

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

**and the WORKSHOP on  
Energy Harvesting: Materials and  
Applications**



**CONFERENCE 2022**

**CONFERENCE PROGRAM**

**September 14<sup>th</sup> – September 16<sup>th</sup>, 2022  
Maribor, SLOVENIA**

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## **ORGANIZER**

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

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## **CONFERENCE SPONSORS**

**Jožef Stefan Institute**, Ljubljana

**Faculty for Electrical Engineering**, Ljubljana

**Mikroiks d.o.o.**, Ljubljana

**IMAPS**, Slovenia Chapter

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## **CONFERENCE PROGRAMME COMMITTEE**

Tadej Rojac, Jožef Stefan Institute, Slovenia **Conference chairperson**

Mojca Otoničar, Jožef Stefan Institute, Slovenia, **Chairperson of the Workshop**

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Miro Zeman, Delft University of Technology, The Netherlands

Andrej Žemva, University of Ljubljana, Faculty of Electrical Engineering, Slovenia

## **CONFERENCE ORGANIZING COMMITTEE**

Iztok Šorli, MIKROIKS d.o.o., Slovenia

Mojca Otoničar, Jožef Stefan Institute, Slovenia,

Olga Zakrajšek, MIDEM, Slovenia

## **GENERAL INFORMATION**

Dear colleagues,

Welcome to the 57<sup>th</sup> International Conference on Microelectronics, Devices and Materials, (MIDEM 2022) with the joint Workshop on Energy Harvesting: Materials and Applications. The conference continues the tradition of annual, international meetings organized by MIDEM – Society for Microelectronics, Devices and Materials, Ljubljana, Slovenia. These conferences have always attracted a large number of Slovene and foreign experts, as well as distinguished guest speakers, giving the opportunity to present their activities and research progress to the international audience and to discuss trends and problems related to their fields of work with other colleagues.

This year, 38 reviewed regular papers and 7 invited papers will be presented over the three days in the period September 14<sup>th</sup> – 16<sup>th</sup>, 2022. Conference contributions are grouped into the following sections: Optoelectronics; Integrated Circuits and System on Chip; Students Session, Sensors and MEMS; Thin and Thick Films; Materials, Technology and Devices. On the second day of the conference the Workshop on Energy Harvesting: Materials and Applications is organized.

We would like to express our thanks to the invited speakers and the contributors of regular papers for their valuable scientific contributions to the conference sessions and to the workshop. The members of the International Scientific Board of the conference, who made the review of the contributions, are gratefully acknowledged. We also thank all the Session Chairs and the members of the Conference Organizing Committee, who did their best to make the conference a success.

We hope that you will remember this event, not only for the importance of the papers and discussions, but also for the new friendships and the pleasant memories of the country.

We wish you a pleasant stay in Maribor and in Slovenia.

Tadej Rojac, chair of the conference MIDEM 2022 and  
Mojca Otoničar, chair of the workshop at the conference MIDEM 2022

### **CONFERENCE VENUE**

The Conference is held from September 14<sup>th</sup> to September 16<sup>th</sup>, 2022 in Maribor, Hotel City Maribor.

### **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 without tax**
- MIDEM Society members, MIDEM Sponsors: **244 EUR without tax**

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

## **SOCIAL EVENTS**

Social Networking is scheduled for Wednesday, September 14<sup>th</sup> – visit to VINAG wine cellar  
Conference Dinner is scheduled for Thursday, September 15<sup>th</sup> at Hotel City Maribor.

## **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 50 EUR and 80 EUR for conference dinner.

## **ACCOMMODATION**

Book your room at the Hotel City Maribor with reference to MIDEM2022.

