PROGRAMME

9th International Conference
Electromagnetic Devices and Processes
in Environment Protection

ELMECO-9

with

12th Seminar
Applications of Superconductors

AoS-12

3 – 6 December 2017
Nałęczów, Poland
Organizers and sponsors of ELMECO-9

IEEE
Poland Section of IEEE - Chapter Magnetics

PETES
Polish Society of Theoretical and Applied Electrical Engineering

LBR
Laboratorium Badań i Rozwoju w Lublinie

PAN
Committee on Electrical Engineering - Polish Academy of Sciences

Lublin University of Technology

Institute of Electrical Engineering & Electrotechnologies
**Programme of the Conference**
**ELMeco-9 & AoS-12**

**Sunday, 3 December 2017**

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<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>17:00 - 19:00</td>
<td>Registration - Conference Centre “ENERGETYK” in Nałęczów</td>
</tr>
<tr>
<td>19:30 -</td>
<td>Welcome dinner</td>
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**Monday, 4 December 2017**

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<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>08:00 - 09:00</td>
<td>Breakfast</td>
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<tr>
<td>08:30 - 09:30</td>
<td>Registration</td>
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<tr>
<td>09:30 - 10:30</td>
<td>Opening session</td>
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<tr>
<td>10:30 - 11:15</td>
<td>Plenary session</td>
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<tr>
<td>11:15 - 11:45</td>
<td>Coffee break</td>
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<tr>
<td>11:45 - 13:15</td>
<td>Oral session O1</td>
</tr>
<tr>
<td>13:20 - 13:30</td>
<td>Group photo in front of the Conference Centre</td>
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<tr>
<td>13:30 - 14:30</td>
<td>Lunch</td>
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<tr>
<td>15:00 - 16:30</td>
<td>Oral session O2</td>
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<tr>
<td>16:30 - 17:00</td>
<td>Coffee break</td>
</tr>
<tr>
<td>17:00 - 18:15</td>
<td>Poster session P1</td>
</tr>
<tr>
<td>19:00 -</td>
<td>Conference Dinner with the electric cello concert</td>
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**Tuesday, 5 December 2017**

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<tr>
<td>08:00 - 09:00</td>
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<td>12:00 - 13:00</td>
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<tr>
<td>19:00 - 22:00</td>
<td>Conference dinner in Wojciechów</td>
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<tr>
<td>22:00 -</td>
<td>Return to Conference Centre by bus</td>
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**Wednesday, 6 December 2017**

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<tr>
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<tbody>
<tr>
<td>08:00 - 08:45</td>
<td>Breakfast</td>
</tr>
<tr>
<td>08:45 - 09:30</td>
<td>Discussion panel</td>
</tr>
<tr>
<td>09:30 - 10:00</td>
<td>Closing session</td>
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# Programme of the Conference

**ELMECO-9 & AoS-12**

9th International Conference

**ELECTROMAGNETIC DEVICES AND PROCESSES IN ENVIRONMENT PROTECTION**

& 12th Seminar **APPLICATIONS OF SUPERCONDUCTORS**

3 – 6 December 2017, Nałęczów, Poland

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### Sunday, 3 December 2017

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<td><strong>09:30 - 10:30</strong></td>
<td><strong>Opening session</strong></td>
</tr>
<tr>
<td>1.</td>
<td>Conference chair opening speech - prof. Henryka Danuta Stryczewska</td>
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<tr>
<td>2.</td>
<td>Invited guests’ speeches</td>
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<tr>
<td>3.</td>
<td>Presentation of Polish Section of IEEE: Chapter Magnetics - dr. Mariusz Stępień</td>
</tr>
<tr>
<td>4.</td>
<td>R&amp;D capabilities of LBR Laboratorium Badan i Rozwoju - dr. Łukasz Kurzępa</td>
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<tr>
<td><strong>10:30 - 11:15</strong></td>
<td><strong>Plenary session</strong> – chair: Henryka Danuta Stryczewska</td>
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<tr>
<td><em>prof. Ryszard Sikora</em></td>
<td>Application of Artificial Intelligence Methods in Medical Diagnostic</td>
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<tr>
<td>11:15 - 11:45</td>
<td>Coffee break</td>
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</table>
11:45 - 13:15  Oral session O1
Chairpersons: Justyna Jaroszyńska-Wolińska, Joanna Pawłat

1. **Vera Mazankova, Ivana Manduchova, Jana Mierna, Frantisek Krcma, David Trunec**
   Study of O₂ and O₃ Surface Reactions in Ozonizer

2. **Grzegorz Raniszewski**
   Arc Discharge Plasma for Effective Carbon Nanotubes Synthesis

