Biochar Emerging applications

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To all our friends that make possible this eBook.

—Alberto, Carlo and Mauro

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Preface

This eBook is aimed to highlight the perspectives of biochar as a substitute for oil derived carbon materials in advanced applications. In this eBook the most renowned research team from all over the world have brought their experience to assess the viability and perspectives of several innovative biochar applications. Many of the applications discussed in this eBook have been already proposed/tested/developed using other environment unfriendly carbon materials like carbon black, carbon nanotubes and graphene. We will show in this eBook that the environment friendly biochar is a viable alternative to them, its widespread use eventually leading to an eco-friendly era for carbon materials.

A quick look to the index readily shows that biochar has interesting perspectives in various field, some traditional, some innovative. A specific attention is dedicated to the use of biocahar as a filler in composite materials, where it can represent a viable alternative to existing fillers for large scale and low cost applications.

We really hope that you enjoy to read this eBook discovering new biochar applications or deepening your understanding in a particular application where you have not yet think that biochar could be a key material.

We are sure that after reading the eBook you'll share our view: biochar will be among the leadres of a new eco-friendly carbon era.

Enjoy!

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Alberto Tagliaferro

Alberto Tagliaferro is an associate professor of solid-state physics at Politecnico di Torino, Italy, where he is head of the Carbon Group, and an adjunct professor at the University of Ontario Institute of Technology, Canada. He has been active in the field of carbon materials, their properties and applications for almost 30 years and has co-authored over 190 publications.

Carlo Rosso

Carlo Rosso holds a PhD in machine design and construction from Politecnico di Torino (2005) and he has been an Associate Professor in machine design at the Department of Mechanical and Aerospace Engineering of Politecnico di Torino since 2016. His main research topics focus on the dynamics of mechanical components with particular attention on gears and metal replacements in the automotive industries. In particular, he focuses on the usage of nanofiller for improving performance in composite materials and the usage of thermoplastic reinforced materials for structural applications. He is the author of four patents and the founder of two start-ups, one of which is Spin-Off of Politecnico di Torino. He is the (co-)author of 70+ publications on machine design topics. He has a good relationship with the industrial framework of the Piedmont region and he has signed industrial research agreements valuing more than €920 000.

Mauro Giorcelli

Mauro Giorcelli is an electronic engineer with PhD in physics. He is a co-founder of the Carbon Group of Politecnico di Torino (Italy) and his career is dedicated to carbon materials. In particular, he is interested in the properties that carbon materials could impart to composite materials. He started to work in the biochar field over five years ago and his collaborations are worldwide, from Canada to Asia and the European Union. He has published over 80 articles which have garnered over 900 citations (Scopus).

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