In case there are no more rooms available try

<https://www.visitmaribor.si/en/accommodation-and-offer/hotels/>

## **Programme and Organizing Committee, MIDEM 2021 Conference**

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**Conference Web page:** <http://www.midem-drustvo.si/conf2022>

time	Wednesday 14-9-2022	Thursday 15-9-2022	Friday 16-9-2022
	CONFERENCE	WORKSHOP	CONFERENCE
8:00- 8:50	Registration	Registration	Registration
8:50 - 9:00	<b>Opening ceremony</b>	<b>Opening of workshop</b>	
9:00 - 9:15		W1: <u>Guyllaine Poulin-Vittrant</u> Mechanical energy harvesting using piezoelectric materials: principles, design and challenges	H1: <u>Hugh Simons</u> Non-destructive, multi-scale mapping of defects and their dynamics
9:15 - 9:30			
9:30 - 9:45	Plenary: <u>Denis Donlajac</u> Micro-thermo optics devices	W2: <u>Marco Deluca</u> Energy autonomous wireless sensor nodes: Energy harvesting and storage perspectives	TTF 1: <u>Mihal Slabki, Kevin P. Free, Anastasia Kucheryavaya, Jurij Kotuza</u> Porous piezoceramic functional platforms by paper templating
9:45 - 10:00	OPTO 1: <u>A. Debevc, M. Topič</u> and J. Krč TOWARDS HIGH DENSITY PHOTONIC INTEGRATED CIRCUITS BY USING ALL-DIELECTRIC METAMATERIALS		TTF 2: <u>Sabi William Konsago, Katarina Žiberna, Brigita Kmet, Andreja Bencan Golob, Hana Uršič, Barbara Malič</u> Influence of the choice of the solvents on microstructure and properties of solution-derived barium titanate-based thin films
10:00 - 10:15	OPTO 2: <u>M. Ljubotina, M. Topič, and J. Krč</u> CHARACTERISATION OF SILICON WAVEGUIDES IN PHOTONIC INTEGRATED CIRCUITS	W3: <u>Matjaž Spreitzer</u> Enabling technologies for high-quality piezoMEMS	TTF 3: <u>Ankita Sarkar, Hana Uršič, Anže Jazbec, Luka Snoj, Matej Šadl, Silvo Drnovšek and Barbara Malič</u> Influence of neutron and gamma irradiation on the dielectric, ferroelectric and electrocaloric properties of Mn-doped (1-x)Pb(Mg1/3Nb2/3)O3-xPbTiO3 ceramics
10:15 - 10:30	OPTO 3: <u>Žiga Šmelcer, Janez Krč and Janez Trontelj</u> Evaluation of thin-film optical interference filter fabrication on silicon and glass substrate		TTF 4: <u>Matej Šadl, Tadej Rojac, Andrej Lebar, Joško Valentincič, Kevin Nadaud, Mica Bah, Franck Levassort, Hana Uršič</u> AEROSOL-DEPOSITED 0.65Pb(Mg1/3Nb2/3)O3-0.35PbTiO3 THICK FILMS FOR ENERGY APPLICATIONS
10:30 - 10:45	<b>Coffee break</b>	<b>Coffee break</b>	<b>Coffee break</b>
10:45 - 11:00			
11:00 - 11:15	OPTO 4: <u>Miha Kikelj, Benjamin Lipovšek, Bertrand Paviet-Salomon, Quentin Jeangros, and Marko Topič</u> An Energy Yield Perspective on Performance of 2/3 Terminal Silicon-Perovskite Tandem Strings	W4: <u>Peter Woias</u> Ambient-adapted energy harvesting from variable mechanical and thermal energy budgets	TTF 5: <u>Victor Regis, Matej Šadl, Hana Uršič</u> Aerosol-deposited multilayer composites
