International Conference on Advancements of Medicine and Health Care through Technology

PROGRAMME

MediTech 2014

4th Edition
International Conference

ADVANCEMENTS OF MEDICINE AND HEALTH CARE
THROUGH TECHNOLOGY

MediTech

2014, 5-7 June

4th edition

Cluj-Napoca, Romania

PROGRAMME

Hosted by the National Society for Medical Engineering
and Biological Technology, Romania
at
Technical University of Cluj-Napoca
26-28 Baritiu str., Cluj-Napoca
on
5th – 7th June 2014

www.meditech.utcluj.ro
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Technical University of Cluj-Napoca

University of Medicine and Pharmacy "Iuliu Hatieganu" Cluj-Napoca

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Wednesday, 4th June 2014

19.00  Welcome Party
“Sinaia” Restaurant
43 Sinaia str., Cluj-Napoca

Thursday, 5th June 2014

9.00 – 10.00  Registration:
Technical University of Cluj-Napoca, 15 C. Daicoviciu str., Cluj-Napoca;

10.00 – 10.30  Opening Ceremony (Aula “Alexandru Domsa”):
• Prof. Radu V. Ciupa, Technical University of Cluj-Napoca, Romania, Chairman of the Conference;
• Prof. Aurel Vlaicu, Rector of the Technical University of Cluj-Napoca, Romania;
• Prof. Alexandru Irimie, Rector of the “Iuliu Hatieganu” University of Medicine and Pharmacy, Cluj-Napoca, Romania;
• Prof. Radu Munteanu, President of the Romanian Academy of Technical Sciences, Cluj-Napoca subsidiary, Romania.

10.30 – 11.00  Invited Paper: Advances in ultrasonography. Contrast-enhanced ultrasound - CEUS
Prof. Radu Badea, “Iuliu Hatieganu” University of Medicine and Pharmacy, Cluj-Napoca, Romania

11.00 – 11.30  Coffee break

11.30 – 12.00  Invited Paper: The study of alive cells is still a challenge for both biomedical researchers and engineers
Prof. Mircea Leabu, University of Medicine and Pharmacy "Carol Davila" and "Victor Babes" National Institute of Pathology, Bucharest, Romania

12.00 – 12.30  Invited Paper: FES-supported movement restoration, from biological bracing to functional augmentation
Prof. Winfried Mayr, Medical University of Vienna, Austria

12.30 – 13.00  Invited Paper: The Virtual Physiological Human: Infrastructure and Applications
Prof. Rod Hose, University of Sheffield, UK
13.00 – 14.30  Lunch break

14.30 – 16.00  SESSION 1: Health Care Technology I
Chairman: Prof. Patricia Lawford, University of Sheffield, UK
Location: Room H21 (26-28 Gh. Baritiu str.)

1.1 Importance of Lateral Cephalogram in Treating Class III Patients
V. Tărmure, O.C. Almășan, D. Buhățel, A. Ilea, P. Jiman, M. Iancu
and A. Pop

1.2 The Use of Digital Imaging in the Evaluation of Perception in
Facial Asymmetry Caused by Facial Nerve Disorders
A. Ilea, C. Vâjâean, L. C. Hurubeanu, B. Boșca, V. Tărmure, V. E.
Trombitaș, R. S. Câmpian and S. Albu

1.3 The Use of Breath Test for the Assessment of Gastric Emptying
Rate in Clinical Practice
T. Surdea-Blaga, L. David and D.L. Dumitrascu

1.4 Age-specific Basal Rate Profile Characteristics at Initiation of
Insulin Pump Therapy
G. Ghimpeteanu, G. Roman, D. Ciobanu and A. Alionescu

1.5 Artificial Intelligence applied in Diagnostic and Treatment of
Dukes C Colorectal Cancer
B. Micu, C. Micu, A. Andercou and N. Constantea

1.6 Glaucoma risk - Correlations between Measurements from
Optical Coherence Tomography and Ocular Response Analyzer
H. Demea, S. Demea, R. Holonec and G. Lupu

14.30 – 16.00  SESSION 2: Medical Devices, Measurement and Instrumentation I
Chairman: Prof. Octavian Baltag, „Grigore T. Popa” University of
Medicine and Pharmacy, Iasi, Romania
Location: Room S01 (26-28 Gh. Baritiu str.)

