

**58<sup>th</sup> INTERNATIONAL CONFERENCE  
ON MICROELECTRONICS,  
DEVICES AND MATERIALS**

**and the WORKSHOP on  
Chemical Sensors: Materials and  
Applications**



**CONFERENCE 2023**

**CONFERENCE PROGRAM**

**September 27<sup>th</sup> – September 29<sup>th</sup>, 2023  
Lipica, SLOVENIA**

## **ORGANIZER**

**MIDEM** - Society for Microelectronics, Electronic Components and Materials,  
Stegne 7, 1000 Ljubljana, SLOVENIA

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## **CONFERENCE ORGANIZING COMMITTEE**

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## GENERAL INFORMATION

Dear colleagues,

Welcome to the 58<sup>th</sup> International Conference on Microelectronics, Devices, and Materials (MIDEM 2023) in conjunction with the Workshop on Chemical Sensors: Materials and Applications. This conference continues the rich tradition of annual international meetings organised by MIDEM – Society for Microelectronics, Devices, and Materials, Ljubljana, Slovenia. Over the years, these conferences have always attracted a large number of experts from Slovenia and abroad, as well as renowned invited speakers. It offers participants a valuable opportunity to present their research activities and achievements to a global audience and to stimulate discussions on new trends and challenges in their respective fields.

This year, forty-four peer-reviewed regular papers, eight invited papers and one plenary paper will be presented over the three days between 27 and 29 September – 2023. The contributions are divided into the following sections: Optoelectronics; Integrated Circuits and System on Chip; Student Session, Sensors and MEMS; Thin and Thick Films; Materials, Technology and Devices. On the second day of the conference, the workshop Chemical Sensors: Materials and Applications will be organised.

We thank the plenary speaker, invited speakers and authors of the regular papers for their invaluable scientific contributions to the conference sessions and workshop. Our appreciation also goes to the members of the International Scientific Advisory Board who reviewed the submitted papers. Our thanks also go to all the session chairs and the members of the organising committee who did their best to ensure the success of the conference.

We hope that you will remember this event not only for the important contributions and discussions, but also for the new friendships made and the fond memories of our beautiful country.

We wish you a pleasant and unforgettable stay in Lipica and all of Slovenia.

Danjela Kuščer, Chair of the Conference MIDEM 2023 and  
Kristina Žagar Soderžnik, Chair of the Workshop at the Conference MIDEM 2023

## **CONFERENCE VENUE**

The Conference is held from September 27<sup>th</sup> to September 29<sup>th</sup>, 2023 in Lipica, Hotel Maestoso.

## **CONFERENCE PROCEEDINGS**

Invited and accepted papers are published in the Conference Proceedings distributed at the Conference.

## **PAPER PRESENTATION**

Oral regular presentations are 15 minutes long (10 minutes for presentation and 5 minutes for questions).

Oral invited presentations are 30 minutes long for workshop and 45 minutes for regular Conference.

## **LANGUAGE**

The official Conference language is English.

## **LUNCH**

Lunch is provided at the hotel, however, make personal arrangements with the hotel.

## **PARKING**

The hotel has free parking available for MIDEM Conference participants.

## **REGISTRATION**

The registration fees are as follows:

- FULL registration fee: **300 EUR with tax**
- MIDEM Society members, MIDEM Sponsors: **244 EUR with tax**

The fee includes Conference Proceedings, Conference Materials and participation to all Conference events.

## **SOCIAL EVENTS**

Social Networking is scheduled for Wednesday, September 27<sup>th</sup> at Maestoso Hotel.

Visit of Stud farm is scheduled for Thursday, September 28<sup>th</sup>.

Conference Dinner is scheduled for Thursday, September 28<sup>th</sup> at Maestoso Hotel.

## **IMPORTANT INFORMATION**

Students have free access to all Conference sessions on submitting their student card / index. For other Conference events there will be an additional charge.

Price of conference materials is 60 EUR, price of social networking is 25 EUR, visit of stud farm is 20 EUR and 60 EUR for conference dinner.

## **ACCOMMODATION**

Book your room at the Maestoso Hotel with reference to MIDEM2023.

