

ELECTRONIC INDUSTRY WEEK

CENTRAL AND SOUTH EASTERN EUROPE

19 – 23 October 2020
– a Cyberspace event –

THE AUTUMN CONVENTION OF THE ELECTRONICS PACKAGING COMMUNITY

Education
Training
Research
Development
Technology



Electronic industry week in Central and South Eastern Europe

*The autumn convention of the
electronics packaging community*

*Education,
Training,
Research,
Development,
Technology*

*19 - 23 October 2020
- a Cyberspace event -*

THE ELECTRONIC WEEK OF ELECTRONICS PACKAGING COMMUNITY 2020 - Programme Brochure

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Technologies, EMFT, Munich - partner of SIITME 2020

WELCOME TO ELECTRONIC WEEK 2020

Organized by:



University of Pitești

Faculty of Electronics, Communications and Computers

<https://www.upit.ro>



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MIELE Tehnica Romania

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Faculty of Electronics, Telecommunications and Information Technology

<http://www.electronica.pub.ro>



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Association for Promoting Electronics Technology, APTE

<http://www.apte.org.ro>

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EPETRUN (Electronic Packaging Education Training and Research University Network)

WELCOME TO ELECTRONIC WEEK 2020

Welcome to the Electronic Industry Week in Central and Southeastern Europe

Dear participants, it is a great pleasure and honor for me to welcome you at the Electronic Industry Week in Central and Southeastern Europe (EIWCSE) event. In this week we succeed to bring together two major events of our electronics packaging community, TIE and the SIITME. Both have a few decades of editions behind and promote a more and more strong relationship between the academia and the electronics industry. Traditionally, the events offered us the possibility to organize, each year, the spring convention, for TIE, and the autumn convention, for SIITME. Unfortunately, this year, the pandemic environment in which we have to live, forced us to postpone the spring convention for autumn and after then to use the cyberspace as the most safety environment for participants.

Looking to the whole week agenda, it is enjoyable to see the diversity and the high density of the activities focused on several topics related to electronics packaging issues. The participants, coming from industry or academia, have possibility to choose between numerous activities, one of them being the evaluation, by industry and academia, of the students' knowledge as PCB designers. According to a professional threshold, established by the industry (TIE Industrial Committee), the best students will receive a certificate for acknowledgment their skills as PCB designers. The attendees of the Strategic Partnership for Education workshop will have the possibility to obtain more information regarding a very important topic of our days: The Remote Virtual Prototype Design Approach Assessment or how it will be possible to enhance the students' knowledge related to mechanical aspects of the electronic products. This issue will be debated during: TIEm - an important part in TIE Education & Training Environment. We also must highlight the aspects regarding modelling and simulation, as well as some topics existing in the Heterogeneous Integration Roadmap (HIR, <https://eps.ieee.org/>). The Professional Development Course, delivered during SIITME,

WELCOME TO ELECTRONIC WEEK 2020

is focused on a very important PCB design topic, the Signal and Power Integrity.

There are also present other very interesting topics discussed during this EIWCSE week and I highly recommend participating to them. I emphasize numerous oral sessions, which include the talks of well-known keynote speakers and three poster sessions, with over 90 presentations. Each poster author will have the possibility to discuss directly, online, with an evaluation team. The evaluators are members of a scientific pool that includes high ranking professionals from academia and industry. It will be possible to find many answers to some important questions related to electronics packaging issues.

Finally, I want to express my gratitude to the EIWCSE organization teams. It is the first time when the event environment is the cyberspace. This brought tremendous activities for the numerous volunteers, from the academia and from the electronics industry, involved in organizing of the whole week, to find the best conditions for the very diverse types of activities. Thanks to the WebEx platform, we succeeded to be created a proper environment for a high-quality event. Thank you, Cisco! Also, I must mention the very good cooperation between academia and the industry representatives for establishing a coherent, complex and interesting agenda. To all of them, and there are a lot of, I want to thank very much for their deeply and responsible commitment in organizing such as complex event as EIWCSE!

