

Call for papers, Special issue

Mechanics of cells, tissues, and biomaterials

The paramount role of mechanics in life has recently been the center of attention of many researchers. This special issue will be focusing on the role of mechanics in the life of cells and tissues and their interactions with biomaterials. Original research and review papers are solicited for review and publication in the journal Mechanical Sciences¹. Mechanical Sciences is an academic open-access journal sponsored by the Library of Delft University of Technology and The Netherlands Organization for Scientific Research (NWO). Thanks to the generous financial support of The Netherlands Organization for Scientific Research, all manuscripts will be processed and published free of any charge. The work submitted for publication should not have been published before except in the form of an abstract. The review process will start immediately after submission of the papers. Accepted papers will be published in the first regular issue of the journal after acceptance. The published papers will be finally collected in a special issue of the journal.



Guest Editors

Amir A. Zadpoor, Delft University of Technology (Delft, NL)
Harrie Weinans, Erasmus Medical Center (Rotterdam, NL)

Background

Due to the highly hierarchical structure of tissues, the consequences of the mechanical forces and motions are transferred back and forth along several time and spatial scales. The mechanical behavior of tissues is therefore studied not only at the tissue scale but also in relation with cells and proteins in a multi-scale modeling scheme.

The environment in which cells and tissues live also plays an important role. The mechanical interactions between cells and tissues and their surrounding living entities (other cells and tissues) and/or synthetic biomaterials need to be studied as well. The synthetic biomaterials may have been used for replacement of some of the tissues (implants) or regeneration of tissues in the laboratory (scaffolds, etc.).

The topics of interest include (but are not limited to):

Tissue Mechanics

- Bone and cartilage mechanics
- Soft tissue mechanics
- Bone tissue adaptation and fracture healing
- Tissue growth, adaptation, and differentiation including the mechanics of morphogenesis

¹ <http://www.mechanical-sciences.net/>

² http://www.mechanical-sciences.net/submission/general_terms.html

- Patient-specific finite element modeling of tissues
- Characterization of soft and hard tissues including computational models developed for nanoindentation, scanning acoustic microscopy, etc.
- Fracture of bone and other biological materials

Cell Mechanics

- Cytoskeletal mechanics
- Cell-biomaterial interactions
- Multi-scale models

Mechanics of Biomaterials

- The mechanics of tissue-implant complexes
- Optimal design of biomaterials and implants
- Mechanical characterization of biomaterials (static, fatigue, permeability, etc)
- Bio-adhesives, bio-interfaces, and their mechanical performance
- Mechanics of active biomaterials

Submission procedure

The submissions should follow the general guidelines detailed in the submission webpage of the journal². Authors can submit their contributions by using the online registration form on the website of the journal:

http://www.mechanical-sciences.net/submission/manuscript_submission.html

When submitting the paper, it is important that the authors choose the correct special.

Key dates

Submission deadline: 15 November 2012

Reviews start: right after submission of the paper

Reviews due: as soon as possible before 1 January 2013

Acceptance: as soon as the review process is concluded

Publication: First regular issue after acceptance (late 2012, early 2013)

² http://www.mechanical-sciences.net/submission/general_terms.html