<https://www.lipica.org/en/new-hotel-maestoso/>

## Programme and Organizing Committee, MIDEM 2023 Conference

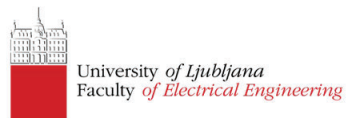
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Conference Web page: <http://www.midem-drustvo.si/conf2023>

### CONFERENCE SPONSORS:

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58<sup>th</sup> International Conference on Microelectronics, Devices and Materials  
and the Workshop on Chemical Sensors: Materials and Application



time	Wednesday 27-9-2023	Thursday 28-9-2023	Friday 29-9-2023
	CONFERENCE	WORKSHOP	CONFERENCE
8:00-8:30			
8:30 - 8:45			
8:45-9:00			
9:00 - 9:15	OPENING	OPENING	
9:15 - 9:30		WORKSHOP INVITED PAPERS: Chairperson K. Žagar Soderžnik <u>Radovan Metelka</u> , Application of various electrode materials in electroanalysis of lipophilic vitamins	Chairperson: Hana Uršič Invited: Inês Cunha, José Tiago Carvalho, Raquel Barras, Diana Gaspar, Madalena Roque, Evira Fortunato, Rodrigo Martins, <u>Luis Pereira</u> , Zinc oxide nanoparticles in low temperature-processed electronic and energy-harvesting devices
9:30 - 9:45	chairperson: M. Topič / J. Krž Plenary: A. Fejfar, M. Hladik, M. Hývl, M. Khytko, A. Vlk, M. Ledinský: Solar photovoltaics - nanotechnology at (many) km <sup>2</sup>		SESSION ON THIN and THICK FILMS: Chairperson: Hana Uršič <u>Izabela Stojanovska</u> , Brigita Kmet, Danjela Kuscer, EFFECT OF ANNEALING CONDITIONS ON STRUCTURAL AND ELECTRICAL PROPERTIES OF Ga-MODIFIED ZnO THIN FILMS
9:45 - 10:00		<u>Edilene ASSUNÇÃO DA SILVA</u> , <u>Nathalie REDON</u> , <u>Caroline DJC</u> , Ammonia organic sensors: from environmental to biomedical applications	<u>Sabi William Kossago</u> , <u>Katarina Žiberna</u> , <u>Andreja Benčan</u> , <u>Hana Uršič</u> , <u>Barbara Malič</u> , ETHYLENE-GLYCOL BASED CHEMICAL SOLUTION DEPOSITION OF 0.5Ba(Zn <sub>0.2</sub> Ti <sub>0.8</sub> )O <sub>3-δ</sub> (Ba <sub>0.7</sub> Ca <sub>0.3</sub> )TiO <sub>3</sub> THIN FILMS
10:00 - 10:15	SESSION ON OPTOELECTRONICS: Chairperson M. Topič/J. Krž <u>Miha Kikeli</u> , Benjamin Lipovek, Laurie-Lou Senaud, Bertrand Pavlet-Salomon, Quentin Jeangros, and Marko Topič, Energy Yield Advantages of 3-Terminal Perovskite-Silicon Tandem Strings	<u>Špela Trafela</u> , Anja Korent, Abhilash Krishnamurthy, Kristina Žagar Soderžnik, Kristina Žužek Rožman and Sašo Sturm, POLYANILINE/POLYSTYRENE/Au-BASED ELECTRODE AS AN ELECTROCHEMICAL BIOSENSOR FOR A SELECTIVE DETECTION OF SARS-CoV-2 VARIANTS	<u>Ana Varlec</u> , <u>Natalija Virant</u> , <u>Marko Mihelin</u> , <u>Tilen Sever</u> , Printing electroluminescent devices on glass bottles – optimization of the display design
10:15 - 10:30	<u>Špela Tomičič</u> , Marko Remec, Florian Scheler, Mark Khenkin, Carolin Ulbrich, Rutger Schlatmann, Steve Albrecht, Marko Jošt, Benjamin Lipovek, Marko Topič, Energy yield model as a tool for studying light soaking and other irreversible degradation mechanisms of perovskite-silicon tandem devices in outdoor operation		<u>Soukaina Merselmiz</u> , <u>Victor Regis</u> , <u>Matej Šadl</u> , <u>Barbara Malič</u> , <u>Andrej Debevec</u> , <u>Silvo Drnovšek</u> , and <u>Hana Uršič</u> , LEAD-FREE Ba(Zr,Ti)O <sub>3</sub> -(Ba,Ca)TiO <sub>3</sub> THICK FILMS PREPARED BY AEROSOL DEPOSITION AND SCREEN-PRINTING TECHNIQUES