3. **Oksana Kolomiiets, Olena Prysiazhna, Valeriy Chernyak, Denis Hamazin, Andriy Goriachko, Vasyl Lendiel, Anatiliy Trohimchuk, Oleksiy Legenchuk**
   Nanosilver Particles Synthesis in Plasma-liquid Secondary Microdischarge System

4. **Anna Dzimitrowicz, Piotr Jamroz, Paweł Pohl**
   Examination of the Interactions Occurring in the Gas and Liquid Phases of Atmospheric Pressure Glow Discharge Generated in Contact with a Liquid Electrode Leading to Production of Size-defined Gold Nanostructures

13:20 - 13:30  **Group photo in front of the Conference Centre**

13:30 - 14:30  Lunch

15:00 – 16:30  Oral session O2
Chairpersons: Andrzej Zaleski, Paweł Surdacki

1. **Bartłomiej A. Głowacki**
   Microstructurally Determined Electromagnetic Properties of Copper-sheathed in Situ MgB₂ Wires

2. **Monika Lewandowska, Aleksandra Dembkowska, Kamil Sedlak**
   Thermal-hydraulic Analysis of Different Design Concepts of the LTS TF Coil Winding Pack for EU-DEMO

3. **Mariusz Stępień, Bogusław Grzesik, Zygmunt Mikno**
   A Comparison of Highly Coupled Step-down Transformers Dedicated for Resistance Welding Systems

4. **Jacek Sosnowski**
   Investigations of the Bending Strain Influence on the Current-voltage Characteristics of First Generation HTc Superconducting Tapes

   The Influence of HIP Process on Pinning Centers, Critical Current Density and Structure in MgB₂ Wires and Ba(Fe0.92,Co0.08)₂As₂ Superconducting Material

16:30 - 17:00  **Coffee break**
1. **Keita Shuto, Koki Eto, Fumiaki Mitsugi, Hiroharu Kawasaki, Shin-ichi Aoqui**
   Electrode Temperature Measurement of Low Temperature Gliding Arc Discharge Device

2. **Kenji Ebihara, Seiji Baba, Fumiaki Mitsugi, Tomoaki Ikegami, Yoshitaka Yamashita, Toshifumi Yamashita, Shin-ichi Aoqui, Henryka D. Stryczewska**
   Ozone-mist Sterilisation and Web-Based Management for Greenhouse Agriculture

3. **Fumiaki Mitsugi, Noriko Horibe, Shin-ichi Aoqui, Kazuhiro Nagahama**
   Ozone Treatment of Soil

4. **Shin-ichi Aoqui, Noriko Horibe, Kazuhiro Nagahama, Tamiko Ohshima, Hiroharu Kwasaki, Fumiaki Mitsugi**
   Behavior of Chemical Changes and Microbes in Soil for Agriculture in Ozone Environment

5. **David Trunec, Věra Mazánková, František Krčma**
   Kinetic Model of O₂ and O₃ Reactions with Electrode Surface in Ozonizer

6. **Mateusz Tański, Artur Berendt, Jerzy Mizeraczyk**
   Direct and Indirect Studies of the Gaseous Charged Species in Surface Dielectric Barrier Discharge in Plasma Actuator

7. **Nana Otsubo, Shota Kusumegi, Fumiaki Mitsugi, Toshiyuki Kawasaki, Toshiyuki Nakamiya, Yoshito Sonoda**
   Detection of Pressure Waves Emitted from Plasma Jets with Fibered Optical Wave Microphone in Gas and Liquid Phases

8. **Joanna Pawłat, Michał Kwiatkowski, Piotr Terebun, Barbara Chudzik, Mariusz Gagoś**
   Candida Albicans Inactivation with DBD He/O₂ Plasma Jet

9. **Marek Kopacki, Agnieszka Starek, Piotr Kiczorowski, Joanna Pawłat, Jarosław Diatczyk**
   Efficacy of Ozone Fumigation to Control Eupteryx Decemnotata in Rosemary Growing Under Cover

10. **Marek Kopacki, Joanna Pawłat, Piotr Terebun, Michał Kwiatkowski, Agnieszka Starek, Piotr Kiczorowski**
    Efficacy of Non-thermal Plasma Fumigation to Control Fungi Occurring on Onion Seeds

11. **Joanna Pawłat, Piotr Terebun, Michał Kwiatkowski, Agnieszka Starek, Piotr Kiczorowski, Dariusz Andrejko, Marek Kopacki**
    Effects of Helium-Air RF Plasma Jet on Onion Seeds’ Germination
12. Alexander Nikitin, Diana Suhareva, Egor Mishchenko, Alesya Zubareva, Olga Shurankova, Ruslan Spirov
   Influence of Electromagnetic Radiation of Extremely High Frequency on Sensitivity of Plants to Cold Stress

