

Biochar Emerging applications

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Biochar

Emerging applications

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Edited by

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To all our friends that make possible this eBook.

—Alberto, Carlo and Mauro

Contents

Preface	xiv
Acknowledgements	xv
Editor biographies	xvi
List of contributors	xvii
Part I Biochar: feedstocks, production, and characterization	
1 Introduction to the biochar world with a focus on new possible applications	1-1
<i>Thomas R Miles</i>	
1.1 Introduction	1-1
1.2 Biochar properties	1-1
1.3 Products and markets	1-2
1.4 Forms of biochar	1-4
1.5 Methods to apply biochar	1-5
1.6 Production	1-5
1.7 New applications	1-8
1.8 Summary	1-9
Organizations	1-10
References	1-11
2 Controlling the conversion of biomass to biochar	2-1
<i>Paola Giudicianni, Raffaele Ragucci and Ondřej Mašek</i>	
2.1 Thermal decomposition of biomass undergoing pyrolysis	2-2
2.2 Pyrolysis operating conditions affecting the electrical, mechanical, and adsorption properties of biochar	2-5
2.2.1 Physical, chemical, and mechanical properties of biochar as a filler in composites	2-6
2.2.2 The physical and chemical properties of biochar involved in adsorption mechanisms	2-7
2.2.3 The effect of operating variables on lignocellulosic biomass derived biochar	2-9
2.3 The effect of feedstock composition on biochar properties	2-13
2.3.1 Biochar from raw vegetal biomass	2-14
2.3.2 Toxicity issues related to the presence of organic and inorganic contaminants in biochar from phytoremediation activities	2-18

2.3.3	Biochar from residues of biological and biochemical treatments of biomass	2-18
2.4	Can biomass properties be altered to control biochar properties?	2-20
2.4.1	Biomass doping for enhanced biochar production	2-20
2.4.2	Mechanical pre-treatment of biomass	2-21
2.5	Predictive approaches for biochar properties: current trends and perspectives	2-21
	Acknowledgements	2-23
	References	2-23
3	Large scale biochar production and activation	3-1
	<i>Edoardo Miliotti and David Chiaramonti</i>	
3.1	Introduction	3-2
3.2	Slow pyrolysis	3-4
3.2.1	Kilns	3-5
3.2.2	Retorts	3-5
3.2.3	Converters	3-6
3.3	Hydrothermal carbonization	3-8
3.4	Activated carbon production	3-9
3.4.1	Rotary kilns	3-10
3.4.2	Multiple hearth furnaces	3-11
3.4.3	Fluidized beds	3-11
3.5	Conclusions	3-11
	References	3-11
4	Microwave heating-assisted pyrolysis of biomass for biochar production	4-1
	<i>Sherif Farag and Jamal Chaouki</i>	
4.1	Microwave fundamentals	4-1
4.2	The main parameters to describe microwave heating	4-2
4.3	Microwave-assisted pyrolysis of biomass and waste	4-2
4.4	The effects of microwaves on biochar properties	4-3
4.5	Applications of biochar from microwave pyrolysis	4-5
4.5.1	Wastewater treatment	4-5
4.5.2	Agricultural sector	4-7
4.5.3	Gas adsorption	4-8
4.6	Conclusions	4-8
	References	4-9

