## **Table of Contents**

## **Preface**

## **Chapter 1: Fire Retardancy and Thermal Decomposition of Biopolymers and Biocomposites**

Development of Advanced Bio Thermoset Polymers from Sustainable Resources K. Khiari, A. Berrouane and M. Derradji	3
Investigation of Thermomechanical and Flammability Behaviors of Hemp/Polypropylene Reinforced Polylactic Acid Composites D. Javasimman, J. A. Bralesch, B. A. Braseth, A. Sivaraman, B. Singh and B. Satishkuman	0
D. Jeyasimman, J.A. Prakash, R.A. Prasath, A. Sivaraman, P. Singh and P. Satishkumar	9
Handling Composites at Aircraft Accident Sites: An Evaluation of the Fracture Features in Burnt CFRP after the Application of a Fixant Solution	2.1
N. Zimmermann, P.H. Wang and K. Pullen	21
Chapter 2: Fire Resistance of Green Concrete	
The Influence of Organic Fibers on the Fire Resistance of Concrete  J. Klobása and R. Hela	29
Performance Evaluation of Sustainable High-Strength Lightweight Concrete Incorporating Wastes as Aggregates at Elevated Temperatures  A.M. Tahwia, M. Amin, N. Abdelaziz and A.M. Heniegal	35
Geopolymer-Concrete-Based Eco-Friendly and Fire-Resistant Concrete Structures: Effect	33
of Exposure to High Temperature at Varying Heating Duration S.N. Abd Razak, N. Shafiq, L. Guillaumat, S.A. Farhan and V.K. Lohana	53
Evaluation of the Mechanical Properties of Recycled Coarse Aggregate Concrete against the	55
Action of Fire	
A.J. Lamas Chavez, A.F. Aliaga Guevara and P.J.P. Torres	61
Investigation of NWC and Structural LWC Using Local Material in the UAE Exposed to Elevated Temperatures	
H. Alharmoodi, R. Hawileh, A. Hajjaj, A. Aljarwan and J.A. Abdallah	71
Chapter 3: Fireproofing Evaluation of Reinforced Concrete and	
Structures	
The Efficiency of Non-Destructive Testing to Estimate the Damage Level of Fiber- Reinforced Concrete Exposed to High Temperatures	
A.M. Nefoussi, E. Mohammed, H. Siad, R. Chihaoui, M. Mouli, M. Lachemi and A. Kada	83
Evaluation of Structural Response in Ultra-High-Strength Concrete and Carbon Fiber Reinforced Frames Exposed to High Temperatures Using Numerical Simulation	101
D.L. Manco, A.L. Palacios, V.I. Davila, J.R. Casas and R.M. Delgadillo	101
Method of Identification of Mechanical Characteristics of Concrete of Reinforced Concrete Crossbars according to the Results of Fire Tests S. Pozdieiev, O. Nekora, S. Fedchenko and T. Shnal	109
Assessment of the Influence of Features of Crack Formation in Reinforced Concrete	109
Products on their Fire Resistance	
A. Vasilchenko, O. Danilin, E. Darmofal and T. Lutsenko	117
Effect of Slenderness Ratio on the Behavior of RC Bearing Walls under Fire Exposure M. Assad, R. Hawileh, G. Karaki and J.A. Abdallah	125
Investigation the Effects of Fire on an Industrial Metallic Structure A.C. Murariu, I. Duma and I.A. Perianu	135

## **Chapter 4: Combustion Modelling**

Cluster Mechanism of the Explosive Processes Initiation in the Matter	
D. Tregubov, Y. Slepuzhnikov, M. Chyrkina-Kharlamova and A. Maiboroda	145
Thermodynamic Calculations of the Main Characteristics of the Combustion Process of	
Pyrotechnic Nitrate-Metallized Mixtures with Additives of Organic and Inorganic	
Substances under External Thermal Influences	
N. Koziar, O. Kyrychenko, A. Khyzhniak and O. Diadiushenko	157
Regulations of the Influence of External Thermal Influences on Speed and Explosive Safe Combustion Modes of Pyrotechnic Nitrate-Metallized Mixtures with Metal Fluoride	
N. Koziar, O. Kyrychenko, K. Viktorija and O. Diadiushenko	169