

Workshop on
Bio-Medical Instrumentation and related Engineering
and Physical Sciences
organized by the
Department of Medical Instruments Technology, TEI of Athens

Technological Educational Institute of Athens,
Friday 6 July 2012

PROGRAM

9:00 – 11:00 **Registration**

9:15 – 9:30 **Welcome** (President of TEI of Athens)

Oral Sessions (9:30 – 17:30)

9:30 – 10:50 **Session 1** (6 papers of 10 minutes and total 20 minutes for discussion)
Session Chairmen: A. Tzavaras, PhD and C. Michail, PhD

1. Scintillation Screen Preparation for Use in Digital Medical Imaging Systems

I. Valais¹, C. Michail¹, I. Seferis², G. Fountos¹, N. Kalyvas¹, I. Kandarakis¹ and G.S. Panayiotakis²

(¹ Department of Medical Instruments Technology, Technological Educational Institute of Athens, ² University of Patras, Dept. of Medical Physics, Medical School)

Presenter: Valais Ioannis

2. CMOS Detector Calibration using Light Sources

P. Kortidis, I. Stathopoulos, I. Kandarakis and I. Valais

(Department of Medical Instruments Technology, Technological Educational Institute of Athens)

Presenter: Kortidis Panagiotis

3. Effect of Film Digitization of Mammographic Image Quality

N. Kalyvas, A. Dimou, K. Tsinoukas, G. Fountos, C. Michail, I. Valais and I. Kandarakis
(Department of Medical Instruments Technology, Technological Educational Institute of Athens)

Presenter: Kalyvas Nektarios

4. Image Quality Assessment in CMOS and CR Medical Imaging Systems

C. Ntales¹, N. Kynatidis¹, C. Michail¹, I. Seferis², I. Valais¹, N. Kalyvas¹, G. Fountos¹ and I. Kandarakis¹

¹Department of Medical Instruments Technology, Technological Educational Institute of Athens,

²Department of Medical Physics, University of Patras, Medical School)

Presenter: Ntales Christoforos

5. A Theoretical Approach for Optimum Dual Energy Selection in the Quality Assessment of Bone in Osteoporosis Diagnosis

P. Sotiropoulou¹, V. Koukou¹, N. Martini¹, G. Fountos², C. Michail², I. Valais², I. Kandarakis² and G.C. Nikiforidis

¹Department of Medical Physics, University of Patras, Medical School, ²Department of Medical Instruments Technology, Technological Educational Institute of Athens)

Presenter: Sotiropoulou Panagiota

6. Experimental Evaluation of a CMOS Based Detector Coupled to a Custom Made Gd₂O₂S:Eu Screen for Medical Imaging

I. Seferis¹, C. Michail², I. Valais², G. Fountos², N. Kalyvas², I. Kandarakis² and G.S. Panayiotakis¹

¹Department of Medical Physics, University of Patras, Medical School, ²Department of Medical Instruments Technology, Technological Educational Institute of Athens)

Presenter: Seferis Ioannis

10:50 - 11:20 **Coffee Break**

11:20 –12:50 **Round Table:** “Departments of BioMedical Technology in Greece, Present and Future”

Round Table Chairpersons: George Fountos and Ioannis Valais, TEI of Athens

1. The Clinical Engineer in the National Health System (*G. Saatsakis, MSc. Biomedical Engineer, Head of Biomedical Engineering Department of Aretaieio University Hospital*)
2. Replacing of Biomedical Technology: When and why? (*A. Gaitanis, PhD Biomedical Engineer, Head of Biomedical Engineering Department of BRFAA*)
3. Application of Quality Management System at Biomedical Engineering Departments in Public Sector: Advantages, Difficulties, Prospects (*Emmy Moyssidoy, Biomedical Engineer, General Secretary of Hellenic Association of State Biomedical Engineers*)
4. Pre-Purchase Evaluation of Medical Devices in the Private Sector of the Health System - Taking into Account Patient Safety (*T. Psichis, Director of Biomedical Engineering Department, Euroclinic of Athens & Euroclinic Pediatrics*)

13:00 - 14:30 **Lunch**

14:30 - 15:50 **Session 2** (6 papers of 10 minutes and total 20 minutes for discussion)
Session Chairmen: S. Kostopoulos, PhD and D. Glotsos, PhD

1. A Pattern Recognition System for Brain Tumour Grade Prediction Based on Histopathological Material and Features Extracted at Different Optical Magnifications

C. Konstandinou¹, E. Maneas¹, D. Glotsos², S. Kostopoulos², P. Ravazoula³ and D. Cavouras
(¹Department of Informatics and Telecommunications, National and Kapodistrian University of Athens, Greece, ²Medical Image and Signal Processing Laboratory, Department of Medical Instruments Technology, Technological Educational Institute of Athens, 12210, Egaleo, Athens, Greece, ³Department of Pathology, University Hospital of Patras, 26504, Rio, Patras, Greece)