5	Biochar characterization methods	5-1
	<i>Ondřej Mašek, Anna Bogush, Anjali Jayakumar, Christian Wurzer and Clare Peters</i>	
5.1	Introduction	5-1
	5.1.1 Sampling	5-2
	5.1.2 General sample preparation for analysis	5-2
5.2	Biochar compositional analysis	5-3
	5.2.1 Elemental (CHNSO) analysis	5-3
	5.2.2 ICP-OES/MS	5-4
	5.2.3 X-ray fluorescence	5-4
	5.2.4 XAS (XANES and EXAFS)	5-4
	5.2.5 XPS	5-5
5.3	Structural characterization of biochar	5-5
	5.3.1 X-ray μ -tomography	5-6
	5.3.2 Electron microscopy (SEM/EDX)	5-6
	5.3.3 Surface area	5-7
	5.3.4 Raman spectroscopy	5-7
	5.3.5 X-ray diffraction (XRD)	5-8
5.4	Biochar stability	5-9
	5.4.1 Elemental ratios (O/C and H/C)	5-9
	5.4.2 TGA-based methods (proximate analysis and R50 index)	5-9
	5.4.3 Edinburgh stability tool	5-10
	5.4.4 Nuclear magnetic resonance (NMR) spectroscopy	5-11
5.5	Other key biochar characteristics	5-11
	5.5.1 Electrical and electrochemical properties	5-11
	5.5.2 pH	5-12
	5.5.3 Surface functional groups (FTIR)	5-12
	5.5.4 Magnetic properties	5-13
5.6	Conclusions	5-13
	References	5-14
6	Cellulose nanocrystals as natural feedstocks for advanced carbon materials	6-1
	<i>Mattia Bartoli, Michael Chae and David C Bressler</i>	
6.1	Cellulose nanocrystals: production and properties	6-1
6.2	Cellulose nanocrystals as the feedstock for new carbonaceous materials	6-5

6.3	Perspectives on the cellulose nanocrystals and related carbon materials	6-9
	References	6-9
7	Biochar-based circular economy	7-1
	<i>Harn Wei Kua, Ondřej Mašek and Souradeep Gupta</i>	
7.1	A circular economy based on bio-waste recycling and recovery	7-1
7.2	Biochar as part of a circular economy	7-2
7.3	Waste recycling through biochar production and utilization	7-3
7.4	Upcycling of residues via biochar as an additive in construction materials	7-3
7.5	Cascade/sequential uses of biochar	7-4
7.6	Beyond technologies	7-5
	7.6.1 Enabling policies to accelerate the development of biochar	7-5
	7.6.2 Developing biochar within an industrial symbiotic network	7-6
7.7	Conclusions	7-7
	References	7-7

Part II Biochar: a filler for composites

8	Shielding effectiveness of biochar composites at microwave frequency	8-1
	<i>Muhammad Yasir and Patrizia Savi</i>	
8.1	Introduction	8-1
8.2	Transmission, reflection, and absorption	8-3
8.3	Waveguide method for transmission reflection evaluation	8-4
	8.3.1 Sample fabrication	8-4
8.4	Conclusions	8-8
	Acknowledgements	8-9
	References	8-9
9	Flame retardant polymer systems containing biochar: current state-of-the-art and perspectives	9-1
	<i>Samuele Matta, Mattia Bartoli and Giulio Malucelli</i>	
9.1	Introduction	9-1
9.2	Flame retarded systems containing biochar	9-2

9.3	Conclusions and perspectives	9-5
	References	9-6
10	Review of biochar as a sustainable mortar admixture and evaluation of its potential as coating for PVA fibers in mortar	10-1
	<i>Harn Wei Kua, Souradeep Gupta and Sek Teng Koh</i>	
10.1	Introduction—the need to improve the fiber reinforcement of cementitious composites	10-1
10.2	A review of the state-of-the-art of biochar as a supplementary admixture in cementitious composites	10-3
	10.2.1 Biochar as an additive in cementitious composites	10-3
	10.2.2 Biochar as a supplement for self-healing concrete	10-5
	10.2.3 The role of biochar to modify carbonation potential and enhance the performance of recycled aggregate concrete	10-5
	10.2.4 Biochar as an additive in concrete and lightweight mortar subjected to elevated temperature	10-6
	10.2.5 Biochar based coating for polymer fibers to improve the strength of fiber-reinforced mortar	10-7
10.3	Materials and methods	10-7
10.4	Results and analyses	10-9
	10.4.1 Characterization of biochar	10-9
	10.4.2 Mechanical characterization and influence on mechanical properties	10-10
	10.4.3 Influence on permeability	10-12
10.5	Conclusions	10-13
	References	10-13
11	Biochar addition to inorganic binders	11-1
	<i>Daniele Ziegler, Elisabetta Di Francia, Patrizia Savi and Jean-Marc Tulliani</i>	
11.1	Introduction	11-2
11.2	Electromagnetic interference shielding effectiveness	11-2
11.3	Internal curing ability	11-4
11.4	Cargo for self-healing cementitious materials	11-6
11.5	Carbon sink	11-7
11.6	Patents: an updated survey	11-8
11.7	Conclusions	11-10
	References	11-10