10:30 - 10:45			
10:45 - 11:00	COFFE BREAK	COFFE BREAK	COFFE BREAK
11:00 - 11:15	Invited: <u>Martina Schmid</u> , CHALCOPYRITE SOLAR CELLS IN TRANSITION TO THE NEXT GENERATION OF PHOTOVOLTAICS	<u>Miha Nosan</u> , <u>Pedro Farinazzo Bergamo Dias Martins</u> , <u>Ema Gričar</u> , <u>Mitja Kolar</u> and <u>Boštjan Genorio</u> , Sensing of Hydrogen Peroxide in Electrochemical Processes	<u>Ivana Goričan</u> , <u>Uroš Prah</u> , <u>Silvo Drnovšek</u> , <u>Matej Šadl</u> and <u>Hana Uršič</u> , (1-x)Pb(Fe <sub>0.5</sub> Nb <sub>0.5</sub> )O <sub>3-x</sub> BiFeO <sub>3</sub> BULK CERAMICS AND THICK FILMS FOR ENERGY STORAGE APPLICATIONS
11:15 - 11:30			<u>Matej Šadl</u> , <u>Uroš Prah</u> , <u>Veronika Kovacova</u> , <u>Emmanuel Defay</u> , <u>Tadej Rojar</u> , <u>Andrej Lebar</u> , <u>Joško Valentinčič</u> and <u>Hana Uršič</u> , MULTIFUNCTIONAL FLEXIBLE 0.65Pb(Mg <sub>1/3</sub> Nb <sub>2/3</sub> )O <sub>3-δ</sub> 35PbTiO <sub>3</sub> THICK FILMS
11:30 - 11:45	<u>Žan Aldič</u> , Marko Jošt, Marko Topič, Effect of Al <sub>2</sub> O <sub>3</sub> on the electrical performance and long-term stability of FACS perovskite solar cells		<u>Blaž Velkavrh</u> , <u>Urban Tomc</u> , <u>Victor Regis</u> , <u>Matej Šadl</u> , <u>Andrej Kitanovski</u> and <u>Hana Uršič</u> , PREPARATION OF DIELECTRIC THICK FILMS FOR FLUIDIC THERMAL SWITCHES IN MAGNETOCALORIC COOLING DEVICE
11:45 - 12:00	<u>Jure Pušnjač</u> , <u>Janez Krž</u> and <u>Marko Topič</u> , ELECTRICAL MODELLING OF NiO/ITO RECOMBINATION JUNCTION FOR APPLICATIONS IN PEROVSKITE/CIGS TANDEM SOLAR CELLS	<u>Maria González-Gómez</u> , <u>Anna Zymohlad</u> , <u>Olga Casals</u> , <u>Juan Daniel Prades</u> and <u>Cristian Fábrega</u> , Colorimetric Inks: A New Approach to Low Cost and Disposable Gas Sensors	<u>Borut Pečar</u> , <u>Matej Možek</u> and <u>Danilo Vrtačnik</u> , AN INNOVATIVE THERMOCYCLER FOR A POINT-OF-CARE POLYMERASE CHAIN REACTION DIAGNOSTIC SYSTEMS
12:00 - 12:15	<u>Dejan Hrovatin</u> , <u>Andrej Žemva</u> , Increasing the autonomy of the eVTOL SQA	WORKSHOP REGULAR PAPERS: Chairperson K. Žagar Soderžnik <u>Barbara Repič</u> , <u>Maksimiljan Dekeva</u> , <u>Darko Belavič</u> , <u>Kostja Makarovič</u> , <u>Mitja Jerlah</u> , <u>Ema Gričar</u> , <u>Helena Prosen</u> , <u>Mitja Kolar</u> , <u>Gregor Marolt</u> , <u>Danjela Kužer</u> , SCREEN-PRINTED GRAPHITE-GLASS COMPOSITE ELECTRODES FOR DETECTION OF IMIDACLOPRID	CLOSING
12:15 - 12:30	<u>Ziga Smelcer</u> and <u>Janez Trontelj</u> , Analysis of current-referenced oscillator for temperature compensation of slope A/D converter	<u>M. Dekleva</u> , <u>M. Kovačević</u> , <u>E. Gričar</u> , <u>G. Marolt</u> , <u>M. Kolar</u> , <u>B. Genorio</u> , <u>B. Repič</u> , <u>D. Kužer</u> , <u>D. Belavič</u> , <u>K. Makarovič</u> , <u>M. Jerlah</u> and <u>H. Prosen</u> , OPTIMIZATION OF PRETREATMENT FOR A GRAPHITE GLASS COMPOSITE THICK FILM WORKING ELECTRODE	

