

# Table of Contents

## Preface

## Chapter 1: Cracks and Failures in Laminates and Hybrid Materials

|                                                                                                                                                                            |    |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| <b>Comparison of a Hybrid Pipe Design for Replacement of New and Corroded Steel Pipes Subjected to Transverse Impacts</b><br>P. Townsend, A. Nevarez and M. Carboneras     | 3  |
| <b>An XFEM-Based Analysis on the Effect of Pre-Existing Cracks on the Woven GFRP with Central Side Edge Notch</b><br>D.R. Mohapatra, S. Behera and S. Mondal               | 9  |
| <b>The Application of a Hybrid Damage Modeling and Simulation Methodology to Composite Laminate Ultimate Strength Predictions</b><br>G. Qi, H.H. Liu, I.Y. Kim and D. Wowk | 15 |
| <b>Evaluation of a Fiberglass Patching Kit for Repairing Cracked Steel Plates via the PZT-SLDV Lamb Wave Technique</b><br>N. Amiri and L.Y.L. Yu                           | 21 |
| <b>Effect of Notch Shape and Size on the Mechanical Performance of Woven GFRP Laminate: A Numerical Investigation</b><br>D.R. Mohapatra, S. Behera and S. Mondal           | 27 |

## Chapter 2: Strength of Materials, Corrosion and Tribology

|                                                                                                                                                                                                                                          |     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| <b>Investigation of Pipe Failures in Sprinkler Systems: A Case Study</b><br>I. Duma, E. Dobrin, G. Marginean, R. Faur, A. Afezolli, I.A. Perianu and R.N. Popescu                                                                        | 35  |
| <b>Characterization of a Low-Friction EPDM for Dynamic Sealings Applications: Tensile, Wear Behavior and Hot Water Resistance</b><br>D. Foltu, G.I. ooi, D.T. Pascal, I.D. Uțu and V.A. erban                                            | 45  |
| <b>3D-Printed Protective Button Covers for Technical Devices</b><br>C. State and D.A. Predu                                                                                                                                              | 55  |
| <b>Investigation of the High Cycle Fatigue Behaviour of Aluminium Alloy Clinched Joints</b><br>A. Shukurea, P.Z. Kovács and J. Lukács                                                                                                    | 65  |
| <b>The Research of the Cavitation Erosion Resistance of the Aluminium Alloy 2017 a Structure Obtained by WIG Remelted</b><br>I. Bordeasu, A.N. Luca, R. Parmanche, C. Ghera, C.L. Salcianu, L.M. Micu, D. Ostoia, I. Duma and V.I. Safta | 77  |
| <b>The Cavitation Behavior of the 6082 Alloy Aluminium Structure Obtained by WIG Remelted</b><br>I. Bordeasu, R. Parmanche, C. Ghera, C.L. Salcianu, A.N. Sîrbu, N.A. Luca, I. Duma, S.T. Duma and C.E. Podoleanu                        | 89  |
| <b>Review on Welding Criteria Related to Hydrogen Transport in Carbon Steel Pipelines</b><br>Á. Pap, Á. Meilinger and M. Gáspár                                                                                                          | 101 |