudas and K. J. Brondyke, "Aluminum P/M Parts - Their Properties and Performance,!! Technical Paper No. 700141, Society of Automotive Engineers, Inc., Two Pennsylvania Plaza, New York, New York, 10001. 4. K. R. Van Horn (Editor), Aluminum Vol. I, pp. 26-28, American Society for Metals, Metals Park, Ohio, 1967.

Advances in Powder Metallurgy ASM International

"This book covers most of the basic concept of mechanical alloying along with recent advancements. Most importantly it covers almost all types of ferrous and non-ferrous alloys, their processing, properties and novel applications"--

Advances in powder metallurgy Springer Science & Business Media

The increasing use of powder metallurgy techniques to make an almost infinite variety of materials and products places greater emphasis on utilization of sophisticated experimental techniques. Usually research and development efforts initiate the use of newly developed equipment and analytical procedures. Indeed, the contents of this book are strongly linked to research endeavors, in both the academic and industrials worlds. However, this volume can serve a much needed function in industrial applied powder metallurgy. Although many research ers will find the contents of great value, the technical personnel more involved with production, quality control, customer services and product design now have at their dispo sal a means to learn about the potential uses of several very important techniques. With today's "knowledge explosion" the present set of papers greatly facilitates the comprehension and adoption of new procedures. If powder metallurgy is to continue its rapid rate of growth in virtually all segments of industry, then the transition of modern equipment and procedures from tools of research and development laboratories to everyday plant operations and applications must be hastened. The editors hope that this volume aids in this process, as well as assisting students and researchers by providing a ready source of up-to-date useful information.

Modern Developments in Powder Metallurgy Cambridge Int Science Publishing

Powder metallurgy, commonly designated by its initial letters asPM or PM, may be defined as the production of useful artefacts from metal powder without passing through the molten state. This introductory text examines the processes by which these powders are produced, and explores their behaviour in the subsequent consolidation stages.

Advances in Powder Metallurgy & Particulate Materials, 2000: P Springer

Since the early 1990s considerable effort has been devoted to the development of metal-based composite powders (MeCP). Reinforcements in MeCP can vary from intermetallic to ceramic or polymer, depending on composition and can also be microstructured or nanostructured, depending on the size of the constituent materials. Composite powders can be used at the macro- and microscale to produce dense composite objects, composite coatings, to provide a combination of properties in one component or to provide specific properties to withstand extreme conditions in service. In addition to this, technology for the synthesis of nanodevices has also evolved. Metal composite powders are produced by a variety of methods based on solid-, liquid- and gas-phase synthesis and mechanosynthesis. Functionality and design are the current drivers for the development of metal composite powders.

Advances in Powder Metallurgy, 1990 Trans Tech Publications Ltd

Advances in Powder Metallurgy & Particulate Materials - 2005 Metal Powder Industry

P-M Steels

Modern Developments in Powder Metallurgy

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