	Wednesday 27-9-2023 CONFERENCE	Thursday 28-9-2023 WORKSHOP	Friday 29-9-2023 CONFERENCE
12:30 - 12:45	<b>LUNCH</b>	<b>LUNCH</b>	
12:45 - 13:00			
13:00 - 13:15			
13:15 - 13:30			
13:30 - 13:45			
13:45 - 14:00			
14:00-14:15	<b>SESSION on MATERIALS, TECHNOLOGY and DEVICES:</b> Chairperson B. Malič <u>Jurij Koruza</u> , Mao-Hua Zhang, Lovro Fulanović, NaNbO <sub>3</sub> -based materials for high-energy storage capacitors and tunable dielectrics		
14:15 - 14:30	<u>Vida Jurečić</u> , Lovro Fulanović, Jurij Koruza, Vid Bobnar, Nikola Novak, SYNERGETIC BOOST OF FUNCTIONAL PROPERTIES NEAR CRITICAL END POINTS IN ANTIFERROELECTRIC SYSTEMS	<b>Visit: STUD FARM</b>	
14:30 - 14:45	<u>Anžeta Sarkar</u> , Matej Šadl, Anže Jazbec, Luka Snoj, Silvo Drmčević, Tadej Rojac, Geoff Brennecke, Hana Uršič, and Barbara Malič, Neutron and gamma irradiation effects on dielectric, ferroelectric and electrocaloric properties in La-doped 0.9Pb(Mg <sub>1/3</sub> Nb <sub>2/3</sub> )O <sub>3</sub> -0.1PbTiO <sub>3</sub> ceramics		
14:45 - 15:00	<u>Slavko Bernik</u> , Tian Tian, Matejka Podlogar, Guorong LI, A NOVEL ZNO-Cr2O3-BASED VARISTOR CERAMIC – THE ROLE OF DOPANTS IN CREATING NONLINEAR ELECTRICAL PROPERTIES		
15:00 - 15:15	Tina Radošević, Lara Einfall, Nik Gračanin, Martina Kocijan, Damjan Vengus, <u>Matejka Podlogar</u> , PHOTOCATALYTIC DEGRADATION OF FIBER-BASED MICROPLASTIC		
15:15 - 15:30	<u>Domen Pauj</u> , Miran Mozetič, Rok Zaplotnik, Alenka Vesel, Gregor Primc, Heterogeneous surface recombination of oxygen atoms on oxidized nickel		<u>Abhilash Krishnamurthy</u> , Kristina Žagar Soderžnik, EVALUATION OF SENSOR PERFORMANCE DEGRADATION USING FREQUENCY RESPONSE ANALYSIS
15:30-15:45	<u>Dane Loiné</u> , Linus Nyssen, David Pettijean, Thomas Fontaine, François Reniers, Plasma-driven H <sub>2</sub> Production in the Nano-pulsed Multiple Pin-to-mesh Semi-submerged Atmospheric Pressure Discharge	<u>Jelena Vučanićević</u> , Špela Trafela, Neža Sodnik, Zoran Samardžija and Kristina Žagar Soderžnik, ELECTROCHEMICAL SENSOR FOR DETECTION BISPHENOLIS IN THERMAL PAPER	
15:45 - 16:00	<u>Kostja Makarovič</u> , Aleksander Sesek, Matej Klemenčič, Robert Dular, Barbara Malič, DEVELOPMENT OF A DRYING INDICATOR FOR TAPE CASTING PROCESS	<u>Barbara Ljubec Botiček</u> , Anna Timicheva, Živa Marinko, <u>Miran Čeb</u> , Belisa Alcantara Marinho, Anodization of Titanium and other Metal Alloys for Application in Photoelectrocatalysis	
16:00 - 16:15	<b>COFFEE BREAK</b>	<b>COFFEE BREAK</b>	
16:15 - 16:30			
16:30-16:45			
16:45-17:00	<b>HIGH SCHOOL STUDENTS PRESENTATION:</b> Chairperson J. Trontelj Simon Lipovšek, Aleš Volčini, Pong in FPGA	chairperson: M. Topič / J. Krč Invited: Siegfried Krainer and Harald Gietler (Infineon), <b>Opportunities for Photoacoustic and Terahertz (bio)chemical Sensor-Systems enabled by latest Semiconductor technologies</b>	
17:00-17:15	<u>Adrian S. Šiška</u> , Aleš Volčini, Development of a Bitroot Compiler, a Programming Language for a Primitive Architecture  <u>Luka Leskovek</u> , Aleš Volčini: DOOM on the ESP32 Microcontroller	<b>SESSION on OPTOELECTRONICS:</b> Chairperson M. Topič / J. Krč <u>Darja Uršič</u> , Matija Pirč, Marko Jost, Marko Topič, Marko Jankovec, Long-Term Indoor Stability and Energy Harvesting Performance of Perovskite Solar Cells	
17:15-17:30	<u>Bor Kokovnik</u> , Matija Kitek, Luka Pogačnik: Quantifying Droplet Size in a Liquid Rocket Fuel Injector	<u>Žiga Miklič</u> , Marko Topič, Comparison of Solar Irradiance Forecasts and Actual PV Power Plant Production	
17:30-17:45	<u>Jurij Fortuna</u> , Aleksandar Savković, David Turk, Leon Ulčakar, Luka Pogačnik: Towards a Homebrew Engine Control System for Liquid Rocket Engine with Remote Telemetry	<u>Vera Gradišnik</u> , THE INFLUENCE OF LIGHT PULSE DUTY CYCLE AND BIAS VOLTAGES ON LONG-TIME TURNSIENT RESPONE OF a-Si:H P-I-N PHOTODIODE	
17:45-18:00	<u>Jernej Raič</u> , Janez Omahen: Li-Ion Battery Analyzer <u>Jernej Leskovec</u> , Janez Omahen: LoRa Pager - Portable Off-grid Communication	<u>Miloš Ljubotina</u> , Jasper De Witte, Dries Van Thourhout, Bart Kuyken, Leonardo Midolo, Marko Topič and Janez Krč, Numerical analysis of optical losses in integrated GaAs waveguides associated with sidewall surface roughness	
18:00- 18:15	<u>Jure Zdešar</u> , Janez Omahen: Beekeeping Scale for a Beehive with a Built-in Weather Station <u>Mitja Nastran</u> , Maja Azarov Domajnko: Spotify Keyboard <u>Vid Gruden</u> , maja Azarov Domajnko: Casino Card Dealing Machine <u>Filip Jesensek</u> , janez Omahen: Sun Position Algorithm	<u>Merisha Fernando</u> , Andraž Debevc, Miloš Ljubotina, Janez Trontelj, Marko Topič and Janez Krč, Design of waveguiding structures for SiN integrated photonic platform fabricated at ULFE	
18:15 - 18:30	<u>Tomaz Buljan</u> , Aljaz Goršek, Janez Trontelj, The Making of Rotary Terahertz Imaging System <u>Anej Ivanc</u> , Kaja Kastelic, Janez Trontelj: Measurements Using the Ultrasonic Sensor HC-SR04 <u>Kristjan Gradnik</u> , Janez Trontelj: 8-bit Electromechanical Binary Calculator	<u>David Uršič</u> , Andraž Debevc, Marko Topič and Janez Krč, PHOTOACOUSTIC PHENOMENON OF SOOT-BASED LAYERS	
18:30 - 18:45			
18:45 - 19:00			
19:00 --	<b>WELCOME PARTY</b>	<b>CONFERENCE DINNER</b>	

