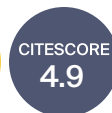




*metals*



*Special Issue Reprint*

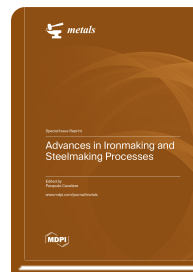
## **Advances in Ironmaking and Steelmaking Processes**

[www.mdpi.com/books/reprint/7318](http://www.mdpi.com/books/reprint/7318)

Edited by  
Pasquale Cavaliere

ISBN 978-3-0365-7548-3 (Hardback)

ISBN 978-3-0365-7549-0 (PDF)



In recent years, ironmaking and steelmaking have witnessed the incorporation of various new processes and technologies that can be operated and organized in different combinations depending on the properties of raw materials and the required quality of the final products. Indications from the steel industry and local and global government institutions suggest that the breakthrough technologies for decarbonization will be based on new fuels and energy vectors. For CO<sub>2</sub>-lean process routes, three major solutions have been identified: decarbonizing, whereby coal would be replaced by hydrogen or electricity in the hydrogen reduction or electrolysis of iron ore processes; the introduction of CCS technology; and the use of sustainable biomass.

Today, hydrogen-based steelmaking is a potential low-carbon and economically attractive route, especially in countries where natural gas is cheap. By considering systems for increasing energy efficiency and reducing the environmental impact of steel production, CO<sub>2</sub> emissions may be greatly reduced by hydrogen-based steel production if hydrogen is generated by means of carbon-free and renewable sources. Currently, the development of the hydrogen economy has received a great deal of attention in that H<sub>2</sub> is considered a promising alternative to replace fossil fuels. Based on hydrogen, the “hydrogen economy” is a promising clean energy carrier for decarbonized energy systems if the hydrogen used is produced from renewable energy sources or coupled with carbon capture and storage (CCS) or nuclear energy.



Order Your Print Copy  
You can order print copies at  
[www.mdpi.com/books/reprint/7318](http://www.mdpi.com/books/reprint/7318)

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.