2.1 An Argumentative Approach to Assessing Safety in Medical Device
Software using Defeasible Logic Programming
S.A. Gómez, A. Groza and C.I. Chesñevar

2.2 Sensorial System for Visually Impaired Individuals
V.D. Zaharia, S. Crișan, B. Țebrean, V.T. Popa and R.A. Munteanu

2.3 Assessment of Peripheral Diabetic Neuropathy: New versus
Conventional Methods
G.V. Inceu and I.A. Veresiu

2.4 An Evolutionary Multi-objective Optimization Approach to Design
the Sound Processor of a Hearing Aid
P. Faragó, C. Faragó, S. Hintea and M. Cîrlugea
2.5 *Equipment for SEMG Signals Acquisition and Processing*
E.P. Vesa and B. Ilie

2.6 *Assessment of Temperature Distribution in Intraperitoneal Chemohyperthermia*
C. Lungoci, I. Raus, T. Oniu, D. Moga, N. Stroia, V. Muntean, D. Petreus and I. A. Mironiuc

16.00 – 16.30 **Coffee break**

16.30 – 18.00 **SESSION 3: Molecular Bioengineering; Biomechanics; Modelling and Simulation**
**Chairman:** Prof. Dan Mandru, Technical University of Cluj-Napoca, Romania
**Location:** Room H21 (26-28 Gh. Baritiu str.)

3.1 *TPPS4 Controlled Release from PVA Hydrogels in Photodynamic Therapy of Cancer*
R.M. Ion and S.C.F. Patachia

3.2 *Preparation and Characterization of Anchoring Films Designed for the Biofunctionalization of Porous Titanium*
A.M. Salantiu, P. Pasca, V. Popescu, S. Simon, L. Muresan and C.O. Popa

3.3 *Synthesis of Nanoceria for Biomedical Applications*
A. Balint, A. Mesaros, L. Mirea, V. Bogdan and L. Perju-Dumbrava

3.4 *Reliability of Gait Parameters Depending on HJC Estimation Method*
M. Krepelka, M. Toth-Taşcău and D.I. Stoia

3.5 *Comparison of Vertebral Strengths derived from FE models of the Vertebral Body and the Vertebral Body with Posterior Elements*
C-H. Lee, P. Landham, R. Eastell, M.A. Adams, P. Dolan and L. Yang

3.6 *Water as a Third Compartment within the Skin's Stratum Corneum*
N.M. Birlea, S.I. Birlea and E. Culea

16.30 – 18.00 **SESSION 4: Medical Devices, Measurement and Instrumentation II**
**Chairman:** Prof. Radu Ciorap, „Grigore T. Popa” University of Medicine and Pharmacy, Iasi, Romania
**Location:** Room S01 (26-28 Gh. Baritiu str.)

4.1 *SQUID gradiometer for biomagnetic fields*
O. Baltag and C. M. Rau

4.2 *Micro-tweezers Based on V-beam Thermal Actuator*
R.S. Chiorean, M.C. Dudescu, M. Pustan and M. Hardau
4.3 **A Method to determine the Nominal Diameter for Hip Joint with No “Pre-wear” Data**  
C. Neamțu, F. Popișter, R. Ghinea and V. Tompa

4.4 **Pars Plana Vitrectomy with the 25 + Vitrectomy System**  
S.D. Nicoară, A. Moroti, L. Sârbu, A. Popeangă and C. Cristian

4.5 **Using laser scanning to measure the difference between classical individual custom trays and 3D ideal individual custom trays in the totally edentulous**  
D. Buhatel, Z. Buna, R.S. Campian, A. Ilea, M. Moga, V. Tarmure, C. Neamtu

4.6 **Study Regarding a System for Evaluation of the Sportsmen’s Balance**  
L. D. Milici, M. R. Milici and N. Dumitrasca

**19.00 Conference Dinner**  
“Hanul Dacilor” Restaurant  
86A Constantin Brancusi bd., Cluj-Napoca

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**Friday, 6th June 2014**

**09.00 – 10.30**  
**SESSION 5: Health Care Technology II**  
**Chairman:** Prof. Mihaela Morega, University “Politehnica” of Bucharest, Romania  
**Location:** Room H21 (26-28 Gh. Baritiu str.)

