

Sustainable Carbon Capture

Technologies and Applications

Edited by
Humbul Suleman, Philip Loldrup Fosbøl,
Rizwan Nasir, and Mariam Ameen



CRC Press

Taylor & Francis Group

Boca Raton London New York

CRC Press is an imprint of the
Taylor & Francis Group, an **informa** business

Contents

Preface.....	ix
Acknowledgments.....	xiii
Editor Biographies	xv
Contributors	xvii
Chapter 1 Introduction to Sustainable Carbon Capture.....	1
<i>Philip Loldrup Fosbøl, Humbul Suleman, Hallvard F. Svendsen, and Michael Z. Hauschild</i>	
Chapter 2 Reactive Chemical Absorption of CO ₂ by Organic Molecules.....	29
<i>Graeme Puxty, Marcel Maeder, and Robert Bennett</i>	
Chapter 3 Ionic Liquids in Carbon Capture.....	73
<i>George E. Romanos, Niki Vergadou, and Ioannis G. Economou</i>	
Chapter 4 Gas Hydrates for CO ₂ Capture	143
<i>Nicolas von Solms</i>	
Chapter 5 Sustainable Metal-Organic Framework Technologies for CO ₂ Capture.....	161
<i>Hira Naveed, Haleefa Shaheen, Ranjana Kumari, Reshma Lakra, Asim Laeeq Khan, and Subhankar Basu</i>	
Chapter 6 Novel CO ₂ Separation Membranes.....	185
<i>Asif Jamil, Muhammad Latif, Alamin Idris Abdulgadir, Danial Qadir, and Hafiz Abdul Mannan</i>	
Chapter 7 Cryogenic CO ₂ Capture.....	209
<i>Khuram Maqsood, Abulhassan Ali, and Aymn Abdulrahman</i>	
Chapter 8 Advance Reforming Technologies for Biofuel Production from Carbon Capture	225
<i>Ain Syuhada, Muhammad Izham Shahbudin, and Mohammad Tazli Azizan</i>	

Chapter 9	Blue/Bio-Hydrogen and Carbon Capture	245
	<i>Md. Abdus Salam, Md. Tauhidul Islam, and Nasrin Papri</i>	
Chapter 10	Improvements in Process Design, Simulation, and Control.....	267
	<i>Haslinda Zabiri, Faezah Isa, Tahir Sultan, Muhammad Afif Asyraf Affian, Anmol Fatima, and Abdulhalim Shah Maulud</i>	
Chapter 11	Special Case Studies in Sustainable Carbon Capture	291
	<i>Jasper A. Ros, Juliana G.M-S. Monteiro, Earl L.V Goetheer, Randi Neerup, Wentao Gong, Sai Hema Bhavya Vinjarapu, Jens Kristian Jørsboe, Sebastian Nis Bay Villadsen, and Philip Løldrup Fosbøl</i>	
Chapter 12	Modelling the Socio-Economic Impacts of Carbon Capture and Storage Deployment: Current Practices and Pathways Forward	323
	<i>Judy Jingwei Xie, Piera Patrizio, and Niall Mac Dowell</i>	
Chapter 13	Emerging Technologies for Sustainable Carbon Capture	341
	<i>Mariam Ameen, Dzeti Farhah Mohshim, Rabia Sharif, Rizwan Nasir, and Hilmi Mukhtar</i>	
Index	359