

Department of Electrical Engineering & Electrotechnologies,
Lublin University of Technology

Polish Society of Theoretical and Applied Electrical Engineering (PTETiS)

Polish Academy of Sciences
Electrotechnical Committee

Polish National Agency for Academic Exchange



PTETiS

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POLSKA AKADEMIA NAUK

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PROGRAMME

10th International Conference
**Electromagnetic Devices and Processes
in Environment Protection**

ELMECO-10

May 26-27, 2022

Lublin, Poland

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Framework Programme
of the Conference
ELMECO-10

Thursday, 26 May 2022

08:30 - 09:30	Registration – Victoria Hotel in Lublin
09:30 - 10:30	Opening session
10:30 - 11:30	Session 1 – oral
11:30 - 12:00	Coffee break
12:00 - 13:30	Session 2 – poster
13:30 - 14:30	Lunch
14:30 - 16:00	Session 3 – oral
16:00 - 16:30	Coffee break
16:30 - 18:30	Session 4 – poster
19:00 -	Conference Dinner

Friday, 27 May 2022

09:00 - 10:30	Session 5 – oral
10:30 - 11:00	Coffee break
11:00 - 12:30	Session 6 – oral
12:45 – 13:00	Closing session
13:00 - 14:00	Lunch

Programme of the Conference **ELMECO-10**

10th International Conference

ELECTROMAGNETIC DEVICES AND PROCESSES IN ENVIRONMENT PROTECTION

26 – 27 May 2022, Lublin, Poland

Thursday, 26 May 2022

08:30 - 09:30 **Registration**

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

1. Conference chair opening speech - prof. Henryka Danuta Stryczewska
2. **Henryka D. Stryczewska**, *Kenji Ebihara, Shin-ichi Aoqui, Fumiaki Mitsugi, Oleksandr Boiko*
Review of plasma technologies application in agriculture, biomedicine, energy and environment

10:30 - 11:30 **Session 1 – oral**

Chairpersons: **Marek Kocik, Joanna Pawlat**

1. **Kenji Ebihara**, *Fumiaki Mitsugi, Shinichi Aoqui, Yoshitaka Yamashita, Seiji Baba, Henryka D. Stryczewska*
Deep learning technology for remote identification of insect pest and plant growth in ozone-mist sterilization
2. **Koji Yamauchi**, *Shin-ichi Aoqui*
Measurement of water absorption characteristics of seeds by using gliding arc plasma treatment

3. **Akihiro Ikeda, Ryotaro Kimura**
Ohmic Contact Formation on 4H-SiC by CO₂ Laser Annealing of Metal Film on the 4H-SiC
4. **Takahiko Satake, Tamiko Ohshima, Yoshihito Yagyū, Takeshi Ihara, Hiroharu Kawasaki, Shin-ichi Aoqui**
Preparation of multi-elements mixture thin film by sputtering deposition using mixture powder target

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

12:00 - 13:30 Session 2 – poster
Chairpersons: **Kenji Ebihara, Aleksandr Boiko**

1. **Hirohara Kawasaki, T. Ohshima, Y. Yagyū, T. Ihara, Y. Hibino, Y. Suda, T. Satake, S. Aoqui**
Ni and SUS mixture thin film preparation by sputtering using NiO₂ and SUS powder mixture target
2. **Shin-ichi Aoqui, Koji Yamauchi**
Wettability measurement of seeds treated under atmospheric pressure gliding arc discharge plasma
3. **Tadao Sugiura**
Optical tweezers for a biological cell measurement
4. **Masaaki Yamazato, Akira Higa**
Iodine doping effects on electrical and optical properties of amorphous carbon nitride thin films
5. **Fumiaki Mitsugi, Masahiro Kamasaki, Than Nu Nu San, Khing Zaw Phyoo**
Detection of plasma-induced pressure wave using optical wave microphone

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

14:30 - 16:00 Session 3 – oral
Chairpersons: **Sławomir Kozak, Ryszard Goleman**

1. **Krzysztof Przybyła, Mariusz Stępień, Marcin Kasprzak**
A digital platform to support remote laboratory classes in power electronics
2. **Marek Kosmulski, Edward Mączka**
Heat transfer nanofluids based on aqueous ethylene glycol and metal oxide nanoparticles

3. **Paweł Lasek, Mariusz Stępień**
Design and analysis of standing-wave pulsed-field magnetisation system for HTS bulks
4. **Agnieszka Reza, Mateusz Tański, Marek Kocik, Mariusz Jasiński, Dariusz Czyłkowski, Bartek Hrycak, Seiji Kanazawa**
Measurement of microwave plasma parameters using the LIF laser fluorescence methods
5. **Mariusz Stępień, Paweł Lasek, Zygmunt Mikno**
An electromagnetic force control concept for resistance welding machines
6. **Paweł Surdacki**
Thermonuclear reactors for future power generation

16:00 - 16:30 **Coffee break**

16:30 - 18:30 Session 4 – poster
Chairpersons: **Marek Kosmulski, Paweł Mazurek**