11:15 - 11:30	OPTO 5: <u>Špela Tomšič, Benjamin Lipovšek, Kristijan Brecl, Marko Jošt, Marko Topič</u> What can we learn from energy yield modelling of perovskite/silicon tandem solar cells		MTD 1: <u>Slavko Bernik, Tian Tian, Matejka Podlogar, Guorong Li</u> MICROSTRUCTURAL AND ELECTRICAL CHARACTERISTICS OF A NOVEL ZnO-Cr2O3-BASED VARISTOR CERAMICS
11:30 - 11:45	OPTO 6: <u>Marko Remec, Špela Tomšič, Marko Jošt, Mark Khenkin, Quiterie Emery, Jinzhao Li, Boštjan Glažar, Marko Jankovec, Eva Unger, Rutger Schlatmann, Carolin Ulbrich, Marko Topič</u> OPERATION OF PEROVSKITE SOLAR CELLS UNDER DIFFERENT OPERATING CONDITIONS USING INDOOR MULTI-CHANNEL TESTING PLATFORM	W5: <u>Astri Bjørnetun Haugen</u> TEXTURED PIEZOELECTRIC CERAMICS FOR ENERGY HARVESTING	MTD 2: <u>Slavko Bernik, Marija Ercegovac, Zoran Samardžija</u> CONTROL OF IMPURITY ELEMENTS FOR ENHANCED ELECTRICAL PROPERTIES OF ZnO-BASED MULTILAYER VARISTORS
11:45 - 12:00	OPTO 7: <u>Žan Aidič, Marko Jošt, Marko Topič</u> Improving stability of FACs perovskite solar cell using PEIE as a nucleation layer for SnO2		MTD 3: <u>Katja Vozel, Katja Klinar, Andrej Kitanovski</u> THERMAL CONTROL ELEMENTS
12:00 - 12:15	OPTO 8: <u>Tina Perko, Marko Jošt, Marko Topič</u> Influence of SnO2 electron transport layer thickness on performance of perovskite solar cell	W6: <u>Julian Walker</u> Engineering Hybrid Ionic Plastic Crystals for Microelectronics and Thermal energy applications – Phase transitions and electromechanical properties	MTD 4: <u>Samir Salmanov, Tadej Rojac, Danjela Kušcer, Mojca Otoničar</u> Cold sintering as an alternative way to obtain lead-free ceramics
12:15 - 12:30	OPTO 9: <u>Jure Pušniak, Janez Krč and Marko Topič</u> SIMULATION STUDY OF A RECOMBINATION JUNCTION IN PEROVSKITE/CIGS TANDEM SOLAR CELL		MTD 5: <u>Kostja Makarovič, Darko Belavič, Mitja Jerlah, Barbara Malič</u> DETERMINING THE MAXIMUM OPERATING TEMPERATURE OF THICK-FILM RESISTORS ON LTCC AND AL2O3 SUBSTRATES
12:30 - 12:45	OPTO 10: <u>Dario Uršič, Matjaž Pirč, Marko Jošt, Marko Topič, Marko Jankovec</u> ENERGY HARVESTING FROM A SINGLE PEROVSKITE SOLAR CELL IN INDOOR OFFICE ENVIRONMENT		MTD6: <u>Matejka Podlogar, Patrick Seleš, Martina Kocijan, Tina Radošević, Vasil Stivalja, Damjan Vengust, Slavko Bernik</u> SYNTHESIS AND CHARACTERIZATION OF ZnO NANODOTS AND NANORODS FOR PHOTOCATALYTIC DEGRADATION OF ORGANIC POLLUTANTS
12:45 - 13:00		<b>Lunch break</b>	<b>Closing ceremony</b>
13:00 - 13:15			
13:15 - 13:30			
13:30 - 13:45	<b>Lunch break</b>		
13:45 - 14:00			
14:00 - 14:15			

