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Autore	Zhang Xiao-Sheng
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3.3 Micro-Nanohierarchical Structures Based on Parylene-C3.3.1 Fabrication and Method; 3.3.2 The Properties of Fabricated MNHS Parylene-C Films; 3.4 The Interaction of Multiscale Structures on Flexible Materials; 3.5 The Surface Modification Based on Post-DRIE Process; 3.5.1 Fluorocarbon Plasma Treatment Based on Post-DRIE Process; 3.5.2 The Mechanism of Enhancing Hydrophobicity by Using Post-DRIE Process; 3.6 Conclusions; References; 4 Flexible Triboelectric Nanogenerators: Principle and Fabrication; Abstract ; 4.1 Working Principle of TENG; 4.2 Design of Flexible Sandwich-Shaped TENG 4.2.1 Structural Geometry and Surface Profile4.2.2 Theoretical Analysis; 4.2.3 Finite Element Simulation; 4.3 Fabrication of the Sandwich-Shaped TENG; 4.4 Electric Properties Test and Analysis of the Sandwich-Shaped TENG; 4.4.1 Test System and Brief Results; 4.4.2 Frequency Effect of External Force on TENG; 4.4.3 Structural Effect on TENG; 4.4.4 Powering Ability for Practical Applications; 4.5 Conclusions; References; 5 Flexible Triboelectric Nanogenerators: Enhancement and Applications; Abstract ; 5.1 Enhancement of TENG Based on Single-Step Fluorocarbon Plasma Treatment 5.1.1 Structural Design and Fabrication

Sommario/riassunto

This book presents a universal mass-production micro/nano integrated fabrication technology, which can be used to realize micro/nano hierarchical structures on Si-based materials and flexible polymeric materials. This fabrication technology has been systematically investigated by using experimental measurements, mechanism analyses, theoretical simulations and so on. Three common materials (i. e., silicon, PDMS and Parylene-C) with micro/nano hierarchical structures have been successfully fabricated, which also show several attractive properties. Furthermore, this book introduces this fabrication technology into microenergy field, and proposes several high-performance nanogenerators, of which practical applications have also been studied in commercial electronic device and biomedical microsystem.