5.1 **A Proposal for a Driving System of a Four DOF Rehabilitation Exoskeleton**  
B. Chetran, O. Tătar, S. Noveanu and D. Mândru

5.2 **Neuromuscular Electrical Stimulation for Mobility Support of Elderly**  

5.3 **Design of a Multi-site Electrical Stimulation System for Transcutaneous Lumbar Posterior Roots Stimulation**  

5.4 **Didactic Application for Monitoring Biomedical Parameters and Data Transfer over the Network Using Virtual Instrumentation**  
R. Munteanu jr., C. Mureșan, D. Iudean, M. Munteanu and B. Amza
5.5 Low-cost Platform for Remote Health Monitoring and Home Environment Analysis
V. Tompa, D. Hurgoiu and C. Neamțu

5.6 Towards Improving Situation Awareness during Emergency Transportation through Ambulance-2-X Communication and Semantic Stream Reasoning
A. Groza, A. Marginean and B. Iancu

09.00 – 10.30  SESSION 6: Medical Imaging, Image and Signal Processing I
Chairman: Prof. Ioan Jivet, Politehnica University Timisoara, Romania
Location: Room S01 (26-28 Gh. Baritiu str.)

6.1 Approximation Method of the Temperature Propagation Parameters in Biological Media
N. M. Roman, H. A. Colosi, D. C. Colosi and V. Mureșan

6.2 PID Control of a Distributed Parameter Biological Process
V. Mureșan, D. C. Colosi, H. A. Colosi and N. M. Roman

6.3 Wavelet Based HRV Analysis
Z. Germán-Salló, A. Gligor and H.S. Grif

6.4 Pathological Voice Assessment using TESPAR Analysis
G. P. Pop, E. Lupu and E. Onaca

6.5 A Histogram Method for Detecting Useful Surface Electromyogram Signals
E. P. Vesa and B. Ilie

6.6 Preliminary EEG Based Analysis of Few Acupoints Used in the Chronic Low Back Pain Treatment
D. D. Lucache, B. Lucache, D. Irimia and M. Poboroniuc

10.30 - 11.00  Coffee break

11.00 - 12.30  SESSION 7: Modelling and Simulation
Chairman: Prof. Rod Hose, University of Sheffield, UK
Location: Room H21 (26-28 Gh. Baritiu str.)

7.1 A Numerical Simulation of the Electrical Monitoring of the Brachial-Ulnar-Radial Arterial Hemodynamic
A. M. Morega, C. Savastru and M. Morega

7.2 Assessment of the Need for Protection against Electromagnetic Radiation of Personnel Onboard Warships
G. Marin, G. Samoilescu, A. Baciu, D. Iorgulescu and S. Radu

7.3 Study on the Influence of Electromagnetic Field produced by a Medical Equipment on the EEG Signals
C. Luca, A. Sălceanu and R. Ciorap
11.00 - 12.30

7.4 Evaluating SAR Distribution on the Human Head during MRI Examination as Function of Frequency
C. Marincas, A. Nicu, C. Csutak and R.V. Ciupa

7.5 Evaluation of Thermal Distribution in the Head following Exposure to an Electromagnetic Field generated by a MRI Birdcage-type RF Coil
C. Marincaș, A. Nicu, C. Csutak and R.V. Ciupa

7.6 Experimental and Computational Study of the Temperature Distribution at the Surface of a Metallic Implant Exposed to High Frequency Electromagnetic Fields
B. Ilie and D. Rafiroiu

12.30 - 14.00

SESSION 8: Medical Devices, Measurement and Instrumentation III
Chairman: Prof. Winfried Mayr, Medical University of Vienna, Austria
Location: Room S01 (26-28 Gh. Baritiu str.)

8.1 Polymer Based Nanostructures for Innovative Bio and Immunosensors Development
L. Fritea, A. Florea, M. Tertiș, A. Cristea, R. Sândulescu and C. Cristea

8.2 Recording of Biomedical Parameters during Magnetotherapy
R. Ciorap, D. Andrițoi, C. Corciova and V. David

8.3 Capacitive Monitoring of a Tubular Layered Substance Delivery System
B. Tebrean, S. Crisan, V.D. Zaharia and T.E. Crisan

8.4 Potential distribution and nerve fiber responses in transcutaneous lumbosacral spinal cord stimulation

8.5 Influence of the Electrical Parameters Variation of the Membrane Cell over the Nerve Fiber Activation
M. Cretu and R. Ciupa

8.6 Application of Virtual Instrumentation for Transmitting and Processing ECG Signals

12.30 - 14.00
Lunch break
14.00 - 15.15  **SESSION 9: Health Care Technology III**  
**Chairman:** Prof. Marius Roman, Technical University of Cluj-Napoca, Romania  
**Location:** Room H21 (26-28 Gh. Baritiu str.)