Presenter: Konstandinou Christos

2. Assessment of the Pressure Developed between Scoliosis Brace and Patient's Body and Evaluation of the Effective Time of Treatment

P. Tsalios¹, I. Loukos², G. Koulouras³ and I. Valais³
(¹University of Patras, Dept. of Medical Physics, Medical School, ²National & Kapodistrian University of Athens, Medical School, ³Department of Medical Instruments Technology, Technological Educational Institute of Athens)

Presenter: Tsalios Panagiotis

3. EEG Sleep Spindle Components Localization using Independent Component Analysis and sLORETA

E. Ventouras¹, M. Thanaj¹, S. Marini¹, H. Tsekou¹, T. Paparrigopoulos² and P.Y. Ktonas²
(¹Department of Medical Instruments Technology, Technological Educational Institute of Athens, ²Sleep Research Unit, 1st Psychiatry Clinic, Eginition Hospital, University of Athens)

Presenter: Marini Spyridoula

4. An Android-based Pattern Recognition Application for the Characterization of Epidermal Melanoma

E. Mikos¹, I. Sioulas¹, K. Sidiropoulos² and D. Cavouras¹
(¹Department of Medical Instruments Technology, Technological Educational Institute of Athens, ²Brunel University West London, UK)

Presenter: Sioulas Ioannis

5. Single and Two-View CAde performance in Diagnostic Full Field Digital Mammography

M. Kallergi, M. Kondili and N. Kiriazi
(Department of Medical Instruments Technology, Technological Educational Institute of Athens)

Presenter: Kallergi Maria

6. Insight into the Biological Effects of Non-Ionizing Radiation Through the Properties of the Electromagnetic Waves

A. Skouroliakou¹, A.F. Fragopoulou², I.K. Giannarakis², A. Manta², M.P. Ntzouni², A. Papopoulou³ and L.H. Margaritis²

(¹Department of Physics and Chemistry, TEI of Athens, ²Department of Cell Biology and Biophysics, Faculty of Biology, Athens University, Greece, ³Department of Medical Instruments Technology, TEI of Athens)

Presenter: Skouroliakou Aikaterini

15:50 - 16:20 **Coffee Break**

16:20 - 17:30 **Session 3** (5 papers of 10 minutes and total 20 minutes for discussion)
Session Chairmen: S. David, PhD and S. Tsantis, PhD

1. 2D Gel Electrophoresis Classification between Chronic Lymphoid and Chronic Myeloid Leukemia using Pattern Recognition Methods

A. Theodosi¹, S. Kostopoulos² and D. Cavouras²

(¹University of Athens, Greece, ²Department of Medical Instruments Technology, Technological Educational Institute of Athens)

Presenter: Theodosi Aggeliki

2. Brachytherapy Simulations of Ir192 MicroSelectron Source using GATE Monte Carlo Toolkit

P. Papadimitroulas^{1,2}, E. Pappas³, S. Spirou¹, G.C. Kagadis², G. Tsakiris³ and G. Loudos¹

(¹Department of Medical Instruments Technology, Technological Educational Institute of Athens, ²Medical School, University of Patras, ³Department of Radiology, Technological Educational Institute of Athens)

Presenter: Papadimitroulas Panagiotis

3. Supporting on-line the Certification of a Surgical Department in a Hospital

E. Nassioka, A. Tsouni, K. Lefteriotis, A. Tzavaras and B. Spyropoulos

(Biomedical Technology Laboratory, Department of Medical Instruments Technology, Technological Educational Institute of Athens)

Presenter: Nassioka Evagelia

4. Development Status of a Quasi-Visualizing Lung-Monitoring Method based on Acoustic Response Alteration Measurements

P. Afentoulidis, A. Tzavaras and B. Spyropoulos

(Biomedical Technology Laboratory, Department of Medical Instruments Technology, Technological Educational Institute of Athens)

Presenter: Afentoulidis Petros

5. Correlation of Technical and Clinical Characteristics of Whole Body and Dedicated, High-Resolution, Head-Neck FDG PET/CT Imaging of Thyroid Cancer

M. Kallergi¹, A. Tzimas¹, E. Roussos¹, A. Georgakopoulos², N. Pianou², M. Metaxas² and S. Chatziioannou³

(¹Department of Medical Instruments Technology, Technological Educational Institute of Athens, ²Nuclear Medicine Division, Biomedical Research Foundation of the Academy of Athens, ³National and Kapodistrian University of Athens; 2nd Department of Radiology, Nuclear Medicine Section, "Attikon" University General Hospital)

Presenter: Kallergi Maria

Poster Session (9:30 – 17:30)

The Contribution of Ultra Sound Gestational Control after 32th Week in Prevention of Perinatal Mortality

M. Adamopoulou, E. Kounadi, P. Sakellariou, M. Rekkas and M. Sampatakakis
(Ministry of Health in Greece, SEYYP, Pireos 205, 118 53 Athens Greece)

