



Brief biographical note

Dr. Mirela TOTH-TASCAU is a mechanical engineer who obtained her Bachelor's degree and Ph.D. at POLITEHNICA University of Timisoara. After a short period in the field of design followed by research at Polytechnic Institute of Timisoara, she began teaching and research activity at Mechanics and Vibrations Department in Faculty of Mechanical Engineering, POLITEHNICA University of Timisoara. Since 2000, she is involved in teaching and research in the field of Biomedical Engineering at POLITEHNICA University of Timisoara. Since 2007 Dr. Mirela TOTH-TASCAU is director of Research Centre *Centre for Modeling the Prosthetic Appliances and Surgical Operations on Human Skeleton* - CMPICUSU from Politehnica University of Timisoara.

At CMPICUSU, Dr. Mirela TOTH-TASCAU has worked on developing of different orthopedic and dental implants especially hip and knee prostheses. Also, she works in the field of theoretical and experimental Biomechanics, based on instrumented motion analyses, both for patients having different pathologies, sport men and animals. The research programs focused, apart from other issues, on the spine mobility, modeling and numerical analysis of biomechanical structures, and developments of some new implants for medical applications.

Her professional and scientific activity comprises: handbooks/textbooks (7); papers published in international scientific journals (15); papers published in national scientific journals (68); papers published in the proceedings of international conferences (102); papers published in the proceedings of national conferences (60); invention (1); participating in different international (2) or national research projects (47); member of the scientific committee of different conferences (8).

Name, salutation: Professor Mirela TOTH-TASCAU

Current appointment:

Biomedical Engineering Group,
Department of Mechanics and Strength of Materials,
Faculty of Mechanical Engineering,
POLITEHNICA University of Timisoara, Romania



Educational Background:

- PhD in Mechanical Engineering, Faculty of Mechanical Engineering, POLITEHNICA University of Timisoara, 1997.
- Engineering Diploma in Fine Mechanics, Faculty of Mechanical Engineering, Polytechnic Institute of Timisoara, 1984.

Experience:

- PhD supervisor in the field of Mechanical Engineering, "Politehnica" University of Timisoara (2009-present)
- Member of Biomedical Engineering Group, Department of Mechanics and Strength of Materials, Faculty of Mechanical Engineering, POLITEHNICA University of Timisoara (1990-present)
- Director of Research Centre *Centre for Modeling the Prosthetic Appliances and Surgical Operations on Human Skeleton* - CMPICUSU from Politehnica University of Timisoara (2007-present)
- Member of Scientific Council of Politehnica University of Timisoara (2008-present)



4th International Conference "Biomaterials, Tissue Engineering & Medical Devices"



- Responsible for quality management system in CIDUCOS Testing Laboratory – accredited by RENAR (2005-present)
- Board President of Applied Engineering Sciences Domain in Politehnica University of Timisoara (2007-present)
- Board President of Medical Engineering Specialization in Politehnica University of Timisoara / Coordinator of Medical Engineering Study Programme (2007-present)
- Coordinator of Implants, prostheses and biomechanical evaluation Master Programme, (2008-present)
- Coordinator of Bio-photonics and imagistic techniques for health care Master Programme, (2007 – 2008)
- Board Vice President of Applied Engineering Sciences Domain in Politehnica University of Timișoara, (2005-2007)
- Board Vice President of Medical Engineering Specialization in Politehnica University of Timișoara, (2005-2007)

Research/clinical interest

Research activity in the field of:

- Fundamental and applied research in Biomechanics;
- Motion analysis of patients and animals having different deficiencies in order to evaluate the disability rate or the rehabilitation process;
- Motion analysis of sportsmen in order to evaluate and improve their performances, and prevent the possible injuries;
- Spine mobility assessment and posture analysis;
- Static and dynamic study of the plantar pressure distribution both for normal and disabled subjects;
- Modeling and numerical analysis of stress and strain distributions in bone structures, implants, assembly of bone/implants and prosthetic components;
- Conception and design of dental and orthopedic implants both for human patients and animals;
- Conception, design and manufacturing of prosthetic devices;
- Image acquisition and processing, 3D reconstruction of biological structures based on CT technique and specialized software, in order to develop a complex data base for different types of skeleton deficiencies and to produce customized implants;
- Development of new methods to test various materials, implants and prosthetic devices.

Present Areas of Research

The ongoing research work is characterized by the following keywords: Biomechanics, Motion analysis, Spine mobility, Modeling, Numerical analysis, Dental and orthopedic implants, Retrieval analysis of explants.

Title of your BIOMMEDD 2010 lecture:

Modelling and numerical analysis of a cervical spine unit.