



Institute of Electrical Engineering  
& Electrotechnologies  
Lublin University of Technology

Polish Section of IEEE  
Polish Society of Theoretical and Applied  
Electrical Engineering (PTETiS)

Polish Academy of Sciences  
Committee on Electrical Engineering



# 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

Naęczów, Poland

## Organizers and sponsors of ELMECO-9



Poland Section of IEEE - Chapter Magnetics



Polish Society of Theoretical and Applied Electrical Engineering



Laboratorium Badań i Rozwoju w Lublinie



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**

17:00 - 19:00      **Registration - Conference Centre "ENERGETYK" in Nałęczów**  
19:30 -              **Welcome dinner**

**Monday, 4 December 2017**

08:00 - 09:00      **Breakfast**  
08:30 - 09:30      **Registration**  
**09:30 - 10:30      Opening session**  
**10:30 - 11:15      Plenary session**  
11:15 - 11:45      **Coffee break**  
**11:45 - 13:15      Oral session O1**  
13:20 - 13:30      **Group photo in front of the Conference Centre**  
13:30 - 14:30      **Lunch**  
**15:00 - 16:30      Oral session O2**  
16:30 - 17:00      **Coffee break**  
**17:00 - 18:15      Poster session P1**  
19:00 -              **Conference Dinner with the electric cello concert**

**Tuesday, 5 December 2017**

08:00 - 09:00      **Breakfast**  
**09:30 - 11:30      Oral session O3**  
11:30 - 12:00      **Coffee break**  
**12:00 - 13:00      Poster session P2**  
13:00 - 14:00      **Lunch**  
14:30 - 16:30      **Guided tour in Nałęczów Resort**  
17:00 - 19:00      **Bus trip to handicraft forge in Wojciechów**  
19:00 - 22:00      **Conference dinner in Wojciechów**  
22:00 -              **Return to Conference Centre by bus**

**Wednesday, 6 December 2017**

08:00 - 08:45      **Breakfast**  
**08:45 - 09:30      Discussion panel**  
**09:30 - 10:00      Closing session**

# Programme of the Conference **ELMECO-9 & AoS-12**

9<sup>th</sup> International Conference

ELECTROMAGNETIC DEVICES AND PROCESSES IN ENVIRONMENT PROTECTION

& 12<sup>th</sup> Seminar APPLICATIONS OF SUPERCONDUCTORS

3 – 6 December 2017, Nałęczów, Poland

## Sunday, 3 December 2017

17:00 - 19:00      **Registration - Conference Centre "ENERGETYK" in Nałęczów**  
19:30 -              **Welcome dinner**

## Monday, 4 December 2017

08:00 - 09:00      **Breakfast**  
08:30 - 09:30      **Registration**

### 09:30 - 10:30      **Opening session**

1. Conference chair opening speech - prof. Henryka Danuta Stryczewska
2. Invited guests' speeches
3. Presentation of Polish Section of IEEE: Chapter Magnetics - dr. Mariusz Stępień
4. R&D capabilities of LBR Laboratorium Badan i Rozwoju - dr. Łukasz Kurzępa

### 10:30 - 11:15      **Plenary session – chair: Henryka Danuta Stryczewska**

***prof. Ryszard Sikora***

Application of Artificial Intelligence Methods in Medical Diagnostic

11:15 - 11:45      **Coffee break**

**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 O<sub>2</sub> and O<sub>3</sub> Surface Reactions in Ozonizer
2. **Grzegorz Raniszewski**  
Arc Discharge Plasma for Effective Carbon Nanotubes Synthesis
3. **Oksana Kolomiets**, **Olena Prysiachna**, 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, Pawel 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 MgB<sub>2</sub> 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 HT<sub>c</sub> Superconducting Tapes
5. **Daniel Gajda**, A. Morawski, A. Zaleski, M. Rindfleisch, M. Tomsic, W. Häßler, K. Nenkov, A. Yamamoto, M. Małecką, T. Cetner, K. Rogacki  
The Influence of HIP Process on Pinning Centers, Critical Current Density and Structure in MgB<sub>2</sub> Wires and Ba(Fe<sub>0.92</sub>,Co<sub>0.08</sub>)<sub>2</sub>As<sub>2</sub> Superconducting Material