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# CONFERENCE PROGRAM

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**WEDNESDAY, SEPTEMBER 27**

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**08:00 REGISTRATION**

**09:00 WELCOME AND CONFERENCE OPENING CEREMONY**

**09:15 CONFERENCE PLENARY PAPER**

CHAIRPERSON: M. Topič / J. Krč

**09:15 A. Fejfar, M. Hladík, M. Hývl, M. Khytko, A. Vlk, M. Ledinský**

Solar Photovoltaics - Nanotechnology at (many) km<sup>2</sup>

**10:00 SESSION on OPTOELECTRONICS**

CHAIRPERSON: M. Topič / J. Krč

**10:00 Miha Kikelj, Benjamin Lipovšek, Laurie-Lou Senaud, Bertrand Paviet-Salomon, Quentin Jeangros and Marko Topič**

Energy Yield Advantages of 3-Terminal Perovskite-Silicon Tandem Strings

**10:15 Špela Tomšič, Marko Remec, Florian Scheler, Mark Khenkin, Carolin Ulbrich, Rutger Schlatmann, Steve Albrecht, Marko Jošt, Benjamin Lipovšek, Marko Topič**

Energy Yield Model as a Tool for Studying Light Soaking and Other Irreversible Degradation Mechanisms of Perovskite-silicon Tandem Devices in Outdoor Operation