Development of a Small Field of View Gamma-Ray Imager using a LuAg:Pr Scintillator

S. David¹, M. Georgiou², E. Fysikopoulos³, I. Seferis⁴, G. Panayiotakis⁴, P. Liaparinos¹, I. Valais¹, I. Sianoudis⁵, A. Aravantinos⁵, G. Fountos¹, C. Michail¹, N. Kalyvas¹, G. Koulouras⁶, C. Antypas⁷, A. Gektin⁸, I. Kandarakis¹ and K. Kourkoutas⁵

(¹Department of Medical Instruments Technology, Technological Educational Institute of Athens, Greece, ²Department of Nuclear Medicine, Medical School, University of Thessaly, Greece, ³School of Electrical and Computer Engineering, National Technical University of Athens, Greece, ⁴Department of Medical Physics, Medical School, University of Patras, Greece, ⁵Department of Physics Chemistry & Materials Technology, Technological Educational Institute of Athens, Greece, ⁶Department of Electronics, Technological Educational Institute of Athens, Greece, ⁷Department of Radiotherapy, Aretaieion Hospital, University of Athens, Greece, ⁸State Scientific Institution "Institute for Single Crystals" of National Academy of Science of Ukraine, Ukraine)

Advanced Image Post Processing and Visualization Tools in Computed Tomography

D. Koumarianos, E. Lavdas, D. Kehagias and G. Oikonomou
(Department of Medical Radiological Technology, Faculty of Health and Caring Professions, TEI of Athens)

Rare Side Effects of Spinal Cord Neurostimulator

E. Kounadi¹, M. Adamopoulou¹, E. Ventouras², P. Sakellariou¹, M. Rekas¹ and M. Sabatakakis¹
(¹Ministry of Health in Greece, SEYYP, Athens, Greece, ²Department of Medical Instruments Technology, Technological Education Institute of Athens, Greece)

Reendothelialization Assessment by Analysing Endovascular Optical Coherence Tomography (OCT) Sequences

K. Mandelias², S. Tsantis¹, G. C. Kagadis², K. Katsanos³, D. Karnabatidis³ and G.C. Nikiforidis².
(¹Laboratory of Ionizing and Non Ionizing Radiation Imaging Systems, Department of Medical Instruments Technology, TEI of Athens, ² Department of Medical Physics, School of Medicine, University of Patras, Greece, ³ Department of Radiology, School of Medicine, University of Patras, Greece)

Mapping Expected Advances in Anaesthesia Vaporizer and Gas-Monitoring Technology as Reflected on Industrial Property Documents

E. Maridaki, L. Papageorgiou and B. Spyropoulos
(Biomedical Technology Laboratory, Medical Instrumentation Technology Department, Technological Education Institute (TEI) of Athens, Athens, Greece)

Noise Monitoring and Alarm System for Infant Incubators

E. Straticopoulos¹, G. Saatsakis² and M. Kallergi¹
(¹Laboratory of Biomedical Technology, Department of Medical Instruments Technology, TEI of Athens, ²Biomedical Engineering Department, Aretaieio University Hospital)

Wavelet Based Analysis of the Cardiotocograms in Labour

G. Sykas¹, S. Tsantis¹ and G.C. Nikiforidis².

(¹Laboratory of Ionizing and Non Ionizing Radiation Imaging Systems, Department of Medical Instruments Technology, TEI of Athens, ² Department of Medical Physics, School of Medicine, University of Patras, Greece)

Radiation Dose Reduction in Cardiac CT – A Comparison of Two Protocols

Th. Syrigou, G. Marpinis, Th. Bagiatis, St. Papageorgiou, N. Kollaros, S. Katsilouli, and I. Mastorakou

(Department of Radiology, Onassis Cardiac Surgery Center)

Radiation Dose in Calcium Score Measurement. Sequential Versus Spiral Mode using 64-Slice Dual Source MDCT

Th. Syrigou, Ch. Plemmenos, Th. Skaltsas, N. Kollaros, St. Kampanarou, O. Karapanagiotou and I. Mastorakou

(Department of Radiology, Onassis Cardiac Surgery Center)

Radiation Dose Considerations in Dual Source Cardiac 64-Slice Computed Tomography. A First Experience

Th. Syrigou, A. Diamantis, V. Argoudeli, E. Kirikos, N. Kollaros, St. Kampanarou and I. Mastorakou

(Department of Radiology, Onassis Cardiac Surgery Center)

Wavelet Based Marcov-Random-Fields towards Speckle Suppression in Ultrasound Images

S. Tsantis¹ and A. Skouroliakou²

(¹Laboratory of Ionizing and Non Ionizing Radiation Imaging Systems, Department of Medical Instruments Technology, Technological Educational Institute of Athens, ²Department of Physics-Chemistry and Material Technology, Technological Educational Institute of Athens)
