

Table of Contents

Preface

Chapter 1: Natural Fibers, Bamboo and Plant-Based Materials

Ternary Blended Cementitious Matrix for Vegetable Fiber Reinforced Composites G. Mármol, H. Savastano, M. Bonilla, M.V. Borrachero, J.M. Monzó, L. Soriano and J. Payá	3
Macro, Micro and Nanoscale Bamboo Fiber as a Potential Reinforcement for Composites V. da Costa Correia, F.M. Siqueira, R. Donizetti Dias and H. Savastano	11
Determination of Shear Stress in Pull out Tests in Laminated Bamboo <i>Guadua angustifolia</i> C.P. Takeuchi, M. Estrada and D.L. Linero	17
Variation in the Fiber Percentage in Specimens of Laminated Bamboo <i>Guadua angustifolia</i> C.P. Takeuchi, M. Estrada and D.L. Linero	23
Preparation of Polypropylene Composites with High Levels of Coir Short Fiber for Use in Products by Injection C.R. Passatore, A. Lopes Leão and D. dos Santos Rosa	28
Functionally Graded MDP Panels Using Bamboo Particles R. Teodoro, J. Raabe, D. Wisky Silva, R. Farinassi Mendes, L.M. Mendes and G.H.D. Tonoli	39
Physical Properties of MDP Panels Produced with Different Proportions of Wood and Pseudostem B.M.R. Guimarães, J.B. Guimarães Jr., E.R. de Oliveira, J.B. Campomori and L.M. Mendes	48
Effect of Fiber and Starch Incorporation in Biodegradation of PLA-TPS-Cotton Composites J.R.N. de Macedo and D. dos Santos Rosa	54
Buriti Palm Fiber (<i>Mauritia flexuosa</i> MART.): Characterization and Studies for its Application in Design Products I.M. Cattani and J. Baroque-Ramos	63
Study of the Potential Employment of Malvaceae Species in Composites Materials B.M.G. Guimarães, D. Cayuela Marín, W.F. Zonatti, W. Mantovani, C. Relvas, F. Cunha, R. Fangueiro, H. Savastano and J. Baroque-Ramos	75
Synthesis of Silver Nanoparticles with Potential Antifungal Activity for Bamboo Treatment O. Pandoli, F. Ventura Pereira-Meirelles, E. Monteiro Lobo Lobo Luz, A. Assumpção, R. dos Santos Martins, T. del Rosso and K. Ghavami	86
Sheath Bamboo Leaves Used at High Pressure Architect J. Garcia and V.M. John	92
Analysis of Fiber Reinforced Laminated Timber Beams C.A. Abade Bertolino, N.T. Mascia, C.D. Basaglia and B. Fazendeiro Donadon	100
Nanocellulose Films from Amazon Forest Wood Wastes: Structural and Thermal Properties L. Bufalino, G.H.D. Tonoli, T.G. Costa, T.d.P. Protásio, A.R. Sena Neto, J.M. Marconcini, M. Guimarães Junior and L.M. Mendes	110
Effect of Natural Fiber Hornification on the Fiber Matrix Interface in Cement Based Composite Systems S.R. Ferreira, F. de Andrade Silva, P.R.L. Lima and R.D. Toledo Filho	118
The Elastic Modulus and Poisson's Ratio of Laminated Bamboo <i>Guadua angustifolia</i> C.P. Takeuchi, M. Estrada and D.L. Linero	126

Chapter 2: Non-Conventional and Innovative Research and Technology

Comparative Study on the Effect that Coir Fibers Have on the Dynamic or Quasi-Static Elastic Moduli of Glass Fiber Laminates Obtained by the Vacuum Bag Technique M. Villalón, H. Vega, N. Montoya, B. Rubio, J. Hernandez, O. Mendoza, R. Salas-Zuñiga, U. Reyes-Zamora, R. Radillo, J.L. Reyes-Araiza and A. Manzano-Ramirez	137
Feasibility of Using MDP Panels, Compared to Conventional Particleboards B.M.R. Guimarães, J.B. Guimarães Jr., J.B. Campomori, R.F. Mendes and L.M. Mendes	145

Application of Enzymes for Stabilization of Soils in Paving J.A.C. Malko, R. Brazetti, M.D.T. Casagrande and B.H. de Albuquerque e Silva	150
--	-----

Chapter 3: Construction Materials and Technologies for Sustainability, Energy Efficiency and Affordable Housing

Evaluation of Calcined Clay Lightweight Aggregates Made with Alkali Activators B.C. de Santis, J.A. Rossignolo, L.M. Gavioli and M.R. Morelli	163
Use of Ceramic Sanitaryware as an Alternative for the Development of New Sustainable Binders L. Reig, M.V. Borrachero, J.M. Monzó, H. Savastano, M.M. Tashima and J. Payá	172
Behavior of Cement Pastes and Mortar Containing Phosphogypsum H. El Nouhy, E. Khattab and S. Zeedan	181
Effects of Incorporating Dune Sand as Fine Aggregate Replacement in Self-Compacting Concrete E. Khattab	189
Treatments on CDW Recycled Aggregates Surface Using Silane-Based Water Repellent W. Franco Santos, M. Quattrone and S.C. Angulo	197
Performance Evaluation of Human Hair Fiber Reinforcement on Lime or Cement Stabilized Clayey-Sand A. Zerrouk, B. Lamri, C. Vipulanandan and S. Kenai	207
Modular Footbridges of Guadua Angustifolia Kunth F.A. Lamus Báez, C.F. Urazán Bonells and S. Andrade Pardo	218
Connection between a Column and its Foundation for Guadua Angustifolia Structures under Lateral Loads S. Andrade Pardo, F.L. Báez and N. Torres Castellanos	227
Static Compaction of Soils with Varying Clay Content A. Zhemchuzhnikov, K. Ghavami and M. dal Toé Casagrande	238
Concrete Water Footprint Assessment Methodologies Y.L. Mack, L.S. Oliveira and V.M. John	247
Analysis of the Durability of Lightweight Concrete Protected by an Acrylic Layer in an Aggressive Acid Environment C.C. Ribeiro, F. de Souza Abreu, T. Starling, P.J. Lopes Neto and J.D. Silva Pinto	255

