



**TENTH NATIONAL CONFERENCE ON  
BIOMEDICAL PHYSICS AND ENGINEERING  
WITH INTERNATIONAL PARTICIPATION  
Sofia, 16 - 18 October 2008**



**FINAL SCIENTIFIC PROGRAMME**

<b>16 OCTOBER, THURSDAY</b>		
10:30		<b>Registration</b>
13:30		<b>Opening ceremony</b>
<b>PLENARY SESSION</b>		
<b>Chairs:</b>	<b><i>Ivan Dotsinsky</i></b> <b><i>Marta Wasilewska-Radwanska</i></b>	
14:00	P.1	Bulgarian Society of Biomedical Physics and Engineering <i>Ventseslav Todorov, Robert Popitz</i>
14:30	P.2	125 years after the Discovery of Piezoelectric Effect and 110 years after the Discovery of Polonium and Radium – Pierre and Marie Curie’s Inheritance for the Modern Medicine <i>Marta Wasilewska-Radwanska</i>
15:00	P.3	Robert Boyle: An Inspirational Multifaceted Figure that Should Be Claimed by Medical Physics <i>Jim Malone</i>
15:30	P.4	Curie’s Life And Work: A Vivid Example for All Generations <i>Athanas Slavchev</i>
16:00 – 16:30 <b>Coffee break</b>		
<b>Session I. PHYSICAL FACTORS AND ENVIRONMENT</b>		
<b>Chairs:</b>	<b><i>Michel Israel</i></b> <b><i>Michaela Ivanova</i></b>	
16:30	I.5	Discovery of Inadvertent Radioactive Materials <i>O. Turák, L. Ballay</i>
16:45	I.6	Safety of Irradiated Foods and the Role of the Regulatory Control <i>T. Tsrunchev, N. Boshnakova, M. Ivanova, A. Terzieva, A. Todorova</i>
17:00	I.7	Whole Body System for Natural Potassium Content and Effective Dose Evaluation in Adult Romanian Subjects <i>M. Saizu</i>

- 17:15 I.8 Surface Air Thermal Climatic Characteristics of Stara Zagora Region, Bulgaria and Its Periodicities, Estimated for the Last 109 Years  
*N. Takuchev*
- 17:30 I.9 Non-Ionizing Radiation Policy in Bulgaria  
*M. Israel, V. Zaryabova, M. Ivanova*
- 17:45 I.10 Methods for Measurements and Assessment of UV radiation at Workplaces  
*M. Ivanova, M. Israel*
- 18:00 I.11 Database: Some Errors and Calibrations  
*P. Tschobanoff, M. Israel*

**Posters:**

- I.12 Distribution Coefficients Values on the Transfer of Radionuclides in an Abandoned Uranium Mine Tailing  
*M. Bragea, C. Cristache, G. Brânzei, A. Brusturean*
- I.13 Study of Gamma Spectra by Monte Carlo Simulation  
*A. Cantaragiu, C. Gheorghies, C. Borcia*
- I.14 Radioactive Waste Management – A General and Specific Task of National and International Importance  
*A. Slavchev*
- I.15 Method for Metrological Verification and Selection of Thermoluminescent Detectors, Used in Individual Dosimetric Control at MMA  
*Zh. Zhelev, M. Alyakov, S. Radev.*
- I.16 Uncertainty in Radiofrequency Exposures  
*P. Tschobanoff, M. Israel*
- I.17 Electromagnetic Fields and Public Concern. Risk Management  
*V. Zaryabova, Ts. Shalamanova, M. Israel*
- I.18 Studying the Electrostatic Field of Workplaces with Sound Equipment in Studios and Sound Directing Apparatus Halls as a Risk Factor for the Workers  
*I. Iliev, P. Ivanova, M. Israel*

18:15 – 18:45	<b>POSTER SESSION</b>
19:00	<b>Welcome Cocktail</b>

**17 OCTOBER, FRIDAY****Session II. CLINICAL MEDICAL PHYSICS – PART I**

**Chairs:** *Borislav Constantinov*  
*Jim Malone*

- 9:00 II.19 Revision of the European Criteria for Acceptability of Radiological Equipment  
*J. Malone*
- 9:15 II.20 Some Problems Concerning Patient Protection Arised in the Commissioning of a Mobile Unit for Digital Fluorography  
*B. Constantinov, K. Terziev, H. Atanasova*
- 9:30 II.21 Quality Assurance of Fluoroscopic Equipment  
*A. Dimov*
- 9:45 II.22 Determination of Mean Glandular Dose on Patients and Phantom in X-ray Mammography  
*S. Avramova-Cholakova, J. Vassileva*
- 10:00 II.23 A Practical Method for Determination of Patient Doses in Computed Tomography (CT)  
*K. Nieminen*
- 10:15 II.24 Radiation Exposure to Examiners and Patients During Therapeutic ERCP: Dose Optimization and Risk Estimation  
*A. Sulieman, G. Paroutoglou, A. Kapsoritakis, A. Kapatenakis, S. Potamianos, M. Vlychou, I. Fezoulidis, K. Kappas, K. Theodorou*