Vivat, crescat, floreat!
(May it live, grow, and flourish)!

Prof. D.H.C. mult. Paul SVASTA, Ph.D.
UPB-University Politehnica of Bucharest
Romania,
APTE-Association for Promoting Electronics
Technology
EIWCSE General Chair



WELCOME TO ELECTRONIC WEEK 2020

This year the spring starts in October

TIE Event is consecrated as a symbol for promoting the spring-like spirit in the professional development of the students who train to become specialists in Electronics. Although we feel like 2020 has stolen “the professional spring in Electronics”, in the youth’s spirit, we reclaim the TIE Event this October.

We would like to prove that TIE is just as challenging for the young people when taking place in autumn. We would also like to show to the academic community and to the economic community that the professionalism of these young men and women who are passionate about creating electronic modules transcends the current medical and social restrictions.

In brief, I am convinced that the TIE Event taking place this year will prove that spring can also start in October.

Professor Dan Pitică, Ph.D.

Technical University of Cluj-Napoca

TIE General Academic Co-Chair

SIITME General Academic Co-Chair



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SIITME and The Electronic Packaging Community

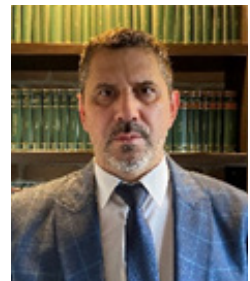
SIITME has become, during its long existence, a meaningful event focused on highlighting topics that are relevant for both industry and education, in the field of electronics technology. This statement is supported by the fact that, this year, an entire week is dedicated to electronics technology, bringing together students, valuable teachers, researchers and prominent representatives of the electronics industry in what that is called “Electronic Industry Week in Central and South Eastern Europe”. In this way, the main goal of SIITME conference, to ensure a strong connection between industry and academia, is achieved.

I would like to congratulate the SIITME organizers, especially Prof. Paul Svasta and his team, for their work to raise, year by year, the quality of this event, making this conference one of the best European conference in the field of Electronic Packaging. In fact, based on these achievements, due to the involvement of Prof. Paul Svasta in promoting electronic technology, Romania was chosen to host in 2022 the ESTC conference, which represents the IEEE-EPS flagship conference in Europe.

I would like to express my gratitude to be part of SIITME 2020 conference and I wish to all the participants of “Electronic Industry Week in Central and South Eastern Europe” event a fruitful experience.

Prof. Ovidiu A. Pop, PhD

Technical University of Cluj-Napoca



WELCOME TO ELECTRONIC WEEK 2020

A personal view on electronics packaging evolution

In 2010, a decision had to be taken: adapt or die. Now we are facing again a similar situation. At that time, the industry was confident in the future. The strategy to invest in technology and knowledge payed off for years to come. My company, department and teams, benefited of a previous almost 2-decades experience of SIITME and TIE. This existing environment acted as a warranty for the quality needed for the ramp-up we aimed for. Besides the strong theoretical know-how, now we also had the practical skills and the right professional attitude and behavior prerequisites.

Still, it was not the moment to rely solely on past actions. Due to increased design density, new manufacturing technologies and increased performance needs, the product packaging needed a change of mindset in our branch. In the automotive industry the focus increased in Signal and Power Integrity design, manufacturability and reliability. Common sense design rules no longer satisfied the need to integrate 3rd party sub-systems. The responsibility of the integrator engineer and integrated stakeholders needed a new way of communication, using a common technical language and parameter exchange that become vital to reduce design loops and waste of materials. Within the itinerant IEEE SIITME event in Romania, we have seen the chance to address latest researches and global experts. We saw the potential to use in our R&D for electronic development the latest researches and technologies. Both the internal product integration demands and the external exposure to the packaging society, convinced us that the Virtual Prototyping environment need both individual experts and start growing dedicated specialized teams. Fast know-how ramp up became mandatory and also the need to adapt to better and new development tool chains.