Chapter 4: Recycling of Industrial Materials, Agricultural and Urban Waste

Thermal Insulation Particleboards Made with Wastes from Wood and Tire Rubber M. da Silva Bertolini, A.L. Christoforo and F.A. Rocco Lahr	263
Evaluation of Physical Properties of Particleboard Produced from Sugarcane Leaves E. Hoffmann Martins, J.B. Guimarães Jr., T.d.P. Protásio, R.F. Mendes and B.M.R. Guimarães	270
Evaluation of Dehydration Temperature on Properties of Recycled Gypsum Plaster V. Moraes Pereira and G. Camarini	275
Use of Tire Rubber Residue in Reinforced Concrete Pipes T.F.S. Trentin, J.C.B. Moraes, J.L.P. Melges, J.L. Akasaki, A.P. Fugii, M.M. Tashima and J.S. Camacho	283
Improvement of Collapsible Soil Behavior of a Lateritic Soil Using Rice Husk Ash L.P. Fagundes, J.D. Yacoub, A.C. Lima, F.R. Nakatsuchi, J.A. Lollo, J.L. Akasaki and M.M. Tashima	290
Building Design and Construction Process Influence in Construction Waste Generation S.C. Angulo, T. Gulo and M. Quattrone	297
Possibilities of Reusing Sugar Cane Straw Ash in the Production of Alternative Binders J.C.B. de Moraes, D.C. de Araújo Queiroz, J.L. Akasaki, J.L.P. Melges, M.V. Borrachero, J. Payá and M.M. Tashima	304
Gypsum Plaster Waste Recycling: Analysis of Calcination Time J.R. de Moraes Rossetto, L. Santos Correia, R. Henrique Geraldo and G. Camarini	312

Assessment of Inorganic Bonded Paperboards Produced from Kraft and Recycled Newsprint	
J.M. Owoyemi, B. Ajayi and O.S. Ogunrinde	322
Thermal and Mechanical Behaviors of Cementitious Composites Reinforced with Bagasse	
K. Bilba, L. Rodier, C. Onésippe and M.A. Arsène	330
Effect of Association of Sugarcane Bagasse with Eucalyptus Wood on the Quality of Particleboard	
C.L. Farrapo, R. Farinassi Mendes, D. Wisky Silva, L.M. Mendes, J.R. Soares Scolforo and J.B. Guimarães Jr.	341
Cover System for Roofs Manufactured with Recycled Polyethylene and Rubber	
R. Gaggino, M. Positieri, J. Kreiker, M.P. Sanchez Amono, R. Arguello and J.C. Baronetto	348
Study of Pozzolan Properties of Two Sugarcane Bagasse Ash Samples from Honduras	
M. Bonilla, M.V. Borrachero, J.M. Monzó, J.L. Akasaki, D. Ma-Tay and J. Payá	357
Study on the Pozzolan Effect of Sugarcane Bagasse Ash from Taretan, Michoacán, Mexico, on a Portland Cement Mortar	
J.L. Rodríguez Bucio, J.L. Reyes-Araiza, E.M.A. Guzmán, A. Manzano-Ramirez, R. Ramírez-Jiménez, W. Martínez Molina, C. Cobreros-Rodríguez and L. Pérez Rea	367
Use of Waste Wood for Particleboard Production	
A. de Lima Felix, C. Rezende Pinto Narciso, F. Silveira Lima, R. Farinassi Mendes, L.M. Mendes and J.R. Soares Scolforo	375
Use of Castor Hull and Sugarcane Bagasse in Particulate Composites	
D. Wisky Silva, C.L. Farrapo, R. Farinassi Mendes, L.M. Mendes, G.H.D. Tonoli and J.B. Guimarães Jr.	381
Cementitious Composites Reinforced with Kraft Pulp Waste	
D. Wisky Silva, R. Farinassi Mendes, C. Freire, B.L. Vilela, G.H.D. Tonoli, R.S. Teixeira, S.F. dos Santos and H. Savastano	390
Dimensional Stability of Particleboards Produced with Soybean Residue	
J.B. Guimarães, Í.L. Guimarães, F.J.N. Lisboa, R.F. Mendes and B.M.R. Guimarães	399
Mechanical Behavior of Reinforced Clayey Soil with Fine Crushed Polyethylene Terephthalate	
I.M.R. Martínez, N.d.S.L. Louzada, L.M. Repsold and M.D.T. Casagrande	404
A Binder from Alkali Activation of FCC Waste: Use in Roof Tiles Fabrication	
M.A. Mas, M.M. Tashima, J. Payá, M.V. Borrachero, L. Soriano and J.M. Monzó	411
Performance of Lime-Metakaolin Pastes and Mortars in Two Curing Conditions Containing Kaolin Wastes	
A.F.N. de Azerêdo, G. Azeredo and A.M.P. Carneiro	419