	Wednesday 14-9-2022	Thursday 15-9-2022	Friday 16-9-2022
14:15 - 14:30	Lunch break	WR 1: <b>Damien Brault, Philippe Boy, Franck Levassort, Gylaine Poulin-Vittrant, Maxime Bavencoffe</b> SOL-GEL SYNTHESIS AND ELECTROMECHANICAL PROPERTIES OF BaHf <sub>0.9</sub> Ti <sub>1-x</sub> O <sub>3</sub> THIN FILMS FOR PIEZOELECTRIC ENERGY HARVESTING APPLICATIONS	
14:30 - 14:45	ICSOC 1: <b>Dejan Hrovatin, Andrej Žemva</b> Development of maximum power point tracker as a part of solar technology-based endurance extension system for use on a lightweight UAV	WR 2: <b>Zouhair Hanani, Ilyasse Izanzar, Soukaina Merselmiz, Hana Uršić, Ismael Saadoun, Mohammed Lahcini, Matjaž Spreitzer, Damjan Vengust, Zdravko Kutnjak, Mohamed Gouné</b> DESIGN OF BCZT/PLA PIEZOELECTRIC NANOGENERATOR FOR MECHANICAL ENERGY HARVESTING	
14:45 - 15:00	ICSIC 2: <b>Ajda Tuševski, Drago Strle</b> Design of Capacitive Sensing Chopper Amplifier Used in Artificial Nose Detection System	WR 3: <b>Lisa Mitterhuber, Vignaswaran Veerapandian, Marco Deluca, Scott Mixture, Joe Schaeperkoetter, Michael Tkadletz, Jürgen Spitaler, Christian Mitterer</b> The importance of thermal design in microelectronic devices- a combined structural and thermal study of nanometer-thin oxide films	
15:00 - 15:15	ICSOC 3: <b>Iva Ivanov, Jure Vreča, Anton Biasizzo</b> Hardware Acceleration of the YOLO Convolutional Neural Network on a Field-Programmable Gate Array	WR 4: <b>Mathieu Fricaudet, Chandra SHEKAR, Thierry Martin, Delong He, Katarina Žberna, Maja Koblar, Tadej Rojac, Mojca Otoničar, Brahim Dkhil, Pierre-Eymeric Janolin, Andraž Bradeško</b> Multiphysic energy harvesting using PVDF-based materials	
15:15 - 15:30	ICSOC 4: <b>Anubhav Vishwakarma, Matej Komelj</b> Design of a permanent-magnet-based self-charging device for a smartphone	WR 5: <b>Vida Jurečić, Nikola Novak, Lovro Fulanović, Xin Chen, Qiming Zhang, Vid Bobnar</b> SPACE CHARGE CONTRIBUTIONS TO THE DIELECTRIC RESPONSE AND BREAKDOWN STRENGTH OF HIGH-TEMPERATURE POLYETHERIMIDE/POLYIMIDE BLENDS	
15:30 - 15:45	ICSOC 5: <b>Nejc Klaničnik, Aleksander Sešek, Matej Možek</b> DESIGN AND SIMULATION OF ACTIVE CMOS INDUCTORS USING GYRATOR-C NETWORKS	WR 6: <b>Neelakandan M Santhosh, Janez Zavašnik, Uroš Cvelbar</b> MULTIFUNCTIONAL CARBON/NICKEL SULPHIDE ELECTRODE DESIGN BY PLASMA AND THERMAL PROCESSING	
15:45 - 16:00	coffee break	coffee break	
16:00 - 16:15			
16:15 - 16:30	SIS1: <b>Aleš Volčini</b> Extracurricular activities on Vegova Ljubljana during the COVID-19 pandemic	SENSORS 1: <b>Barbara Repič, Maksimiljan Dekleva, Darko Belavič, Kostja Makarovič, Mirja Jerlah, Ema Gričar, Helena Prosen, Mitja Kolar, Gregor Marolt, Danjela Kuščer</b> GRAPHITE-GLASS COMPOSITE THICK FILMS FOR ELECTROCHEMICAL DETECTION OF NEONICOTINOIDS	
16:30 - 16:45	SIS2: <b>Adrian Sebastian Šiška, Aleš Volčini</b> MUHI - Minimal uRISC Implementation.	SENSORS 2: <b>Špela Trafela, Anja Korent, Abhilash Krishnamurthy, Kristina Žagar Soderžnik, Kristina Žužek Rožman, Sašo Šturm</b> HIGHLY SENSITIVE AND SELECTIVE BIOSENSOR PLATFORM FOR SARS-CoV-2 ELECTROCHEMICAL DETECTION	
16:45 - 17:00	SIS3: <b>Lovro Rakar, Aleš Volčini</b> An Electronic Computer Game - From an Idea to the Implementation	SENSORS 3: <b>Anja Korent, Špela Trafela, Kristina Žagar Soderžnik, Kristina Žužek Rožman</b> INDIRECT DETECTION OF ACRYLAMIDE USING PAN-AMIDASE BIOSENSOR ELEMENT	
17:00 - 17:15	SIS4: <b>Urh Jamšek</b> A Computer Made of Discrete Logic Components	SENSORS 4: <b>Ciprian Ilescu, Fang Yu</b> MICROPHYSIOLOGICAL SYSTEMS FOR DRUG TOXICITY EVALUATION	
17:15 - 17:30	SIS5: <b>Leon Ulčakar, Nikola Brkovič, Bor Kokovnik, Sebastian Židar, Jaka Kovač, Luka Maček, Luka Počučnik</b> Experimental Rocket Thrust Vectoring System Development Using Stock Components	SENSORS 5: <b>Florina Silvia Ilescu, Ling Tim Hong, Jin Ming Jaden Toh, Octavian Narcis Ionescu, Ciprian Ilescu</b> THE EARLY-WARNING INDICATOR FOR POINT-OF-CARE FEET AND BODY BALANCE SCREENING TOXICITY EVALUATION	
17:30 - 17:45	SIS6: <b>Amadej Arh, Žan Jelič, Luka Maček, Aleš Volčini</b> VegaSat - the Slovenian entry for the ESA CanSat Competition	SENSORS 6: <b>Borut Pečar, Drago Resnik, Matej Možek and Danilo Vrtačnik</b> NUMERICAL SIMULATIONS OF THERMAL MASS FLOWMETER	
17:45 - 18:00	SIS7: <b>Jaka Kovač, Simon Lipovšek, Luka Maček</b> Kofetarica - Virtual Coffee-serving Robot in RoBoCo Simulation Game		
18:00 - 18:15			
18:15 - 18:30			
18:30 - 18:45			
18:45 - 19:00	Visit to VINAG wine cellar		
19:00 --		Conference dinner	