In 2015, the kick-off for TIEPlus, <http://www.tie.ro/tie-plus/concept/>, had the goal to adapt the curricula and teaching environment to high end design tools, thus providing the right engineering skills for the

WELCOME TO ELECTRONIC WEEK 2020

future. All needed entities agreed to voluntarily sustain this: industry, toolchain suppliers and academic stakeholders.

In 2017, the first industrial-academic-research panel discussion was started in SIITME, offering the needed environment for an open dialogue on focused topics.

In 2020, we can conclude that the 10-years journey in this collaborative behavior environment with IEEE Hu-Ro chapter, SIITME, TIE and local educational stakeholders has brought fruitful results.

Today, the technological advancements that the world currently envisions, motivates us to keep the rhythm of know-how ramp-up of our engineers and future engineers, so that the development result reaches the golden dream of “zero waste” already in design phase.

Regardless of your application or research activity, I hope we can all contribute for sustaining the humankind needs well defined in the IEEE HIR roadmap.

I wish you a sustainable, healthy life and a reliable, sane future!

Cosmin MOISA

Head of Product Development Center
Camera Products Timisoara
Human Machine Interface Application Engineering

Continental Automotive Romania
cosmin.moisa@continental-corporation.com



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Never give up on TIE

The past is beyond change, the future is what belongs to us. In the light of this times that we are all living, neither the ongoing coronavirus pandemic, nor the impossibility to meet, shake friendly hands and share good memories made us postpone TIE contest to 2021.

TIE contest salutes those with desire to do something different. It is a career-launching contest for the most promising minds to pave the path for a better, safer, and smarter world. Every year, engineering students participate to build highly innovative, inspiring, and practical projects that are bound to make a difference. Every year, the challenge for students is higher and give them the true possibility to put all the things they had learned so far on their degree into action. They must be able to innovate, to improvise and to inspire, making their teachers proud. In the end the students will reach a certain level of understanding of what is expected in a professional job and of what are the demands of the rapidly evolving industry.

These are just some quick facts on why everyone should be here, witnessing the evolution of the students of today into the professionals of tomorrow.

2020 TIE is today a virtual engineering contest on all its parts, adapting to the current predicament of the entire world and connecting the Universities and the Companies to ensure the best possible results. The outcomes of those efforts must be better students, better teachers, and better future employees and employers.

This year competition is the 29th edition of TIE. The 2021 year will bring the 30th Anniversary TIE Edition, which Technical University

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of Cluj-Napoca will be proud to host in our beloved city of Cluj-Napoca. We only can hope that the future will be bright and we will be able to do all those things that this year forbidden us. We will remembering this year contest as the online edition and we will celebrate onsite the victory of the best, all of that as old friends being part of a big family of PCB designers.

Assoc. prof. Liviu VIMAN, PhD
Technical University of Cluj-Napoca



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TIE 2020 “Online Edition” or like everything else this year “Pandemic Edition” – How the electronic packaging community migrated on-line

It only took several months for the whole planet to radically change. Most probably neither one of us really expected all of this by the start of 2020 and most probably neither one of us really thought things will go the way they went. Back in the first days of February, when we were slowly starting to make all the preparations for this year’s edition, the situation regarding the outbreak in Europe was starting to look not so good and by the end of March everything just stood still. Nothing was happening anymore. We were forced to adapt very fast, to a full online way of communication due to the increasing restrictions of social interaction to prevent the spreading of the virus.

Luckily, due to the fact that everyone involved still had the necessary motivation and spirit, it was decided that “The Spring Convention of Electronic Packaging Community” should be happening, due to the circumstances, alongside SIITME in autumn. This is practically how we ended up in hosting, online of course, the first edition of “The Electronic Week of Packaging Community” in 2020. It will be a week where TIE+ and TIE will join forces, to pose complex technical problems regarding a very “hot topic”, an augmented reality system. Afterwards, during the two-day unveiling of all the interesting papers submitted at SIITME this year, we will also get to know all the keynote speakers, important names in their respective fields of activity, like Christopher Bailey (President of the IEEE Electronics Packaging Society) or Istvan Novak (Principal Signal and Power Integrity Engineer at Samtec).

