

# Table of Contents

## Preface

## Chapter 1: Fatigue and Fracture of Structural Materials

### **Fatigue Life Enhancement of Binder Jet Manufactured Bronze Infiltrated 316L by Severe Shot Peening**

T. Rautio, M. Jaskari, M. Keskitalo, M. Hietala and A. Järvenpää 3

### **Investigation of the Effect of Novel Two-Step Austenitization Process on the Microstructure and Mechanical Properties of ADI**

D. Joshi, S. Putatunda, S. Panneerselvam and J. Boileau 11

### **Bending Fatigue Strength of WAAM Ultra-High-Strength Steel**

M. Hietala, M. Keskitalo, M. Jaskari, T. Rautio and A. Järvenpää 19

## Chapter 2: Mechanical Preferences of Concrete Structures

### **Determination of the Deformation Behavior of Concrete Structures Reinforced with FRP Bars: A Theoretical Study**

K. Mrkvova, D. Vašátko, F. Girgle and P. Štěpánek 29

### **The Sweating Slab Syndrome - A Scientific Analysis**

M. Kehrer and T. Nelson 39

### **Post-Tensioned Slabs in Garages – A Rational Choice**

J. Galic, P. Presecki and V. Miljanovic 51

### **Minimum Reinforcement against Brittle Failure in Concrete Structures**

M. Słowik and I. Skrzypczak 61

### **Multicriteria Optimization of Reinforced Concrete Floor Slabs**

A. Horakova, A. Kohoutkova and I. Broukalova 67

### **Study on Flexural Performance of Fiber Reinforced Concrete Beams Using Glass Fiber Reinforced Polymer Bars and Steel Rebars**

K. Hemalatha and D.R. Prasad 81

### **Optimizing Finite Element Meshes for Structural Analysis: The Role of GiD Pre-Processing in Multi-Story Building Models**

M.M.A. Hamouda and E. Yee 91

### **Experimental Verification of Punching Shear with FRP Reinforcement: Innovations in the New Eurocode Generation**

D. Vašátko, K. Mrkvova, F. Girgle, V. Kostiha and P. Štěpánek 99

### **Anomaly of the Course of the Internal Forces of the Ring Slabs**

J. Vaskova and P. Mateckova 109