10:30 – 11:00 **Coffee break**

**Session III. CLINICAL MEDICAL PHYSICS – PART II**

**Chairs:** *Ventseslav Todorov*  
*Neli Gesheva*

- 11:00 III.25 Combining Different Data Processing Techniques for Ultrasound Imaging with Self-organizing Maps  
*B. Tsekov, G. Clement, V. Savov*
- 11:15 III.26 Ethics, Justification and Diagnostic Medical Uses of Radiation  
*J. Malone*
- 11:30 III.27 The Open Innovation Paradigm: Examples of How to Leverage Synergies between Industry and Academy in Radiotherapy  
*J. Stancanello*
- 11:45 III.28 Program for Monitor Unit Calculation of High Energy Photon Beams at Isocentric Condition  
*N. Gesheva-Atanasova*
- 12:00 III.29 System for Radiotherapy Treatment Planning DIPS 2006  
*V. Ganchev*

12:15 III.30 Radiotherapy Software for Department Management and Organization  
*M. Coevoet*

**Posters:**

- III.31 Results from the Three-years Quality Control in Conventional Radiography  
*J. Vassileva, R. Rashkova, A. Dimov, K. Antonova*
- III.32 Analysis of the  $NCTDI_{air}$  Values Obtained During the Commissioning of Computer Tomographs  
*B. Constantinov, H. Atanasova, K. Terziev*
- III.33 Practical Methods for Estimation of Effective Dose for Computed Tomography Examinations  
*D. Stoyanov, J. Vassileva*
- III.34 Image Quality and Dose in X-Ray Mammography  
*S. Avramova-Cholakova, L. Trifonov, J. Vassileva*
- III.35 Patient Dose in Interventional Cardiology: Influence of Angiography System Type and Parameters  
*R. Borisova, J. Vassileva*
- III.36 A Simple Substitute of a PLES Phantom  
*P. Trindev*
- III.37 Analysis of Gamma-camera Test Images Using the Noise Power Spectrum Analysis Technique  
*I. Rangelova, R. Georgiev*
- III.38 Entrance and Peripheral Dose Measurements During Radiotherapy  
*A. Sulieman, K. Theodorou, C. Kappas*
- III.39 Results of the Validation of a Monte Carlo-Based Treatment Planning System for Radiotherapy for Electron Beams  
*V. Staykova, N. Gesheva-Atanasova, A. Balabanova, M. Gantchew*
- III.40 Wavelet Analysis of the Intravital Fluorescence Microscopy Signal of Subcutaneous Blood Vessel Diameter Changes  
*L. Traikov, A. Ushiyama, I. Antonov, G. F. Lawlor, C. Ohkubo*
- III.41 Preparation of Photo and Video Images during Foot Diagnostics in Stress Condition  
*V. Katsarov, K. Stoyanov, P. Panchev, J. Belcheva, A. Atanasov*
- III.42 In-Vivo Precision – a Crucial Factor in Bone Densitometry. First Results from the Clinical Practice  
*A. Slavchev*
- III.43 Assessment of the Exposure of the Bulgarian Population from Diagnostic Radiology  
*K. Ingilizova, D. Kostova-Lefterova*
- III.44 Medical Exposure to Children – Preliminary Results  
*K. Ingilizova, R. Borisova*

12:30 – 13:00

**Lunch**

13:00	Company presentation - <i>NUCLETRON</i>	
<b>Session IV. BIOMEDICAL ENGINEERING</b>		
<b>Chairs:</b>	<i>Mihail Matveev</i> <i>Andrei Issakov</i>	
13:30	IV.45	Measurement of the Reaction Times of Diabetic Patients with the Help of a Computer <i>F. J. Sanchez-Marin</i>
13:45	IV.46	Heart Rate Complexity in Patients with Diabetes Mellitus: Cross-sectional and Follow-up Study <i>M. Javorka, Z. Trunkvalterova, I. Tonhajzerova, J. Javorkova, K. Javorka, M. Baumert</i>
14:00	IV.47	Distinction of Cough from Other Sounds Produced by Daily Activities from the Upper Airways <i>J. Martinek, M. Tatar, J. Plevkova, T. Zatko, M. Javorka</i>
14:15	IV.48	System for Telemetric Monitoring of High-risk Patients at Hospital Environments – Basic Configuration <i>I. Iliev</i>
14:30	IV.49	A Transceiver Module as a Part of System for Telemetric Monitoring of High-risk Patients <i>I. Iliev</i>
14:45	IV.50	Analysis of PVDF and PZT Transducers for Wideband Medical Ultrasound Equipment <i>P. Genov, E. Bekov</i>
15:00	IV.51	The Application of Acoustic Shock Waves for Bone Pathology Treatment <i>T. Kerin, A. Gargarov</i>
15:15	IV.52	Automated Analysis of Acetowhite Epithelia Formations on the Cervix Using Margin Characterization of Curvature Features and Fourier Descriptors <i>V. Van Raad</i>
<b>Posters:</b>		
	IV.53	Influence of Light Source Wavelength in Photoplethysmography in the Region of the Neck <i>B. Nenova</i>
	IV.54	Blood Pressure Measurement on Treadmill: Impact of Noise Artifacts on Korotkoff Sounds Recognition <i>V. Krasteva, I. Jekova, R. Leber, J.J. Schmid</i>
	IV.55	A Technical Device for Prevention from Spinal Column Disorders <i>R. Raikova, K. Tahtakov, P. Raykov</i>
	IV.56	Model of the Force Generated by a Muscle Motor Units Evoked by Application of Different Stimulation Patterns <i>R. Raikova, J. Celichowski</i>