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# CONFERENCE PROGRAM

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**WEDNESDAY, SEPTEMBER 14**

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**08:00 REGISTRATION**

**08:50 WELCOME AND CONFERENCE OPENING CEREMONY  
(B. Malič, T.Rojac, M.Otoničar)**

**09:00 CONFERENCE PLENARY PAPER**

CHAIRPERSON: M.Topič

**09:00 Denis Donlagić**

Micro-thermo optics devices

**09:45 SESSION on OPTOELECTRONICS (OPTO)**

CHAIRPERSON: M.Topič

**09:45 A.Debevc, M.Topič and J.Krč**

Towards high density photonic integrated circuits by using all-dielectric metamaterials

**10:00 M. Ljubotina, M. Topič, and J.Krč**

Characterisation of silicon waveguides in photonic integrated circuits

**10:15 Žiga Šmelcer, Janez Krč and Janez Trontelj**

Evaluation of thin-film optical interference filter fabrication on silicon and glass substrate

**10:30 COFFEE BREAK**

**11:00 Miha Kikelj, Benjamin Lipovšek, Bertrand Paviet-Salomon,**

**Quentin Jeangros, and Marko Topič**

An Energy Yield Perspective on Performance of 2/3 Terminal Silicon-Perovskite Tandem Strings

**11:15 Špela Tomšič, Marko Jošt, Kristijan Brecl, Marko Topič, Benjamin Lipovšek**

What can we learn from energy yield modelling of perovskite-silicon tandem solar cells

