

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