- IV.57 Piezoelectrical Effect as Effective Means for Bone Restoration  
*A. Slavchev, T. Kerin*
- IV.58 Use Wavelet Transforms for ECG Signal Analysis  
*L. Vladimirova, D. Vuchkov, N. Iliev, D. Dimov, V. Savov*

15:30 – 16.00 **Coffee break**

**Workshop** **POSTGRADUATE EDUCATION ON MEDICAL PHYSICS AND BIOMEDICAL ENGINEERING**

**Moderators:** *Ventseslav Todorov*  
*Ivan Dotsinsky*

- 16:00 E.59 Towards a Uniform European Education for Medical Physicists  
*S. Christofides (EFOMP) – presented by M. Wasilewska-Radwanska*
- 16:10 E.60 The New Program for Postgraduate Education on Medical Radiological Physics  
*J. Vassileva, V. Todorov*
- 16:20 Discussion

**Posters:**

- R.61 Medical Physics Education and the Electrotherapy Methods  
*G. Zlateva, N. Popdimitrova, N. Kentchev, A. Gegova, D. Vladimirova*
- R.62 Concerning Computer Aided Illustrating Process During Physics and Pathology Education of Foreign Students in Bulgarian High Medical Schools  
*N. Popdimitrova, G. Zlateva, M. Mileva, A. Gegova, D. Vladimirova*
- R.63 Benefit and Risk of Ionizing Radiation – a Challenge in the Contemporary Physics Education  
*J. Belcheva, V. Katsarov*
- R.64 EMFs – a Part of the Microclimatic Factors in Teaching Medical Physics at Medical University-Sofia  
*V. Hadjimitova*

17:00 – 18:30 **General assembly of the BSBMPE**

19:30 **Gala Dinner**

**18 OCTOBER, SATURDAY****Session V. BIOPHYSICS****Chairs:** *Nezabravka Popdimitrova  
Lubomir Traikov*

- 9:00 V.65 Modified Bioluminescent ATP Assay For Viability and Enumeration of Cells in BCG-Vaccine  
*E. Pavlova, V. Savov, M. Chouchkova*
- 9:15 V.66 On Kinetics of the Ferritin and Albumin Adsorption on a Gold Surface by Multi-Angle Ellipsometry  
*L. Vladimirova, A. Paneva, A. Gritzkow, V. Savov, I. Georgiev*
- 9:30 V.67 Effect of Humic Substances on the Protein Structural Stability and Erythrocyte Hemolytic Resistance  
*I. Ivanov, P. Zagorchev*
- 9:45 V.68 Impact of Chirality on the Drug/polymer Interaction within Binary Physical Mixures Containing Polymer Excipient and Ibuprofen, Ketoprofen or Naproxen. A DSC Study  
*I. Ivanov, Zh. Tsokeva*
- 10.00 V.69 A Scientific Approach to Radiation Measurements in Diagnostic Radiology. Company Presentation – *M. Dahlin, UNFORS INSTRUMENTS*

**Posters:**

- V.70 Effects of 900 MHz Electromagnetic Fields on *Plectranthus*  
*M. Dimitrova, D. Dragolova, G. Atanasova, N. Atanasov, M. Kouzmanova*
- V.71 Electron Microscopy and Medical Morphological Studies  
*A. Gegova, D. Vladimirova, N. Popdimitrova, G. Zlateva, M. Mileva, A. Logofetov*
- V.72 Transport of CO<sub>2</sub> through the Biomimetic Membrane  
*E. Matsaridis, V. Savov*
- V.73 Electrochemical Study of Ferritin – Ascorbic Acid Relations  
*L. Vladimirova, V. Savov*

**10:30 – 11:00 Coffee break**

<b>OPEN DOORS SESSION</b>		
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<b><i>Chairs:</i></b>		<b><i>Michel Israel</i></b> <b><i>Ivo Iliev</i></b>
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11:00	L.74	Risk of Non-ionizing Radiation
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*M. Israel*

11:30	L.75	Application of Telemetry for Observation of High-Risk Patients
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*I. Iliev*

12:00	L.76	The Combined Techniques PET/CT and SPECT/CT Increase the Potential of Nuclear Medicine
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*I. Kostadinova, P. Trindev*

12:45	<b>“Professor Ivan Daskalov” Award Ceremony</b>	
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13:00	<b>Closing Ceremony</b>	
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14:00	<b>Cultural programme – Sofia Sightseeing Tour</b>	
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<b>19 OCTOBER, SUNDAY</b>		
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9:00	<b>Excursions</b>	
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