**11:30 Marko Remec, Špela Tomsič, Marko Jošt, Mark Khenkin, Quiterie Emery, Jinzhao Li, Boštjan Glažar, Marko Jankovec, Eva Unger, Rutger Schlatmann, Carolin Ulbrich, Marko Topič**

Operation of perovskite solar cells under different operating conditions using indoor multi-channel testing platform

**11:45 Žan Ajdič, Marko Jošt, Marko Topič**

Improving stability of FACs perovskite solar cell using PEIE as a nucleation layer for SnO<sub>2</sub>

**12:00 Tina Perko, Marko Jošt, Marko Topič**

Influence of SnO<sub>2</sub> electron transport layer thickness on performance of perovskite solar cell

**12:15 Jure Pušnjak, Janez Krč and Marko Topič**

Simulation study of a recombination junction in perovskite/CIGS tandem solar cell

**12:30 Darjo Uršič, Matija Pirc, Marko Jošt, Marko Topič, Marko Jankovec**

Energy harvesting from a single perovskite solar cell in indoor office environment

## **12:45 LUNCH**

## **14:30 SESSION on INTEGRATED CIRCUITS and SYSTEM on CHIP (ICSOC)**

CHAIRPERSON: J. Trontelj

**14:30 Dejan Hrovatin, Andrej Žemva**

Development of maximum power point tracker as a part of solar technology-based endurance extension system for use on a lightweight UAV

**14:45 Ajda Tuševski, Drago Strle**

Design of Capacitive Sensing Chopper Amplifier Used in Artificial Nose Detection System

**15:00 Iva Ivanov, Jure Vreča, Anton Biasizzo**

Hardware Acceleration of the YOLO Convolutional Neural Network on a Field-Programmable Gate Array

**15:15 Anubhav Vishwakarma, Matej Komelj**

Design of a permanent-magnet-based self-charging device for a smartphone

**15:30 Nejc Klanjšček, Aleksander Sešek, Matej Možek**

Design and simulation of active CMOS inductors using gyrator-c networks

## **15:45 COFFEE BREAK**



## **16:15 STUDENTS PRESENTATION**

CHAIRPERSON: J. Trontelj

### **16:15 Aleš Volčini**

Extracurricular activities on Vegova Ljubljana during the COVID-19 pandemic

### **16:30 Adrian Sebastian Šiška, Aleš Volčini**

MUHI - Minimal uRISC Implementation.

### **16:45 Lovro Rakar, Aleš Volčini**

An Electronic Computer Game - From an Idea to the Implementation

### **17:00 Urh Jamšek**

A Computer Made of Discrete Logic Components

### **17:15 Leon Ulčakar, Nikola Brkovič, Bor Kokovnik, Sebastjan Zidar,**

**Jaka Kovač, Luka Maček, Luka Pogačnik**

Experimental Rocket Thrust Vectoring System Development Using Stock Components

### **17:30 Amadej Arh, Žan Jelič, Luka Maček, Aleš Volčini**

VegaSat – The Slovenian entry for the ESA CanSat competition

### **17:45 Jaka Kovač, Simon Lipovšek, Luka Maček**

Kofetarica: A Virtual Coffee-serving Robot in RoBoCo Simulation Game

## **18:45 VISIT TO VINAG WINE CELLAR**

The cellar is withing walking distance to the hotel.

We will gather in front of the hotel and walk as a group.

The visit starts at 19:15 and will last for two hours.