16:30 - 17:00

**Coffee break**

**17:00 - 18:15**

**Poster session P1**

Chairpersons: Marek Kuna-Broniowski, Jarosław Diatczyk

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 O<sub>2</sub> and O<sub>3</sub> 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/O<sub>2</sub> Plasma Jet
9. *Marek Kopacki, Agnieszka Starek, Piotr Kiczorowski, Joanna Pawłat, Jaroslaw 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 Krupski, Henryka Danuta Stryczewska*  
Gliding Arc Discharge Push-Pull Power Supply
15. *Michał Aftyka, Piotr Krupski, 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**

## Tuesday, 5 December 2017

08:00 - 09:00 **Breakfast**

**09:30 - 11:30 Oral session O3**

Chairpersons: Bogusław Grzesik, Dariusz Czerwiński

1. **Yoshiki Myoen**, *Tetsuro Baba, Tamiko Ohshima, Takeshi Kano, Yukio Takeuchi, Shin-ichi Aouki*  
Development of a Magnetic-shield Fabric Consisted of Permalloy Wire
2. **Aleksander Polit**, *Andrzej Uramek*  
Selected Aspects of Designing Power Inductors for Power Electronic Converters
3. **Mirostaw Wciślik**  
Sustainable Development and Ecological Aspects in Electric Steelmaking Process Evolution
4. **Monika Kaczorowska**  
Comparative Analysis of Measures of Biological Artifacts Identification in the Electroencefalography Signal in the Context of Biological Noise
5. **Mikhail Tokovarov**, *Monika Kaczorowska, Małgorzata Plechawska-Wójcik*  
Towards Human Identification Based on SSVEP Response. A Proof of Concept Study
6. **Stanisław Skulimowski**, *Marcin Badurowicz*  
Wearable Sensors as Feedback Method in Virtual Reality Anti-stress Therapy

11:30 - 12:00 **Coffee break**



**12:00 - 13:00**

**Poster session P2**

Chairpersons: Grzegorz Raniszewski, Ryszard Goleman

1. *Anna Kisiel, Leszek Wozny*  
Acoustic Emission Testing for BiSrCaCuO Tapes
2. *Anna Kisiel, Leszek Wozny, Slawomir Debowski*  
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
6. *G. Gajda, A. Morawski, W. Kozłowski, D. Gajda, K. Biernat, P. Przyslupski, M. Gurzkowski, R. Diduszko*  
Effect of HIP Process Performed on MgB<sub>2</sub> Bulk Samples With Dy, Tb Oxides and Carbon Encapsulated Boron Addition, on the Microstructure, J<sub>c</sub> and T<sub>c</sub> Critical Parameters
7. *Małgorzata Bernat, Henryka D. Stryczewska, Ryszard Goleman, Tomasz Giżewski, Katarzyna Zaborowska-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, Pawel Lasek, Mariusz Stepień*  
Characterization the Critical Current in HTS Tape Placed between Halbach Arrays
11. *Paweł Lasek, Krzysztof Habelok, Mariusz Stępień*  
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 Czerwinski, Piotr Wojcicki, Tomasz Zientarski*  
On Time Blood Pressure Prediction with the Use of PPG Signals
15. *Dariusz Czerwiński, Mieczysław Pcian, 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	<b>Lunch</b>
14:30 - 16:30	<b>Guided tour in Nałęczów Resort</b>
17:00 - 19:00	<b>Bus trip to handicraft forge in Wojciechów</b>
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22:00 -	<b>Return to Conference Centre by bus</b>

### Wednesday, 6 December 2017

07:45 - 08:45      **Breakfast**

**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

*Shin-ich Aoqui, Nakayama Yasumune, Fumiaki Mitsugi, Hiejima Kazuo, Yao Kohei, Nishioka Takuro, Iwakiri Masaki, Oishi Ryo, Shotaro Sonoda, Kikunaga Keigo, Nakashima Nagisa, Yamamoto Masaki, Imazato Akichito, Nana Otsubo, Keita Shuto, Monika Kaczorowska, Marek Kamiński, Monika Mańko*

**09:30 - 10:00      Closing session**