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We really hope, this first and maybe unique edition of “Electronic Industry Week“ will help our ever growing community of electronics passionates, engineers and professionals, keep in touch with all the new technologies on the market and with the new scientific studies submitted by young researchers. In modern times, networking is crucial for an organic development of a community, be it on-line or off-line.

Cristian GORDAN:

EE Integrator/PCB Designer
TIE Industrial Committee Chair



PROGRAM AT A GLANCE

Monday, October 19

09:00 – 09:30	Opening session for the week events
09:30 – 10:00	TIEPlus opening, subject introduction
10:00 – 12:30	TIEPlus CONTEST – 1st part
12:30 – 14:00	Lunch Break
14:00 – 17:00	TIEplus Virtual Prototype Workshop
17:00 – 17:30	Coffee Break
17:30 – 19:30	TIE– technical session

Tuesday, October 20

07:45 – 08:15	TIE contest preliminary activities
08:15 – 12:45	TIE CONTEST
12:45 – 14:00	Lunch Break
14:00 – 20:00	Assessment of the projects; litigations
20:00 – 21:30	TIE 2020 Committee Meeting

PROGRAM AT A GLANCE

Wednesday, October 21

08:30 – 9:30	Professional Development Hour – Executive summary HIR
09:30 – 09:45	Coffee Break
09:45 – 12:00	Human Resource workshop
12:00 – 12:30	Lunch Break
12:30 – 13:30	TIE and TIEplus 2020 subject demystification
13:30 – 14:00	TIE and TIEplus Awarding ceremony
14:00 – 15:30	Industrial Panel Discussion: Introduction to HIR Modeling goals & application challenges
15:30 – 19:30	Professional Development Course
19:30 – 21:30	IEEE – Hu & RO EPS&NTC Joint Chapter Meeting

Thursday, October 22

08:15- 08:30	Registration and Webcast Connection
08:30- 08:50	Opening ceremony, Welcome words, Pitesti
09:00- 11:10	Plenary Oral Session 1
11:10- 11:20	Coffee Break
11:20- 13:30	Plenary Oral Session 2
13:30- 13:50	Lunch Break

PROGRAM AT A GLANCE

13:50- 14:50	Industrial Session 1
14:50- 16:20	Poster Session 1
16:20- 16:30	Coffee Break
16:30- 18:40	Plenary Oral Session 3
18:40- 20:00	Networking IEEE, IMAPS Student Branch Chapter Kick-off Meeting

Thursday, October 22

08:30- 10:00	Poster Session 2
10:00- 10:10	Coffee Break
10:10- 10:50	Special Session
10:50- 12.20	Plenary Oral Session 4
12:20- 12:50	Industrial session 2
12:50- 13:10	Lunch Break
13:10- 14:40	Technical sponsored workshop: Switched Mode Power Supply with high efficiency and best EMI design
14:40- 16:10	Poster Session 3
16:10- 16:20	Coffee Break
16:20- 17:50	Plenary Oral Session 5
17:50- 19:30	Steering Committee Meeting
19:30- 20:30	Awarding session

The Electronic Industry Week Central and South Eastern Europe

Interconnection Techniques in Electronics (TIE)

- International professional student contest -

A WAY to turn your HOBBY into PROFESSION

29th Edition, October 19-20, 2020

Programme Brochure



Opening session for the week events

Monday, October 19, 2020- 09:00 – 09:30

- 09:00- 09:10 **Paul SVASTA**
UPB-University Politehnica of Bucharest Romania,
IEEE EPS Hu&Ro Joint Chapter founder
EIWCSE General Chair
- 09:10- 09:20 **Zsolt ILLYEFALVI-VITÉZ**
Budapest University of Technology and Economics, Hungary
IEEE EPS Hu&Ro Joint Chapter founder
TIE/SIITME International Advisor
- 09:20- 09:25 **Ioana MANEA**
Systems Architect, Cisco Systems
Virtual Conference Management Committee Chair
- 09:25- 09:30 **Cosmin MOISA**
Continental Automotive Romania
TIE General Industrial Co-Chair
SIITME Conference Co-Chair

