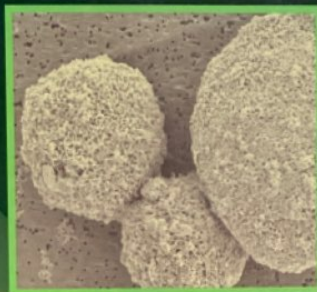
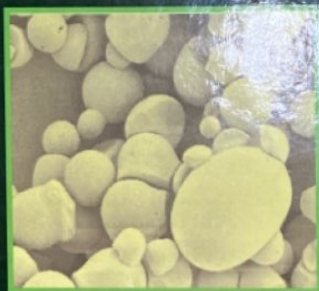


Starch-Based Polymeric Materials and Nanocomposites

Chemistry, Processing, and Applications

Edited by
Jasim Ahmed
Brijesh K. Tiwari
Syed H. Imam
M.A. Rao



CRC Press
Taylor & Francis Group

Contents

Preface.....	vii
Editors.....	ix
Contributors	xi
 Chapter 1	
Introduction: Starch as Biopolymer and Nanocomposite	1
Jasim Ahmed, Brijesh K. Tiwari, Syed H. Imam, and M.A. Rao	
 Chapter 2	
Starch: Chemistry, Microstructure, Processing, and Enzymatic Degradation.....	5
Syed H. Imam, Delilah F. Wood, Mohamed A. Abdelwahab, Bor-Sen Chiou, Tina G. Williams, Gregory M. Glenn, and William J. Orts	
 Chapter 3	
Starch as Gelling Agent.....	33
Thava Vasanthan, Jihong Li, David Bressler, and Ratnajothi Hoover	
 Chapter 4	
Plasticized Starch.....	69
Xiaofei Ma, Peter R. Chang, and Jiugao Yu	
 Chapter 5	
Rheological and Thermal Properties of Starch and Starch-Based Biopolymers.....	85
M.A. Rao, Jirarat Tattiyakul, and Hung-Ju Liao	
 Chapter 6	
Modification of Biodegradable Polymers through Reactive Extrusion-I.....	101
I. Moura and A.V. Machado	
 Chapter 7	
Modification of Biodegradable Polymers through Reactive Extrusion-II.....	133
Sathya B. Kalambur	
 Chapter 8	
Starch-Derived Cyclodextrins and Their Future in the Food Biopolymer Industry.....	167
C. González-Barreiro, R. Rial-Otero, J. Simal-Gándara, G. Astray, A. Cid, J.C. Mejuto, J.A. Manso, and J. Morales	

Chapter 9	
Functional and Physicochemical Properties of Cyclodextrins	183
Jun Zhao and Shan-Jing Yao	
Chapter 10	
Introduction of Starch into Plastic Films: Advent of Starch in Plastics	231
R.E. Harry-O'kuru and Sherald H. Gordon	
Chapter 11	
Starch-Based Edible Films and Coatings	239
Mahesh Gupta, Charles Brennan, and Brijesh K. Tiwari	
Chapter 12	
Starch as a Feedstock for Bioproducts and Packaging	255
Gregory M. Glenn, Syed H. Imam, William J. Orts, and Kevin Holtman	
Chapter 13	
Chemometric Analysis of Multicomponent Biodegradable Plastics by Fourier Transform Infrared Spectrometry: The R-Matrix Method	271
Sherald H. Gordon	
Chapter 14	
Starch Polymer as Advanced Material for Industrial and Consumer Products.....	287
Randal L. Shogren	
Chapter 15	
Recent Progress in Starch-Based Biodegradable Hybrids and Nanomaterials.....	301
Peter R. Chang, Xiaofei Ma, Debbie P. Anderson, and Jiugao Yu	
Chapter 16	
Mechanical, Rheological, and Thermal Properties of Starch-Based Nanocomposites.....	325
Jasim Ahmed	
Chapter 17	
Starch Nanocomposites and Nanoparticles: Biomedical Applications.....	361
Anitha R. Dudhani	

Chapter 18	Prelims
Application of Life Cycle Assessment for Starch and Starch Blends	373
Ali Abas Wani and Preeti Singh	
Index	397