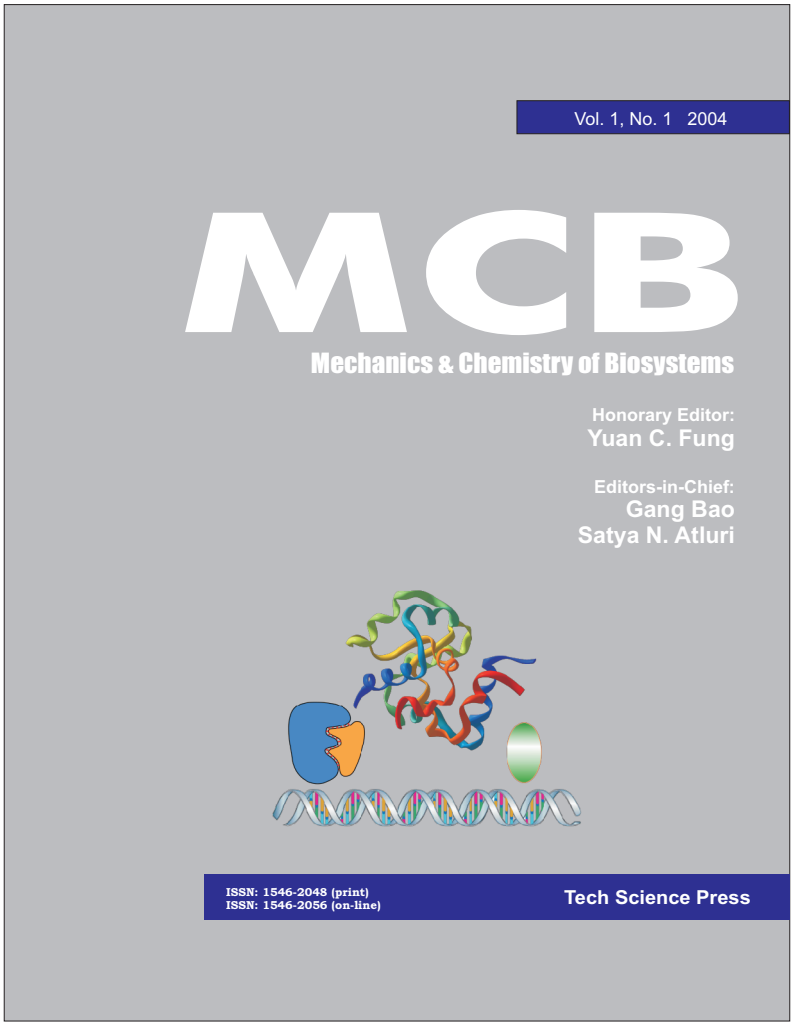

Aims and Scope:

Mechanics and chemistry are fundamentally linked together in the science and engineering of biological systems. The aims of this journal are to help establish a better understanding of the mechanochemical coupling in living cells, to facilitate the studies of the mechanics of biomolecules including proteins and nucleic acids, and to provide a knowledge base for engineering biosystems such as hybrid bio/abio nano- and micro-mechanical systems. The scope of the journal is broad-based, and includes:

Mechanical Behaviour of Single Cells: Studies of how cells sense mechanical forces or deformations, and transduce them into biological responses. Specifically, studies of how mechanical forces alter cell growth, differentiation, movement, signal transduction, protein secretion and transport, gene expression and regulation. Studies of single cell behavior, including viscoelastic properties, cell growth, spreading, rounding, crawling, cell adhesion, cell cytoskeleton dynamics, cell-cell and cell-ECM interactions.

Effect of Force on the Function of Biomolecules: Studies of how mechanical forces and deformation affect the conformation, binding/reaction, and transport of biomolecules. Studies of how the structural rigidity of DNA, RNA and proteins under stretching, twisting, bending and shearing affects DNA condensation, gene replication and transcription, DNA-protein/RNA-protein interactions, protein function, protein-protein and receptor-ligand interactions. Studies of mechanochemical coupling in biomolecular motors. Studies of the mechanics of subcellular structures and protein assemblies/complexes.

Bio-inspired Devices and Biomimetic Systems: DNA and proteins as components of hybrid nanosystems; interfacing issues in organic/inorganic nanodevices; mechanics issues in bioMEMS/bioNEMS, biomolecular probes, micropatterned and functionalized surfaces, and biosensors/actuators. Studies of self-assembly processes and mechanics of self-assembled layers of biological materials, assembly of nanoparticles and biomolecules. Biomineralization. Biomimetic materials; engineered cells and tissues.

Multiscale Computational Tools: Development of simulation models and numerical methods for the analysis, modeling, and prediction of the

behavior and function of single cells and biomolecules, and for the integration, optimization, control, strength and durability of hybrid multifunctional biological nano- and micro-systems. Methodologies include Molecular and Langevin dynamics of biomolecules and Mesoscopic modeling techniques. Multi-spatial and-time-scale modeling methodologies, and seamless coupling of nano-micro-macro computational models.

Experimental Biomechanics Methods: Development of experimental techniques to study the mechanical behavior of cells including local probes to deform a portion of the cell, mechanical deformation of a single cell, and simultaneous mechanical stressing of a population of cells. Methods for single-molecule biomechanics studies, including attachment, positioning and manipulating of single molecules, imaging and measuring deformation, and applying simple or combined loads.

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