TIEplus contest

Monday, October 19, 2020- 09:30 – 14.00

- 09:30 – 10:00 **TIEPlus opening**, subject introduction
Dr. Cătălin Negrea, Continental Automotive
- 10:00 – 12:30 **TIEPlus CONTEST evaluation session**
Presentation of technical reports by contestants:
Ghincu Romulus Andrei, University of Oradea
Ghineț Dragoș, Technical University of Cluj-Napoca
Petre Adrian-Răzvan, University Politehnica of Bucharest
- 12:30 – 14:00 **Lunch Break**



TIEplus Virtual Prototype Workshop

Monday, October 19, 2020- 14.00 – 17.00

- 14:00- 14:05 **Opening**
Moderator: Dr. Cătălin Negrea, Continental Automotive
- 14:05-14:45 **Electronics Reliability with ANSYS Sherlock**
Răzvan Stanca, INAS
- 14:45-15:30 **Challenges of Power-over-Coax**
Akio Kanezaki, Murata Manufacturing Co.
- 15:30-16:15 **NAFEMS Activities and history**
David Felhos, Marton Groza, NAFEMS - The international simulation community
- 16:15-17:00 **On the High Speed Design of a Gigabit Multimedia Interface for a Multi-board System**
Andreea-Luminița Tasnadi, Continental Automotive Romania

TIEplus - A Virtual Prototyping Student Contest focused on Printed Circuit Board Design

Abstract: The TIEplus simulation contest is a unique opportunity for students to test their simulation skills on industry inspired EE design topics

Keyword: virtual prototyping, design flow, simulation, high-speed design, thermal analysis

The continuous complexity increase of electronic assemblies correlated with today’s time-to-market demands, creates the need of accelerated development cycles that imply the usage of virtual prototyping techniques. In the last decade, the importance of topics like signal integrity, thermal management, and electro-magnetic compatibility in the development of an electronic device, has risen dramatically, creating the need for a concurrent simulation-based design flow.

The goal of TIEplus is to promote virtual prototyping disciplines among universities and R&D centers by involving students (bachelor, master, Ph.D.) in workshops and presentations from simulation software vendors and industry experts, as a preparation for the contest.

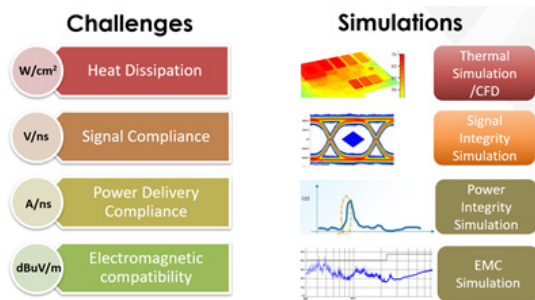
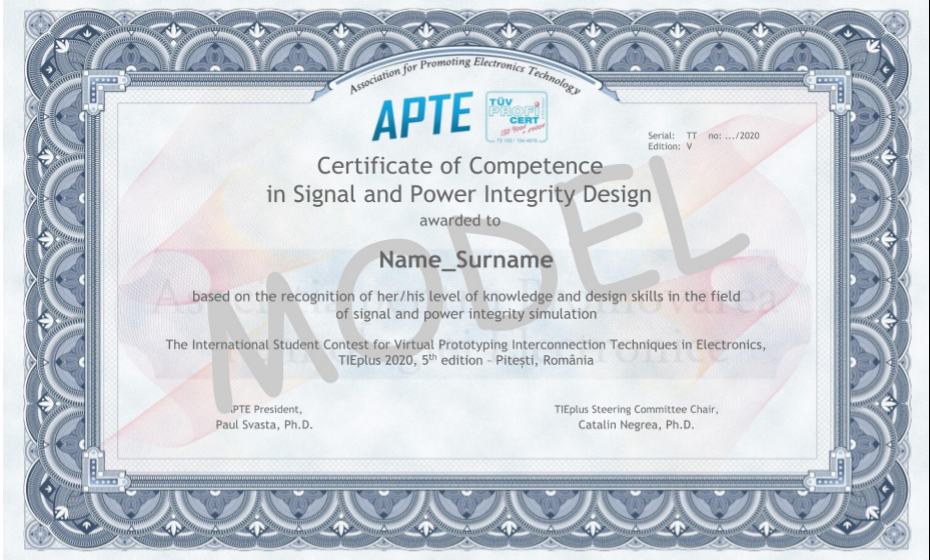


