



metals



Special Issue Reprint

Mechanical Alloying: Processing and Materials

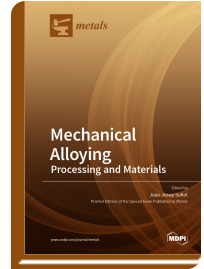
www.mdpi.com/books/reprint/4377

Edited by

Joan-Josep Suñol

ISBN 978-3-0365-2117-6 (Hardback)

ISBN 978-3-0365-2118-3 (PDF)



Mechanical alloying is a technique of producing alloys and compounds that permits the development of metastable materials (with amorphous or nanocrystalline microstructure) or the fabrication of solid solutions with extended solubility. The elements or compounds to be mixed (usually as powders) are introduced in jars usually under a controlled atmosphere.

Regarding the scope of this book, advanced materials have been developed by mechanical alloying: Fe–X–B–Cu (X = Nb, NiZr) nanocrystalline alloys, mixtures of the binary Fe–Mn and Fe–Cr alloys with chromium and manganese nitrides, Mn–Al–Co and Mn–Fe alloys, non-equiatomic refractory high-entropy alloys, nanocrystalline Fe–Cr steels, nanocrystalline Mn–Co–Fe–Ge–Si alloys, Al–Y₂O₃ nanocomposite, and hydride-forming alloys. Likewise, production conditions and ulterior treatments can provide readers interesting ideas about the procedure to produce alloys with specific microstructure and functional behavior (mechanical, magnetic, corrosion resistance, hydrogen storage, magnetocaloric effect, wastewater treatment, and so on). As an example, to obtain the improvement in the functional properties of the alloys and compounds, sometimes controlled annealing is needed (annealing provokes the relaxation of the mechanical-induced strain). Furthermore, the powders can be consolidated (press, spark plasma sintering, and microwave sintering) to obtain bulk materials.



Order Your Print Copy

You can order print copies at

www.mdpi.com/books/reprint/4377

MDPI Books offers quality open access book publishing to promote the exchange of ideas and knowledge in a globalized world. MDPI Books encompasses all the benefits of open access – high availability and visibility, as well as wide and rapid dissemination. With MDPI Books, you can complement the digital version of your work with a high quality printed counterpart.



Open Access

Your scholarly work is accessible worldwide without any restrictions. All authors retain the copyright for their work distributed under the terms of the Creative Commons Attribution License.



Author Focus

Authors and editors profit from MDPI's over two decades of experience in open access publishing, our customized personal support throughout the entire publication process, and competitive processing charges as well as unique contributor discounts on book purchases.



High Quality & Rapid Publication

MDPI ensures a thorough review for all published items and provides a fast publication procedure. State-of-the-art research and time-sensitive topics are released with a minimum amount of delay.



High Visibility

Due to our global network and well-known channel partners, we ensure maximum visibility and broad dissemination. Title information of books is sent to international indexing databases and archives, such as the Directory of Open Access Books (DOAB), and the Verzeichnis Lieferbarer Bücher (VLB).



Print on Demand and Multiple Formats

MDPI Books are available for purchase and to read online at any time. Our print-on-demand service offers a sustainable, cost-effective and fast way to publish MDPI Books printed versions.