**THURSDAY, SEPTEMBER 15**

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**08:00 REGISTRATION**

**08:50 WORKSHOP OPENING CEREMONY  
(M.Otoničar)**

**09:00 WORKSHOP - INVITED PAPERS**

CHAIRPERSON: M.Otoničar

**09:00** **Guylaine Poulin-Vittrant, Maxime Bavencoffe, Franck Levassort, Danjela Kuščer, Hana Uršič, Taoufik Slimani Tlemceni, Kevin Nadaud, Emmanuel Dumons, Louis Pascal Tran-Huu-Hue**

Mechanical energy harvesting using piezoelectric materials: principles, design and challenges

**09:30 Marco Deluca**

Energy autonomous wireless sensor nodes: Energy harvesting and storage perspectives

**10:00 Matjaž Spreitzer, Urška Trstenjak, Chao-Ting Chen, Shun-Chiu Lin, Paul Wittendorf, Frode Tyholdt, Wen-Jong Wu**

Enabling technologies for high-quality piezoMEMS

**10:30 COFFEE BREAK**

**11:00 Peter Woias**

Ambient-adapted energy harvesting from variable mechanical and thermal energy budgets

**11:30 Astri Bjørnetun Haugen**

Textured piezoelectric ceramics for energy harvesting

**12:00 Julian Walker**

Engineering Hybrid Ionic Plastic Crystals for Microelectronics and Thermal energy applications  
– Phase transitions and electromechanical properties

**12:30 LUNCH**

## **14:15 WORKSHOP – REGULAR PAPERS**

CHAIRPERSON: M.Otoničar

**14:15 Damien Brault, Philippe Boy, Franck Levassort, Guylaine Poulin-Vittrant, Maxime Bavencoffe**

SOL-GEL synthesis and electromechanical properties of  $\text{BaHf}_x\text{Ti}_{1-x}\text{O}_3$  thin films for piezoelectric energy harvesting

**14:30 Zouhair Hanani, Ilyasse Izanar Soukaina Merselmiz, Hana Uršič, Ismael Saadoune, Mohammed Lahcini, Matjaž Spreitzer, Damjan Vengust, Zdravko Kutnjak, and Mohamed Gouné**

Design of BCZT/PLA piezoelectric nanogenerator for mechanical energy harvesting

**14:45 Lisa Mitterhuber, Vignaswaran Veerapandiyan, Marco Deluca, Scott Misture, Joe Schaeperkoetter, Michael Tkadletz, Jürgen Spitaler, Christian Mitterer**

The importance of thermal design in microelectronic devices- a combined structural and thermal study of nanometer-thin oxide films

**15:00 Matthieu Fricaudet, Sharath Kattemane Chandrashekar, Thierry Martin, Delong He, Katarina Žiberna, Maja Koblar, Tadej Rojac, Mojca Otoničar, Brahim Dkhil, Pierre-Eymeric Janolin, Andraž Bradeško**

Multiphysic energy harvesting using PVDF-based materials

**15:15 Vida Jurečič, Nikola Novak, Lovro Fulanović, Xin Chen, Qiming Zhang, Vid Bobnar**  
Space charge contributions to the dielectric response and breakdown strength of high-temperature polyetherimide/polyimide blends

**15:30 Neelakandan M Santhosh, Janez Zavašnik, Uroš Cvelbar**

Multifunctional carbon/nickel sulphide electrode design by plasma and thermal processing

## **15:45 COFFEE BREAK**

## **16:15 SESSION on SENSORS and MEMS (SENSORS)**

CHAIRPERSON: D. Vrtačnik

**16:15 Barbara Repič, Maksimiljan Dekleva, Darko Belavič, Kostja Makarovič, Mitja Jerlah, Ema Gričar, Helena Prosen, Mitja Kolar, Gregor Marolt, Danjela Kuščer**

Graphite-glass composite thick films for electrochemical detection of neonicotinoids

**16:30 Špela Trafela, Anja Korent, Abhilash Krishnamurthy, Kristina Žagar Soderžnik, Kristina Žužek Rožman and Sašo Šturm**

Highly sensitive and selective biosensor platform for SARS-CoV-2 electrochemical detection

