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Nota di contenuto	Preface -- A Biography of Bhushan L. Karihaloo -- Oriented Thermomechanics for Isothermal Planar Elastic Surfaces under Small Deformation, by Xia-Hui Pan, Shou-Wen Yu, Xi-Qiao Feng -- The Energetics of Self-Organised InAs/GaAs(100) Quantum Dots, by Simon P.A. Gill -- Elastic and Electric Fields in Quantum Wire/Dot Nanostructures via the Perturbation Theory, H. J. Chu, E. Pan, J. Wang -- Overall Properties of Thermoelastic Nanocomposites Incorporating Interface Energies, by Zhuping Huang, Yongqiang Chen, Ruchao Huang, Lizhi Sun -- Size and Surface Effects on Stress-Diffusion Doupling in Silicon Nanowire Electrodes, by Y. F. Gao and M. Zhou -- Growth Instability of Strained Film: an Elastic Green's Function Force Monopole Approach, by Hao Hu and Feng Liu -- Fast Flow Through Nanotubes and Tube Blow-Out, by Duangkamon Baowan, Barry J. Cox and James

M. Hill -- Mechanics and Multidisciplinary Study for Creating Graphene-based van der Waals Nano/microscale Devices, by Yilun Liu, Jiarui Yang, Ze Liu, Yao Cheng, Francois Grey, Quanshui Zheng -- Mechanical Properties of Materials Considering Surface Effects, by Holm Altenbach, Victor A. Eremeyev, and Nikita F. Morozov -- A Study on Cell-Substrate Interfacial Interaction Modulated by Substrate Stiffness, by Jianyong Huang, Lei Qin, Chunyang Xiong and Jing Fang -- Energy Approach for Nanoscale Beams with Surface Effects, by C. Liu, A. S. Phani and R.K.N.D. Rajapakse -- Multiple-scale Interface Fracture Analysis for Thin Film/Substrate System under Temperature Mismatch, by M.Z. Li, H.S. Ma, L.H. Liang, Y.G. Wei -- Quality Verification of Polished PCD Composites by Examining the Phase transformations, by Y. Chen and L. C. Zhang -- Size –Dependent Elastic Properties of Honeycombs, by H. X. Zhu -- Computational Modeling of Surface Effects: Distinctions from Classical Surface Elasticity Theory, by Harold S. Park -- Computational Thermomechanics with Boundary Structures, by Paul Steinmann and Ali Javili -- Thermodynamics and Kinetics of the Nanocheckerboard Formation, by Yong Ni , Linghui He, and Armen G. Khachaturyan -- Understanding Diffusion-Induced-Stresses in Lithium Ion Battery Electrodes, by Yang-Tse Cheng, Mark W. Verbrugge, Rutooj Deshpande -- Mechanical and Viscoelastic Properties of Polymer Layers on Solid-Liquid Interfaces, by Sheng Qin, Xuefeng Tang, Xianbin Du, Lifei Zhu, Yifeng Wei, Osung Kwon, Jiajie Fang, Ping Wang, and Da-Ming Zhu -- A density Functional Study of Zinc Oxide Elastic Properties under High Pressure, by Bin-Bin Wang and Ya-Pu Zhao -- A Multiscale Approach to the Influence of Geometry and Deformation on the Electronic Properties of Carbon Nanotubes, by Dong Qian -- Heterogeneous Structures with Negative Effective Mass, by Shanshan Yao, Xiaoming Zhou and Gengkai Hu -- Tuning Long-Range Elastic Interaction between Adsorbates by External Straining, by L. H. He -- On the Stress Field and Dislocation Emission of an Elliptically Blunted Mode III Crack with Surface Stress Effect, by J. Luo -- Mechanics of Surface Enhanced Microcantilever Sensors, by Y.H. Xue, Y. Wang and H.L. Duan.

Sommario/riassunto

This volume constitutes the proceedings of the IUTAM Symposium on Surface Effects in the Mechanics of Nanomaterials and Heterostructures, held in Beijing, 8-12 August, 2010. The symposium brought together the most active scientists working in this area from the fields of solid mechanics, composites, physics, and materials science and summarized the state-of-the-art research results with a view to advancing the frontiers of mechanics and materials physics. and heterostructures have a large fraction of their atoms at surfaces and interfaces. These atoms see a different environment to those in the interior and can have a substantial effect on the overall mechanical and physical behaviour of a material. The last decade has witnessed a growing interest in the study of surfaces and how the surface behaviour couples with that of the bulk to determine the overall system response. The papers in this proceedings cover: extension of continuum mechanics and thermodynamics to the nano-scale; multiscale simulations; surface effects in monolithic nano-scale elements and nanostructures; mechanical and physical properties of nanomaterials and heterostructures; self-assembly, etc. The surface stress effect is inherently a multidisciplinary and fertile field; the Symposium truly reflects these features. This IUTAM Symposium was also dedicated to Professor Bhushan L Karihaloo of Cardiff University on his impending retirement, in recognition of his contributions to the fields of solid mechanics and nanomechanics, and to IUTAM activities in general. .

Nanomaterials