13. Grzegorz Raniszewski
   Parameters of the Electric Arc in Plasma Systems to Materials Conversion

14. Piotr Kruspi, Henryka Danuta Stryczewska
   Gliding Arc Discharge Push-Pull Power Supply

15. Michał Aftyka, Piotr Kruspi, Grzegorz Komarzyniec
   The Influence of Power Supplies Converter Parameters on the Gliding Arc Characteristics

16. Aleksandra Dembkowska, Monika Lewandowska, Xabier Sarasola
   Helium Flow and Temperature Distribution in the CS1 module of the DEMO CS coil

17. Paweł A. Mazurek, Joanna Pawłat, Michał Kwiatkowski, Piotr Terebun
   Analysis of Electrical and Magnetic Fields in ELF Band from Plasma Reactor Installations

18. Paweł A. Mazurek, Oleksandr M. Naumchuk
   Electromagnetic Emission Testing in GSM Band

19. Jakub Smolka, Sebastian Zurek, Edyta Lukasik, Maria Skublewska-Paszkowska
   Heart Rate Estimation Using an EMG System Integrated with a Motion Capture System

20. Marcin Buczaj, Andrzej Sumorek
   Analysis of Changes of Air Velocity in Ventilation Ducts as a Factor Determining the Level of Safety in Buildings

21. Marek B. Horyński
   Energy Management in Households as Part of the Sustainable Development of the Energy Economy

22. Marek B. Horyński
   Models of Building Automation in the Laboratory of Energy-Efficient Building Systems

23. Piotr Billewicz, Paweł Węgierek, Justyna Pietraszek
   Analysis of the Influence of Ambient Conditions on Efficiency of HIT-IBC-Based Photovoltaic System Dedicated for Energy Efficient Buildings

24. Piotr Billewicz, Paweł Węgierek
   Research on Distribution of Energy Levels in Ion Implanted Monocrystalline Silicon in the Aspect of Photovoltaic Applications

25. Jerzy Zgraja, Piotr Urbanek, Jacek Kucharski
   Predictive Method of Improvement of the Generators Rated Power Usage in Inductive Heating
26. Artur Boguta, Jacek Majcher  
Using the Physical Parameters of Rape Seeds to Assess Germination Force

27. Sebastian Styła, Jacek Majcher  
Using a Rotating Electromagnetic Field to Remove Impurities from Ferromagnetic Elements

28. Szymon Malinowski, P. Anthony F. Herbert, Justyna Jaroszyńska-Wolińska  
Comparison of Deposition of Laccase Biocoatings on Carbon Nanomaterials

29. Justyna Jaroszyńska-Wolińska, P. Anthony F. Herbert, Szymon Malinowski, Cecylia Wardak  
Laccase Biosensors from Bio-coatings Deposited by Corona Plasma SPP for Rutin Determination

19:00 - Conference Dinner with the electric cello concert

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**Tuesday, 5 December 2017**

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<th>Session/Activity</th>
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<tr>
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<td>Chairpersons: Bogusław Grzesik, Dariusz Czerwiński</td>
</tr>
<tr>
<td>1. Yoshiki Myoen, Tetsuro Baba, Tamiko Ohshima, Takeshi Kano, Yukio Takeuchi, Shin-ichi Aoqui</td>
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<td>Development of a Magnetic-shield Fabric Consisted of Permalloy Wire</td>
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<td>2. Aleksander Polit, Andrzej Uramek</td>
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<td>Selected Aspects of Designing Power Inductors for Power Electronic Converters</td>
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<td>3. Miroslaw Wcislik</td>
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<td>Sustainable Development and Ecological Aspects in Electric Steelmaking Process Evolution</td>
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<td>4. Monika Kaczorowska</td>
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<td>Comparative Analysis of Measures of Biological Artifacts Identification in the Electroencephalography Signal in the Context of Biological Noise</td>
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<tr>
<td>5. Mikhail Tokovarov, Monika Kaczorowska, Malgorzata Plechawska-Wojcik</td>
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<td></td>
<td>Towards Human Identification Based on SSVEP Response. A Proof of Concept Study</td>
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<tr>
<td>6. Stanislaw Skulimowski, Marcin Badurowicz</td>
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<td></td>
<td>Wearable Sensors as Feedback Method in Virtual Reality Anti-stress Therapy</td>
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<tr>
<td>11:30 - 12:00</td>
<td>Coffee break</td>
</tr>
</tbody>
</table>
1. Anna Kisiel, Leszek Wozny
   Acoustic Emission Testing for BiSrCaCuO Tapes

