

Contents

Contributing authors — VII

Pawan Kumar Rakesh, Lalit Ranakoti, Mayank Pokhriyal, Shaurya Bhatt,
Vivek Bahuguna

Chapter 1

Processing on polylactic acid and its applications — 1

Pérez-Fonseca A.A., Rodrigue D., Martín del Campo A.S.,
Robledo-Ortiz J.R.

Chapter 2

Polylactic acid-agave fiber biocomposites: processing, properties, weathering performance, and biodegradation — 13

Alma Berenice Jasso-Salcedo, Carolina Caicedo, Abril Fonseca-García,
Claudio Alonso Díaz-Cruz, Enrique Javier Jiménez-Regalado,
Rocio Yaneli Aguirre-Loredo

Chapter 3

Polylactic acid composite materials for packaging and the consumption of food products — 31

Leire Goñi-Ciurriz, Itziar Vélaz

Chapter 4

Antibacterial properties of polylactic acid composites for food packaging — 73

Maryam Safaei, Seyed M.A. Razavi, Omid Yousefzade, Azadeh Sadeghi

Chapter 5

Barrier properties of polylactic acid — 101

Azadeh Sadeghi, Seyed M.A. Razavi, Omid Yousefzade, Maryam Safaei

Chapter 6

Heat-sealing properties of polylactic acid and polylactic acid composites — 123

Omid Yousefzade, Seyed M.A. Razavi, Azadeh Sadeghi, Maryam Safaei

Chapter 7

Reactive extrusion of polylactic acid — 141

Merve Dandan Doganci, Erdinc Doganci

Chapter 8

Surface properties of polylactic acid-based composites — 163

Pawan Kumar Rakesh, Mayank Pokhriyal, Shaurya Bhatt, Vivek Bahuguna

Chapter 9

Study on mechanical properties of *Himalayacalamus falconeri* fiber-reinforced polylactic acid composites — 181

Pawan Kumar Rakesh, Shaurya Bhatt, Vivek Bahuguna, Mayank Pokhriyal

Chapter 10

The fabrication process of the pine needle fiber-reinforced polylactic acid composites — 217

D.V. Lohar, A.M. Nikalje, P.G. Damle

Chapter 11

Development of novel hybrid green polymer composites (HGPC) with a combination of biowaste material as fillers — 227

Pawan Kumar Rakesh, Jayant Kumar, Vipin Kumar, Inderdeep Singh

Chapter 12

Joining behavior of bio-filler-based polyester composites — 257

Pawan Kumar Rakesh, Neel Kamal Gupta, Shaurya Bhatt, Vikas Rastogi, Inderdeep Singh

Chapter 13

Dimensional analysis of 3D-printed knuckle joint and bearing pillow block — 271

Pawan Kumar Rakesh, Lalit Ranakoti, Shaurya Bhatt, Mayank Pokhriyal

Chapter 14

Processing and applications of silk fiber-reinforced biocomposite for tissue engineering — 289

Pawan Kumar Rakesh, Lalit Ranakoti, Shaurya Bhatt, Mayank Pokhriyal

Chapter 15

The development of silk fiber-, jute fiber-, *Grewia optiva* fiber-reinforced biopolymer composites — 303

Pawan Kumar Rakesh, Shaurya Bhatt, Vivek Bahuguna, Mayank Pokhriyal

Chapter 16

Machinability characteristics of pine needle fiber-reinforced polylactic acid composites — 321

Index — 331