9.1 *Materiovigilance and Medical Devices*  
S. Mirel, L. Colobatiu, E. Fasniuc, A. Boboia, C. Gherman, V. Mirel and D. Muresan

9.2 *Content Marketing in Dentist's Websites. An Empirical Comparative Study between Romania and the UK*  
A. Constantinescu-Dobra

9.3 *Reliability Indicators and a Failure Mode and Effect Analysis Calculation for a Holter Recorder*  
D. Iudean, R. Munteanu jr., P. Bechet, C. Muresan and A. Crețu

9.4 *Patient Satisfaction with Healthcare - A Focus Group Exploratory Study*  
M.A. Coțiu, I.M. Crișan and Gh.A. Catană

9.5 *Simulation Based Training for Medical Staff from Department of Pediatrics and Neonatology*  
R. Ciorap, C. Luca, C. Corciovă 1 and E. Moraru

14.00 - 15.15  **SESSION 10: Medical Imaging, Image and Signal Processing II**  
**Chairman:** Prof. Alexandru Morega, University “Politehnica” of Bucharest, Romania  
**Location:** Room S01 (26-28 Gh. Baritiu str.)

10.1 *Ultrasound Image Enhancement for Visualization using Spatially Variant Morphological Filters*  
I. Jivet and M. Tomoroga

10.2 *Automatic, Simultaneous, Non-invasive Measurements of Flow and Area in the Human Pulmonary Arteries from MRI Images*  
A. Lungu, J. Wild, A. Swift, D. Capener, D. Kiely and D.R. Hose

10.3 *Structured Light Based Imaging Architecture for Guided Fracture Reduction*  
F. Neaga, I. Raus, R. Moga, D. Moga, S. Vlad, N. Stroia and M. Munteanu

10.4 *Optical Coherence Tomography in the Diagnosis, Monitoring and Treatment of Macular Disorders*  
S.D. Nicoară

10.5 *Evaluation of ZigBee Technology for a Low-cost Video Surveillance System*  
E. Lupu, A. Tigauan, P. Pop and R. Arsinte

15.15 - 15.45  **Coffee break**
15.45 - 16.45  **SESSION 11: Health Care Technology IV**  
**Chairman:** Conf. Mihai Munteanu, Technical University of Cluj-Napoca, Romania  
**Location:** Room H21 (26-28 Gh. Baritiu str.)

11.1 *Imaging Techniques in the Assessment of Liver Tumoral Vascularization*  

11.2 *The Informatised Follow Up of the Therapeutics Effects of Levonorgestrel Releasing Intrauterine Device – Mirena®*  
D. Muresan, I. Rotar and S. Mirel

11.3 *Evaluation of Self-Measurements for Two Blood Pressure Devices*  
S. Mirel, A.T. Lup, L. Colobatiu, D. Pop Vornicescu, T. Pop, V. Mirel and S. Pop

11.4 *Real-time System for Continuous and Remote Monitoring of Respiration during Sleep using Wireless Sensors Networks*  
C. Rotariu, H. Costin, R. Ciobotariu, Al. Păsărică, and C. Cristea

15.45 - 16.45  **SESSION 12: Health Care Technology V**  
**Chairman:** Prof. Eugen Lupu, Technical University of Cluj-Napoca, Romania  
**Location:** Room S01 (26-28 Gh. Baritiu str.)

12.1 *Towards Knowledge Extraction from Electronic Health Records - Automatic Negation Identification*  
I. Bărbănțan and R. Potolea

12.2 *Towards Assisting Medical Decisions by Using Rule Based Protocols and Semantic Resources*  
R. R. Slăvescu, A.-C. Groşan and K. C. Slăvescu

12.3 *Preliminary Experiments on Using Subjective Logic for Reasoning on Diagnosis*  
R. R. Slăvescu and K. C. Slăvescu

12.4 *Making Existing Buildings Accessible*  
N. Cobîrzan and S. Pălăcean

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**Saturday, 7th June 2014**

09.00 – 11.00  **Round table:** Romanian National Society for Medical Engineering and Biological Technology  
Location: Room H21 (26-28 Gh. Baritiu str.)

11.00 – 11.30  **Coffee break**

11.30 – 12.00  **Closing Ceremony**  
**Location:** Room H21 (26-28 Gh. Baritiu str.)