2. Anna Kisiel, Leszek Wozny, Slawomir Debowsi
   Measurements of Spatial Charge in Nonhomogeneous Dielectrics with Nanofillers

3. Beata Kondratowicz-Kucewicz
   The Energy and the Magnetic Field in HTS Superconducting Magnetic Energy Storage Model

4. Tadeusz Janowski, Grzegorz Wojtasiewicz
   Equalizing Current in the Windings of 2G HTS Transformer with Parallel Tapes Transposed with Clusters of Transpositioners

5. Grzegorz Wojtasiewicz
   Analysis of the Distribution of the Equalizing Current in Superconducting Windings of Transformer

   Effect of HIP Process Performed on MgB$_2$ Bulk Samples With Dy, Tb Oxides and Carbon Encapsulated Boron Addition, on the Microstructure, Jc and Tc Critical Parameters

7. Małgorzata Bernat, Henryka D. Stryczewska, Ryszard Goleman, Tomasz Giżewski, Katarzyna Żaborowska-Sapeta, Ireneusz Kowalski, Daniel Janczak
   Static Characteristic Identification of Printed Resistive Pressure Sensors Based on Graphene

8. Ryszard Goleman, Henryka D. Stryczewska, Monika Mańko, Tomasz Giżewski, Aleksandra Znajewska-Pander, Waldemar Placek, Agnieszka Owczarczyk-Saczonek
   Image Preprocessing Algorithms of Pigmented Skin Lesions and their Influence on Feature Vector in Classification Using Fractal Parameters

9. Henryka D. Stryczewska, Ryszard Goleman, Magdalena Pietras, Tomasz Giżewski
   Evaluation of the Damages in Three-phase Watt-hour Induction Meters after External High Magnetic Field Exposition

10. Krzysztof Habelok, Paweł Lasek, Mariusz Stepień
    Characterization the Critical Current in HTS Tape Placed between Halbach Arrays

11. Paweł Lasek, Krzysztof Habelok, Mariusz Stepień
    Current Density Distribution FEM Modeling in YBCO Bulks with Y-211 Particles

12. Piotr Warda
    Measurement Data Transmission in the Presence of Electromagnetic Fields
13. Michał Łanczont
Numerical Modeling of Superconducting Devices in OpenModelica

14. Dariusz Czerwiński, Piotr Wojcicki, Tomasz Zientarski
On Time Blood Pressure Prediction with the Use of PPG Signals

15. Dariusz Czerwiński, Mieczysław Pciań, Michał Majka
Model of Low Power Superconducting Generator

16. Dariusz Czerwiński, Jarosław Nowak
Field Propagation of Jamming Sources in WiFi Networks

17. Magdalena Borys, Małgorzata Plechawska-Wójcik, Paweł Krukow, Sara Barakate, Karim Hachmoud
Using Machine Learning Models to Classify User Performance in the Ruff Figural Fluency Test from Eye-tracking Features

18. Grzegorz Komarzyniec
14 kVA Superconducting Transformer with (RE)BCO Windings

19. Leszek Jaroszyński
Magnetic Core Model for a Reliable Simulation of Three-phase Transformer in PSPICE

20. Paweł Surdacki, Mariusz Holuk, Kamil Bańka, Kamil Gawkowski
Investigation of the CHP Generation System with the Stirling Engine

21. Paweł Surdacki, Leszek Jaroszyński, Łukasz Woźniak
Limiting Short-Circuit Current with a 10 kVA Superconducting Transformer

22. Anna Stankiewicz
Fractional Order RLC Circuits

23. Eligiusz Pawłowski, Piotr Warda
Power Grid Frequency Measurement in LabVIEW Environment Using the Least Mean Squares Method to Signal Phase Approximation in the Presence of Noise

24. Piotr Makarski, Izabela Kuna-Broniowska, Marek Kuna-Broniowski
Influence of Magnetron Control on the Quality the Microwave Processing of the Food Products

25. Mieczysław Dziubiński, Ewa Siemionek, Marek Adamiec, Artur Drozd, Sławomir Kołodziej
Energy Consumption of the Trolleybuses

26. Mieczysław Dziubiński
Simulation of Maintenance Starting Circuit in Means of Transport
13:00 - 14:00  Lunch
14:30 - 16:30  Guided tour in Nałęczów Resort
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| 08:45 - 09:30 | Discussion panel  
Advances in Biotechnology and Computer Engineering in Sojo University and Lublin University of Technology  
Chairpersons: Joanna Pawłat, Shin-ichi Aoqui |
| 09:30 - 10:00 | Closing session                                                     |