



crystals



Special Issue Reprint

Processing Technology of Brittle Crystal Materials

www.mdpi.com/books/reprint/7918

Edited by

Chen Li

Chongjun Wu

Binbin Meng

Shanshan Chen



ISBN 978-3-0365-8866-7 (Hardback)

ISBN 978-3-0365-8867-4 (PDF)

In this reprint, the mechanical properties and material removal behaviors of brittle crystals and ceramics are evaluated using the nanoindentation and scratch tests. Some advanced processing technologies of brittle crystals, ceramics, and composite materials are proposed, such as precision grinding, rotary ultrasonic milling and drilling, continuous polishing, thermal-controlled fracture cutting, laser processing, abrasive flow machining, and the additive manufacturing process. In addition, the relationship between the critical cutting depth and the maximum undeformed chip thickness on the removal mode of brittle materials is analyzed. The theoretical models of grinding force and surface generation are developed by considering the brittle-to-ductile transition, arc-shaped effect, and synchronous vibration of the wheel. These advanced theoretical models and processing methods effectively improve the surface integrity of the workpiece and machining efficiency, and reduced the cutting force and tool wear.



Order Your Print Copy

You can order print copies at

www.mdpi.com/books/reprint/7918

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.