Contents

1 Role of the Structural Nonlinearity in Enhancing the Performance of a Vibration Energy Harvester Based on the Electrets Materials ................................................. 1 Eugenio G.M. Brusa and Mircea Gh. Munteanu

2 Numerical Analysis of Fracture of Pre-stressed Ferroelectric Actuator Taking into Account Cohesive Zone for Damage Accumulation ......................................................... 23 Sergii Kozinov and Meinhard Kuna

3 Modelling the Constitutive Behaviour of Martensite and Austenite in Shape Memory Alloys Using Closed-Form Analytical Continuous Equations ........................................ 41 Arathi Pai, Thomas Niendorf, Phillip Krooss, Isabel Koke, Ansgar Traechtler and Mirko Schaper

4 Experimental Investigations of Actuators Based on Carbon Nanotube Architectures ........................................... 67 Sebastian Geier, Thorsten Mahrholz, Peter Wierach and Michael Sinapius

5 Efficient Experimental Validation of Stochastic Sensitivity Analyses of Smart Systems ........................................ 97 Steffen Ochs, Sushan Li, Christian Adams and Tobias Melz

6 Design of Control Concepts for a Smart Beam Structure with Sensitivity Analysis of the System ............................... 115 Sushan Li, Steffen Ochs, Elena Slomski and Tobias Melz

7 Adaptive Inductor for Vibration Damping in Presence of Uncertainty ................................................................. 133 Bilal Mokrani, Ioan Burda and André Preumont
8 Active Control of the Hinge of a Flapping Wing with Electrostatic Sticking to Modify the Passive Pitching Motion .......................... 153
Hugo Peters, Qi Wang, Hans Goosen and Fred van Keulen

9 Control System Design for a Morphing Wing Trailing Edge .... 175
Ignazio Dimino, Monica Ciminello, Antonio Concilio, Andrè Gratias, Martin Schueller and Rosario Pecora

10 Towards the Industrial Application of Morphing Aircraft Wings—Development of the Actuation Kinematics of a Droop Nose ................................. 195
Stefan Storm and Johannes Kirn

11 Artificial Muscles Design Methodology Applied to Robotic Fingers ................................................................. 209
J.L. Ramírez, A. Rubiano, N. Jouandeau,
L. Gallimard and O. Polit

12 Methods for Assessment of Composite Aerospace Structures ..... 227
T. Wandowski, P. Malinowski, M. Radzienski, S. Opoka
and W. Ostachowicz

13 Design Optimization and Reliability Analysis of Variable Stiffness Composite Structures ....................... 245
A. Sohouli, M. Yildiz and A. Suleman

14 Robust Multi-objective Evolutionary Optimization-Based Inverse Identification of Three-Dimensional Elastic Behaviour of Multilayer Unidirectional Fibre Composites .................. 267
Mohsen Hamdi and Ayech Benjeddou