

# Inaugural Editorial of *Biochar X*: unleashing the endless potential of biochar and ushering in a new era of global interdisciplinary innovation

Wenfu Chen<sup>1\*</sup>, Eilhann E. Kwon<sup>2</sup>, Hailong Wang<sup>3</sup>, Bing Wang<sup>4</sup> and Yanlin Qin<sup>5</sup>

Received: 7 August 2025

Accepted: 14 August 2025

Published online: 29 August 2025

**Keywords:** Biochar, Sustainable development, Energy storage and production, Environmental remediation, Interdisciplinary innovation

In July 2025, we announced the official launch of *Biochar X*. This international academic journal is dedicated to fostering innovative discoveries and advancing applied research in the field of biochar. With a critical mission to expand the frontiers of knowledge, *Biochar X* aims to encourage diverse developments in biochar science, promote global academic exchange and collaboration, and facilitate the translation of scientific research into practical applications.

Biochar, a material derived from the pyrolysis of biomass with a rich history in human civilization, has emerged as a leading focus of scientific research and technological innovation, showcasing remarkable potential. Traditionally used for enhancing agricultural soils, biochar's applications have now expanded to various sectors, including energy, healthcare, and construction. Thanks to its unique physical, chemical, and biological properties, biochar plays a crucial role in tackling many of today's pressing challenges, such as the energy crisis, environmental degradation, food security, and climate change. While significant advancements have been made, the research and practical implementation of biochar are still in a dynamic phase of exploration and development. Numerous uncertainties remain, highlighting the need for collaborative efforts among scientists, engineers, policymakers, and stakeholders worldwide to fully unlock and harness its potential.

The inception of *Biochar X* addresses this urgent need by establishing an international platform for interdisciplinary integration. This journal will serve as a space for researchers in the biochar field to present their latest research findings, exchange cutting-edge academic perspectives, and share innovative practical experience. Our goal is to dissolve the boundaries between traditional disciplines and foster in-depth cooperation and collaborative innovation in biochar research across diverse fields, including energy science, materials science, environmental science, agricultural science, food science, medicine, and architecture.

Within the framework of *Biochar X*, we will concentrate on innovative discoveries and emerging applications of biochar across several key areas. In the energy sector, we focus on biochar's role in energy storage and production, as well as its potential applications as an industrial material in the electronics and metallurgy industries. Our commitment lies in exploring how biochar can facilitate green energy transitions and industrial advancements. In the fields of health, food, and medicine, we investigate the potential benefits of biochar for human beings, including its applications in detoxification and pharmaceuticals. We also examine biochar's role in animal feed, waste management, and maintaining animal health, while assessing its impact on food safety and nutritional value. Our goal is to provide new solutions for the health and well-being of humans and animals. In the construction and building field, we focus on the innovative uses of biochar in the production of building materials, studying its functions in regulating indoor humidity, temperature, air quality, and shielding against electromagnetic radiation. We strive to create healthier, more comfortable, and more environmentally friendly building environments. Furthermore, we recognize the social and policy implications of biochar, including research on the economic feasibility of its production and applications; the development of relevant policies, regulations, and standards; and the enhancement of social acceptance, all aimed at ensuring the sustainable development and widespread adoption of biochar technology.

The launch of *Biochar X* marks a new chapter in the global advancement of biochar research. Through this platform, we aim to unite global expertise, foster innovative thinking, promote interdisciplinary collaboration, and catalyze both fundamental and applied research in the field. Our mission is to accelerate the development and deployment of biochar technologies, contributing to the resolution of global challenges and the achievement of the United Nations Sustainable Development Goals. We warmly invite scholars, researchers, engineers, policymakers, and all readers interested in biochar-related

\* Correspondence: Wenfu Chen ([biochx@gzu.edu.cn](mailto:biochx@gzu.edu.cn))

Full list of author information is available at the end of the article.

research to actively engage with and contribute to the growth of *Biochar X*. Together, let us explore the vast potential of biochar science and usher in a new era of interdisciplinary innovation.

## Declarations

### Competing interests

The authors declare that they have no conflict of interest.

### Author details

<sup>1</sup>Biochar Engineering & Technology Research Center of Liaoning Province, Agronomy College, Shenyang Agricultural University, Shenyang, Liaoning 110866, China; <sup>2</sup>Department of Earth Resources and Environmental Engineering, Hanyang University, Seoul 04763,

Korea; <sup>3</sup>Biochar Engineering Technology Research Center of Guangdong Province, School of Environmental and Chemical Engineering, Foshan University, Foshan, Guangdong 528000, China; <sup>4</sup>College of Resources and Environmental Engineering, Guizhou University, Guiyang, Guizhou 550025, China; <sup>5</sup>School of Chemical Engineering and Light Industry, Guangdong University of Technology, Guangzhou, Guangdong 510006, China



Copyright: © 2025 by the author(s). Published by Maximum Academic Press, Fayetteville, GA. This article is an open access article distributed under Creative Commons Attribution License (CC BY 4.0), visit <https://creativecommons.org/licenses/by/4.0/>.