1. **Artur Boguta**
New building automation solutions that use the ZigBee and WiFi standard
2. **Oleksandr Boiko**
Dielectric properties, polarization process and charge transport in granular metal-dielectric nanocomposites
3. **Marcin Buczaj**
The electricity demand of academic buildings in 2019-2021
4. **Radosław Gad, Oleksandr Boiko**
Principles certification and homologation of product and automotive vehicles in freemarket economy
5. **Katarzyna Garasz, Marek Kocik, Mateusz Tański**
The effect of high voltage stimulation on *Agaricus bisporus* cultivation
6. **Ryszard Goleman**
Mathematical model of a single phase induction motor with 50Hz / 150Hz magnetic frequency converter
7. **Ryszard Goleman, Jacek Majcher, Kamil Bańka**
Electromagnetic compatibility of selected elements of building automation
8. **Leszek Jaroszyński**
Computer simulation of the superconducting transformer in the power grid
9. **Sławomir Kozak**
SSCL separator mass change

10. **Janusz Kozak**
Forces and stresses in the windings of a superconducting fault current limiter
11. **Joanna Koziel, Michał Majka**
The technical capabilities of electric vehicles produced today and available commercially
12. **Piotr Krupski, Henryka Danuta Stryczewska**
Surgical procedure lighting unit
13. **Michał Łanczont**
Teaching computer science in the field of Electrical Engineering
14. **Jacek Majcher, Marcin Kafarski, Agnieszka Szytłowska, Andrzej Wilczek, Arkadiusz Lewandowski, Wojciech Skieruch**
Measurements of soil moisture with a dagger probe using the FDR technique
15. **Jacek Majcher**
Use of bifilar winding to enhance germination of rapeseed
16. **Michał Majka**
One-dimensional mathematical model of conduction-cooled current leads
17. **Paweł Mazurek**
Electromagnetic disturbances in a plasma reactor at different interelectrode distances
18. **M.S.P Sudhakaran, Young Sun Mok, Lamia Sultana, Md.Mokter Hossain, Piotr Terebun, Michał Kwiatkowski, Joanna Pawłat**
NiMoO₄ supported on γ -Al₂O₃ for syngas production with solar energy assistance
19. **Agnieszka Reza, Mateusz Tański, Daria Przytuła, Katarzyna Garasz, Adam Tomaszewski**
Electrostatic filtration of solid particles suspended in air with DBD-type ionizer
20. **Stanisław Mikołaj Słupski**
DMC method in CR fuel injection system diagnostics
21. **Monika Styła, Sebastian Styła**
Numerical simulations of a flat phantom in the near-field of symmetric dipole antenna
22. **Piotr Terebun, Michał Kwiatkowski, Agnieszka Starek, Marek Kopacki, Agnieszka Sujak, Dariusz Andrejko, Joanna Pawłat**
Effects of radio frequency plasma jet on Allium cepa L. seeds' germination
23. **Piotr Warda**
The method of dynamic selection of the clock frequency of the frequency-to-code converter
24. **Beata Kondratowicz-Kucewicz, Grzegorz Wojtasiewicz**
Analysis of hydrogen tanks technology for mobile and stationary applications

25. **Dawid Zarzeczny**
Impedance sensors for measuring the electrical parameters of the cell culture
26. **Dariusz Zieliński, Wojciech Jarzyna, Łukasz Kwaśny, Karol Fatyga, Piotr Wolszczak, Grzegorz Litak**
Competitiveness of using a cold storage in an air-conditioning system

19:00 - **Conference Dinner**

Friday, 27 May 2022

09:00 - 10:30 **Session 5 – oral**
Chairpersons: **Fumiaki Mitsugi, Paweł Węgierek**

1. **Katarzyna Wojtera, Łukasz Szymański**
Hyperthermal ablation of cancer cells with the heated ferromagnetic nanoparticles
2. **Mateusz Tański, Daria Przytuła, Agnieszka Reza, Katarzyna Garasz, Adam Tomaszewski**
Air purification with Dielectric Barrier Discharge electrostatic precipitator
3. **Michał Lech, Paweł Węgierek**
Improvement of technical parameters of vacuum interrupters used in ecological switchgear of medium voltage
4. **Piotr Terebun, Michał Kwiatkowski, Karol Hensel, Marek Kopacki, Joanna Pawłat**
Application of gliding arc reactor in improving beetroot germination using plasma activated water
5. **Łukasz Woźniak, Paweł Surdacki**
Modelling of transients in transformers wound with HTS tapes
6. **Damian Kostyła, Paweł Węgierek**
Fibre optic methods for measuring pressure in switching and switchgear apparatus

10:30 - 11:00 **Coffee break**

11:00 - 12:30 **Session 6 – oral**
Chairpersons: **Shin-ichi Aoqui, Paweł Surdacki**

1. **Alicja Zielonka**
The Impact of photovoltaics on the electricity grid in Poland
2. **Bartłomiej Stadnik**
Control of the drug packaging process
3. **Patrycja Tymińska, Tomasz Gizewski**
Measurement of corrective forces in the orthopaedic Cheneau brace

4. **Bartłomiej Mroczek, Paweł Pijarski**
Machine Learning in Low Voltage Future Grid
5. **Aleksander Chudy, Piotr Hołyszko, Henryka D. Stryczewska**
Fast charging of electric buses in Lublin and its impact on the power quality based on on-site measurements
6. **Leszek Ruchomski**
Composites Fe/SBA-15 obtained by chemical vapor deposition $\text{Fe}(\text{CO})_5$ onto SBA-15 mesoporous silica

12:45 - 13:00

Closing session

Conference Chair closing speech and Editorial Board remarks

13:00 - 14:00

Lunch