**16:45 Anja Korent, Špela Trafela, Kristina Žagar Soderžnik and Kristina Žužek Rožman**

Indirect detection of acrylamide using PANI-AMIDASE biosensor element

**17:00 Ciprian Iliescu, Fang Yu**

Microphysiological systems for drug toxicity evaluation

**17:15 Florina Silvia Iliescu, Ling Tim Hong, Jin Ming Jaden Toh , Octavian Narcis Ionescu and Ciprian Iliescu**

The early-warning indicator for point-of-care feet and body balance screening

**17:30 Borut Pečar, Drago Resnik, Matej Možek and Danilo Vrtačnik**

Numerical Simulations of Thermal Mass Flowmeter

## **19:00 CONFERENCE DINNER**

Conference Dinner will be held at the Hotel City, TERASA Restaurant, V<sup>th</sup> floor.

## FRIDAY, SEPTEMBER 16

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### 08:00 REGISTRATION

### 09:00 CONFERENCE INVITED PAPER

CHAIRPERSON: Hana Uršič

#### 09:00 Hugh Simons

Non-destructive, multi-scale mapping of defects and their dynamics

### 09:30 SESSION on THIN AND THICK FILMS (TTF)

CHAIRPERSON: Hana Uršič

#### 09:30 Mihail Slabki, Kevin P. Pree, Anastasia Kucheryavaya, Jurij Koruza

Porous piezoceramic functional platforms by paper templating

#### 09:45 Sabi William Konsago, Katarina Žiberna, Brigita Kmet, Andreja Bencan Golob, Hana Uršič, Barbara Malič

Influence of the choice of the solvents on microstructure and properties of solution-derived barium titanate-based thin films

#### 10:00 Ankita Sarkar, Hana Uršič, Anže Jazbec, Luka Snoj, Matej Šadl, Silvo Drnovšek and Barbara Malič

Influence of neutron and gamma irradiation on the dielectric, ferroelectric and electrocaloric properties of

Mn-doped  $(1-x)\text{Pb}(\text{Mg}_{1/3}\text{Nb}_{2/3})\text{O}_3-x\text{PbTiO}_3$  ceramics

#### 10:15 Matej Šadl, Tadej Rojac, Andrej Lebar, Joško Valentinčič, Kevin Nadaud, Micka Bah, Franck Levassort, and Hana Uršič

Aerosol-deposited  $0.65\text{Pb}(\text{Mg}_{1/3}\text{Nb}_{2/3})\text{O}_3-0.35\text{PbTiO}_3$  thick films for energy applications

### 10:30 COFFEE BREAK

#### 11:00 Victor Regis, Matej Šadl and Hana Uršič

Aerosol-deposited multicaloric composites

## **11:15 SESSION on MATERIALS, TECHNOLOGY AND DEVICES**

CHAIRPERSON: Slavko Bernik

### **11:15 Slavko Bernik, Tian Tian, Matejka Podlogar, Guorong Li**

Microstructural and electrical characteristics of a novel ZnO-Cr<sub>2</sub>O<sub>3</sub>-based varistor ceramics

### **11:30 Slavko Bernik, Marija Ercegovac, Zoran Samardžija**

Control of impurity elements for enhanced electrical properties of ZnO-based multilayer varistors

### **11:45 Katja Vozel, Katja Klinar, Andrej Kitanovski**

Thermal control elements

### **12:00 Samir Salmanov, Tadej Rojac, Danjela Kuščer, Mojca Otoničar**

Cold sintering as an alternative way to obtain lead-free ceramics

### **12:15 Kostja Makarovič, Darko Belavič, Mitja Jerlah, Barbara Malič**

Determining the maximum operating temperature of thick-film resistors on LTCC and Al<sub>2</sub>O<sub>3</sub> substrates

### **12:30 Matejka Podlogar, Patrick Seleš, Martina Kocijan, Tina Radošević, Vasyl Shvalya, Damjan Vengust, Slavko Bernik**

Synthesis and characterization of ZnO nanodots and nanorods for photocatalytic degradation of organic pollutants

## **12:45 CLOSING OF THE CONFERENCE**