**10:30 COFFEE BREAK**

**11:00 CONFERENCE INVITED PAPER**

CHAIRPERSON: M. Topič / J. Krč

**11:00 Martina Schmid**

Chalcopyrite Solar Cells in Transition to The Next Generation of Photovoltaics



## **11:30 SESSION on OPTOELECTRONICS**

CHAIRPERSON: M. Topič / J. Krč

### **11:30 Žan Ajdič, Marko Jošt, Marko Topič**

Effect of Al<sub>2</sub>O<sub>3</sub> on the Electrical Performance and Long-term Stability of FACs Perovskite Solar Cells

### **11:45 Jure Pušnjak, Janez Krč and Marko Topič**

Electrical Modelling of NiO/ITO Recombination Junction for Applications in Perovskite/CIGS Tandem Solar Cells

## **12:00 SESSION on ELECTRONICS / INTEGRATED CIRCUITS and SYSTEM on CHIP**

CHAIRPERSON: M. Topič / J. Krč

### **12:00 Dejan Hrovatin, Andrej Žemva**

Increasing The Autonomy of the eVTOL SQA

### **12:15 Žiga Šmelcer and Janez Trontelj**

Analysis of Current-referenced Oscillator for Temperature Compensation of Slope A/D Converter

## **12:30 LUNCH**

## **14:00 SESSION on MATERIALS, TECHNOLOGY AND DEVICES**

CHAIRPERSON: B. Malič

### **14:00 Jurij Koruza, Mao-Hua Zhang, Lovro Fulanović**

NaNbO<sub>3</sub>-based Materials for High-energy Storage Capacitors and Tunable Dielectrics

### **14:15 Vida Jurečič, Lovro Fulanović, Jurij Koruza, Vid Bobnar, Nikola Novak**

Synergetic Boost of Functional Properties Near Critical End Points in Antiferroelectric Systems

### **14:30 Ankita Sarkar, Matej Šadl, Anže Jazbec, Luka Snoj, Silvo Drnovšek, Tadej Rojac, Geoff Brennecke, Hana Uršič and Barbara Malič**

Neutron and Gamma Irradiation Effects on Dielectric, Ferroelectric and Electrocaloric Properties in La-doped 0.9Pb(Mg<sub>1/3</sub>Nb<sub>2/3</sub>)O<sub>3</sub>-0.1PbTiO<sub>3</sub> Ceramics

**14:45 Slavko Bernik, Tian Tian, Matejka Podlogar, Guorong Li**

A Novel ZnO-Cr<sub>2</sub>O<sub>3</sub>-based Varistor Ceramic – The Role of Dopants in Creating Nonlinear Electrical Properties

**15:00 Tina Radošević, Lara Einfalt, Nik Gračanin, Martina Kocijan, Damjan Vengust, Matejka Podlogar**

Photocatalytic Degradation of Fiber-based Microplastic

**15:15 Domen Paul, Miran Mozetič, Rok Zaplotnik, Alenka Vesel, Gregor Primc**

Heterogeneous Surface Recombination of Oxygen Atoms on Oxidized Nickel

**15:30 Dane Lojen, Linus Nyssen, David Petitjean, Thomas Fontaine, François Reniers**

Plasma-driven H<sub>2</sub> Production in the Nano-pulsed Multiple Pin-to-mesh Semi-submerged Atmospheric Pressure Discharge

**15:45 Kostja Makarovič, Aleksander Sešek, Matej Klemenčič, Robert Dular, Barbara Malič**

Development of a Drying Indicator for Tape Casting Process

**16:00 COFFEE BREAK**

## **16:30 STUDENTS PRESENTATION**

**16:30 – 18:30**

CHAIRPERSON: J. Trontelj

**Simon Lipovšek, Aleš Volčini**

Pong in FPGA

**Adrian Sebastian Šiška, Aleš Volčini**

Development of a Bitrout Compiler, a Programming Language for a Primitive Architecture

**Luka Leskovšek, Aleš Volčini**

DOOM on the ESP32 Microcontroller

**Bor Kokovnik, Matija Kitek, Luka Pogačnik**

Quantifying Droplet Size in a Liquid Rocket Fuel Injector

**Jurij Fortuna, Aleksandar Savković, David Turk, Leon Ulčakar, Luka Pogačnik**

Towards a Homebrew Engine Control System for Liquid Rocket Engine with Remote Telemetry

