

Contents

<i>Preface</i>	<i>vii</i>	
<i>List of abbreviations</i>	<i>ix</i>	
1	Natural fibers and their composites	1
1.1	Introduction	1
1.2	Sources of natural fibers	5
1.3	Surface modification of natural fibers	13
1.4	Chemical treatments	14
1.5	Physical treatment	22
1.6	Sisal and jute fiber	23
1.7	Wood	32
1.8	Bamboo	35
1.9	Cotton	37
1.10	Flax fiber	39
1.11	Mechanical properties of natural fibers	39
1.12	Natural fiber polymer composites	42
1.13	Applications of natural fiber composites	48
1.14	Significance and economics of natural fiber polymer composites	53
1.15	Sources of further information and advice	55
1.16	References	55
2	Introduction to tribology of polymer composites	59
2.1	What is tribology?	59
2.2	Origin of friction	61
2.3	Definition of wear and its classification	65
2.4	How friction and wear are measured	66
2.5	Mechanical characterization of polymer composites	72
2.6	Tribology characterization of polymer composites	74
2.7	Significance of composites in tribology	79
2.8	References	82

vi Contents

3	Sisal reinforced polymer composites	84
3.1	Sisal fiber	84
3.2	Sisal–polymer composites	90
3.3	Mechanical properties of sisal–polymer composites	94
3.4	Tribological behavior of sisal–polymer composites	96
3.5	References	107
4	Jute reinforced polymer composites	108
4.1	Jute fiber	108
4.2	Jute–polymer composites	112
4.3	Tribological behavior of jute composites	121
4.4	References	127
5	Cotton reinforced polymer composites	129
5.1	Cotton fiber	129
5.2	Cotton–polymer composites	136
5.3	Tribological behavior of cotton–polyester composites	146
5.4	References	160
6	Bamboo reinforced polymer composites	162
6.1	Bamboo	162
6.2	Bamboo–polymer composites	165
6.3	Tribological behavior of bamboo and bamboo–polymer composites	172
6.4	References	179
7	Wood reinforced polymer composites	180
7.1	Wood	180
7.2	Wood–plastic composites	183
7.3	Tribological behavior of wood flour–polymer composites	192
7.4	Sources of further information and advice	195
7.5	References	196
<i>Appendix: Chemical composition of natural plant fibers</i>		197
<i>Index</i>	<u>No. DE INVENTARIO 3494</u>	201

FECHA DE INGRESO 19-02-2010

No. DE FACTURA Donación

PROVEEDOR Dr. Herbe' Cruz.