12	Insight into the mechanical performance of biochar containing reinforced plastics	12-1
	<i>Carlo Rosso, Oisik Das and Mattia Bartoli</i>	
12.1	Towards non-conventional carbonaceous fillers: biochar as a potential resource for the production of reinforced plastics	12-1
12.2	Bulk properties of biochar containing reinforced plastics	12-2
12.3	Surface properties of biochar containing reinforced plastics	12-9
12.4	Future challenges: a perspective on the uses of biochar for advanced mechanical applications	12-10
	References	12-11

Part III Biochar: other emerging applications

13	Sensing properties of biochar	13-1
	<i>Daniele Ziegler, Elisabetta Di Francia and Jean-Marc Tulliani</i>	
13.1	Introduction	13-1
13.2	Sensor optimization	13-2
13.3	Biochar as a humidity sensor	13-3
13.4	Biochar in electrochemical sensing applications—electrode modifier	13-5
13.5	Biochar in electrochemical sensing applications—heavy metals detection	13-6
13.6	Biochar in electrochemical sensing applications—organic compounds	13-10
13.7	Conclusions	13-15
	References	13-15
14	Monolithic wood biochar properties and supercapacitor performance relationships	14-1
	<i>Aldrich Ngan, Johnathon N Caguiat, Li Tao, Donald W Kirk and Charles Q Jia</i>	
14.1	Introduction	14-2
14.2	Experimental details	14-3
	14.2.1 Biochar electrode preparation and characterization	14-3
	14.2.2 Electrode performance in a supercapacitor	14-4
14.3	Results and discussion	14-6
	14.3.1 Relationships between biochar physical properties	14-6
	14.3.2 Dependence of supercapacitor performance on biochar properties	14-9

14.4	Conclusions	14-12
	References	14-13
15	Applications of biochar in gas/water purification and in contaminated soil remediation	15-1
	<i>Hanieh Bamdad, Griffin Loeb sack, Naomi Klinghoffer, Ken Yeung, Kelly Hawboldt and Franco Berruti</i>	
15.1	Biochar as an adsorbent	15-2
	15.1.1 Biochar in gas adsorption	15-2
	15.1.2 Biochar in liquid adsorption	15-4
15.2	Biochar soil remediation	15-8
	15.2.1 Inorganic pollutants/resources	15-8
	15.2.2 Organic pollutants	15-9
15.3	Summary and conclusions	15-9
	References	15-9
16	Applications of biochar catalysts	16-1
	<i>Naomi Klinghoffer</i>	
16.1	Introduction	16-1
16.2	Biochar properties	16-2
	16.2.1 The role of biochar morphology in catalytic activity	16-3
	16.2.2 The role of biochar composition in catalytic activity	16-3
	16.2.3 Role of surface functionalities in catalytic activity	16-4
16.3	Modified biochar catalysts	16-5
	16.3.1 Biochar as a catalyst support	16-5
	16.3.2 Activation and functionalization of biochar catalysts	16-5
16.4	Applications for biochar catalysts	16-7
	16.4.1 Tar removal	16-7
	16.4.2 Biodiesel production	16-8
	16.4.3 NO _x removal	16-9
	16.4.4 Electrochemical applications	16-10
	16.4.5 Bio-oil upgrading and biomass hydrolysis	16-11
16.5	Conclusions and outlook	16-11
	References	16-12

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 biochar 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, Carlo and Mauro would be grateful to all the authors that with their friendship and professional efforts have given their outstanding contribution that brought this eBook from the realm of wishful thinking to reality. IOP staff support in all steps of the editorial process is also gratefully acknowledged.

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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.

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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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