**Jernej Raič, Janez Omahen**

Li-Ion Battery Analyzer

**Jernej Leskovec, Janez Omahen**

LoRa Pager – Portable Off-Grid Communication

**Jure Zdešar, Janez Omahen**

Beekeeping Scale for a Beehive with a Built-in Weather Station

**Mitja Nastran, Maja Azarov Domajnko**

Spotify Keyboard

**Vid Gruden, Maja Azarov Domajnko**

Casino Card Dealing Machine

**Filip Jesenšek, Janez Omahen**

Sun Position Algorithm

**Tomaž Buljan, Aljaž Gorišek, Janez Trontelj:**

The Making of Rotary Terahertz Imaging System

**Anej Ivanc, Kaja Kastelic, Janez Trontelj:**

Measurements Using the Ultrasonic Sensor HC-SR04

**Kristjan Gradnik, Janez Trontelj**

8-bit Electromechanical Binary Calculator

**19:00 WELCOME PARTY AT MAESTOSO HOTEL**

## THURSDAY, SEPTEMBER 28

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### 08:00 REGISTRATION

### 08:45 WORKSHOP OPENING CEREMONY

(D. Kuščer, K. Žagar Soderžnik)

### 09:00 WORKSHOP - INVITED PAPERS

CHAIRPERSON: K. Žagar Soderžnik, D. Kuščer

#### 09:00 Radovan Metelka

Application of Various Electrode Materials in Electroanalysis of Lipophilic Vitamins

#### 09:30 Edilene Assunção da Silva, Nathalie Redon, Caroline Duc

Ammonia Organic Sensors: From Environmental to Biomedical Applications

#### 10:00 Špela Trafela, Anja Korent, Abhilash Krishnamurthy, Kristina Žagar Soderžnik, Kristina Žužek Rožman and Sašo Šturm

Polyaniline/Polystyrene/Au-based Electrode as An Electrochemical Biosensor for A Selective Detection of SARS-CoV-2 Variants

### 10:30 COFFEE BREAK

#### 11:00 Miha Nosan, Pedro Farinazzo Bergamo Dias Martins, Ema Gričar, Mitja Kolar and Boštjan Genorio

Sensing of Hydrogen Peroxide in Electrochemical Processes

#### 11:30 Maria González-Gómez, Anna Zymohliad, Olga Casals, Juan Daniel Prades and Cristian Fàbrega.

Colorimetric Inks: A New Approach to Low Cost and Disposable Gas Sensors

### 12:00 WORKSHOP - REGULAR PAPERS

CHAIRPERSON: K. Žagar Soderžnik, D. Kuščer

**12:00 Barbara Repič, Maksimiljan Dekleva, Darko Belavič, Kostja Makarovič, Mitja Jerlah, Ema Gričar, Helena Prosen, Mitja Kolar, Gregor Marolt, Danjela Kuščer**  
Screen-printed Graphite-glass Composite Electrodes for Detection of Imidacloprid

**12:15 M. Dekleva, M. Kovačević, E. Gričar, G. Marolt, M. Kolar, B. Genorio, B. Repič, D. Kuščer, D. Belavič, K. Makarovič, M. Jerlah and H. Prosen**  
Optimization of Pretreatment for A Graphite Glass Composite Thick Film Working Electrode

## **12:30 LUNCH**

## **14:00 VISIT OF STUD FARM IN LIPICA (STABLE TOUR)**

## **15:15 WORKSHOP – REGULAR PAPERS**

CHAIRPERSON: K. Žagar Soderžnik, D. Kuščer

**15:15 Abhilash Krishnamurthy, Kristina Žagar Soderžnik**  
Evaluation of Sensor Performance Degradation Using Frequency Response Analysis

**15:30 Jelena Vujančević, Špela Trafela, Neža Sodnik, Zoran Samardžija and Kristina Žagar Soderžnik**  
Electrochemical Sensor for Detection Bisphenols in Thermal Paper

**15:45 Barbara Ljubec Božiček, Anna Timicheva, Živa Marinko, Miran Čeh, Belisa Alcantara Marinho**  
Anodization of Titanium and Other Metal Alloys for Application in Photoelectrocatalysis

## **16:00 COFFEE BREAK**

## **16:30 CONFERENCE INVITED PAPER**

CHAIRPERSON: M. Topič / J. Krč

**16:30 Siegfried Krainer and Harald Gietler**  
Opportunities for Photoacoustic and Terahertz (Bio)Chemical Sensor-systems Enabled by Latest Semiconductor Technologies

## **17:00 SESSION on OPTOELECTRONICS**

CHAIRPERSON: M. Topič / J. Krč

**17:00 Darjo Uršič, Matija Pirc, Marko Jošt, Marko Topič, Marko Jankovec**

Long-term Indoor Stability and Energy Harvesting Performance of Perovskite Solar Cells

**17:15 Žiga Miklič, Marko Topič**

Comparison of Solar Irradiance Forecasts and Actual PV Power Plant Production

**17:30 Vera Gradišnik**

The Influence of Light Pulse Duty Cycle and Bias Voltages on Long-time Transient Response of a-Si:H P-I-N Photodiode

**17:45 Miloš Ljubotina, Jasper De Witte, Dries Van Thourhout, Bart Kuyken, Leonardo Midolo, Marko Topič and Janez Krč**

Numerical Analysis of Optical Losses in Integrated GaAs Waveguides Associated with Sidewall Surface Roughness

**18:00 Merisha Fernando, Andraž Debevc, Miloš Ljubotina, Janez Trontelj, Marko Topič and Janez Krč**

Design of Waveguiding Structures for SiN Integrated Photonic Platform Fabricated at UL FE

**18:15 David Uršič, Andraž Debevc, Marko Topič and Janez Krč**

Photoacoustic Phenomenon of Soot-based Layers

## **19:00 CONFERENCE DINNER**

Conference Dinner will be held at the Maestoso Hotel.

**FRIDAY, SEPTEMBER 29**

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**08:00 REGISTRATION**

**09:00 CONFERENCE INVITED PAPERS**

CHAIRPERSON: H. Uršič

**09:00 Inês Cunha, José Tiago Carvalho, Raquel Barras, Diana Gaspar, Madalena Roque, Elvira Fortunato, Rodrigo Martins, Luis Pereira**

Zinc Oxide Nanoparticles in Low-temperature Electronic and Energy-harvesting Devices

**09:30 SESSION on THIN AND THICK FILMS**

CHAIRPERSON: H. Uršič

**09:30 Izabela Stojanoska, Brigita Kmet, Danjela Kuščer**

Effect of Annealing Conditions on Structural and Electrical Properties of Sol-gel Ga-modified ZnO Thin Films

**09:45 Sabi William Konsago, Katarina Žiberna, Andreja Benčan, Hana Uršič, Barbara Malič**

Ethylene-glycol Based Chemical Solution Deposition of  $0.5\text{Ba}(\text{Zr}_{0.2}\text{Ti}_{0.8})\text{O}_3-0.5(\text{Ba}_{0.7}\text{Ca}_{0.3})\text{TiO}_3$  Thin Films

**10:00 Ana Varlec, Natalija Virant, Marko Mihelin, Tilen Sever**

Printing Electroluminescent Devices on Glass Bottles – Optimization of the Display Design

**10:15 Soukaina Merselmiz, Victor Regis, Matej Šadl, Barbara Malič, Andrej Debevec, Silvo Drnovšek and Hana Uršič**

Lead-free  $\text{Ba}(\text{Zr},\text{Ti})\text{O}_3-(\text{Ba},\text{Ca})\text{TiO}_3$  Thick Films Prepared by Aerosol Deposition and Screen-printing Techniques

**10:30 COFFEE BREAK**

**11:00 Ivana Goričan, Uroš Prah, Silvo Drnovšek, Matej Šadl and Hana Uršič**  
(1-x)Pb(Fe<sub>0.5</sub>Nb<sub>0.5</sub>)O<sub>3</sub>-xBiFeO<sub>3</sub> Bulk Ceramics and Thick Films for Energy Storage Applications

**11:15 Matej Šadl, Uroš Prah, Veronika Kovacova, Emmanuel Defay, Tadej Rojac, Andrej Lebar, Joško Valentinčič and Hana Uršič**  
Multifunctional Flexible 0.65Pb(Mg<sub>1/3</sub>Nb<sub>2/3</sub>)O<sub>3</sub>-0.35PbTiO<sub>3</sub> Thick Films

**11:30 Blaž Velkavrh, Urban Tomc, Victor Regis, Matej Šadl, Andrej Kitanovski and Hana Uršič**  
Preparation of Dielectric Thick Films for Fluidic Thermal Switches in Magnetocaloric Cooling Device

**11:45 Borut Pečar, Matej Možek and Danilo Vrtačnik**  
An Innovative Thermocycler for A Point-of-care Polymerase Chain Reaction Diagnostic Systems

**12:00 CLOSING OF THE CONFERENCE**