Fig. 1. PCB design challenges and supporting simulation disciplines addressed by TIEplus contest

The contest is based on an online platform where all the modeling information is provided; the contestants have two weeks to create the model and simulate the interconnect according the requirements. At the end of this period they will present the simulation results to the evaluation committee.

This edition’s engineering challenge is defined around an augmented reality headset system, and it incorporates signal integrity requirements for a 5-lane LVDS interface, as well as power integrity design coupled with thermal analysis.

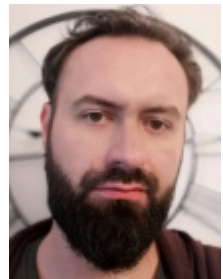


About the presenter: Catalin Negrea is the initiator and coordinator of a virtual prototyping team in Continental Automotive, Interior Division, focused on the development of high-end design solutions for interior HMI and driver monitoring. In 2013 he was nominated as a company level expert in the field of signal and power integrity. He obtained a Ph. D. degree from the Politehnica University of Bucharest in 2013, with a thesis focused on multidisciplinary modeling and electro-thermal simulation of semiconductor devices. Catalin is the author of 20 scientific papers in the fields of thermal management and signal integrity.

Dr. Catalin Negrea

Lead Engineer / Virtual Prototyping
Instrumentation & Driver HMI
Research & Development Electronic Engineering

Continental Automotive Romania
catalin.negrea@continental-corporation.com





TIE^{Plus} 2020 Committee

TIE^{Plus} Steering Committee

Chairman: Cătălin NEGREA, Continental Automotive, Timișoara

Co-Chairman: Norocel CODREANU, University Politehnica of Bucharest

Members:

Marcel MANOFU, Continental Automotive, Timișoara, Romania

Cosmin MOISĂ, Continental Automotive, Timișoara

Dan PITICĂ, Technical University of Cluj-Napoca

Paul SVASTA, University Politehnica of Bucharest

TIE^{Plus} Organizing Committee

Mihaela ANDREI, Dunărea de Jos University of Galați

Marcel MANOFU, Continental Automotive, Timișoara

Bogdan MIHĂILESCU, Association for Promoting Electronic Technology

Viorel NICOLAU, Universitatea Dunărea de Jos din Galați

Andreea-Luminița TASNADI, Continental Automotive, Timișoara

TIE^{Plus} Technical Committee Members

Mihai BURGHEAUA, Layout Engineer, Continental-OSRAM, Iași

Norocel CODREANU, University Politehnica of Bucharest

Danilo Di FEBO, Business Development, CST, Italy

Markus LAUDIEN, Lead Application Engineer, ANSYS, Germany
Marcel MANOFU, SI/PI Principal Eng., Continental Automotive, Timișoara
Răzvan NEAG, SI/PI Eng., Continental Engineering Services, Timișoara
Cătălin NEGREA, Continental Automotive, Timișoara
Camelia STOICA, EBU Technical Services, INAS,
Craiova Roxana VLĂDUȚĂ, SI Engineer, eSilicon,
București Radu VOINA, Digilent, Cluj-Napoca

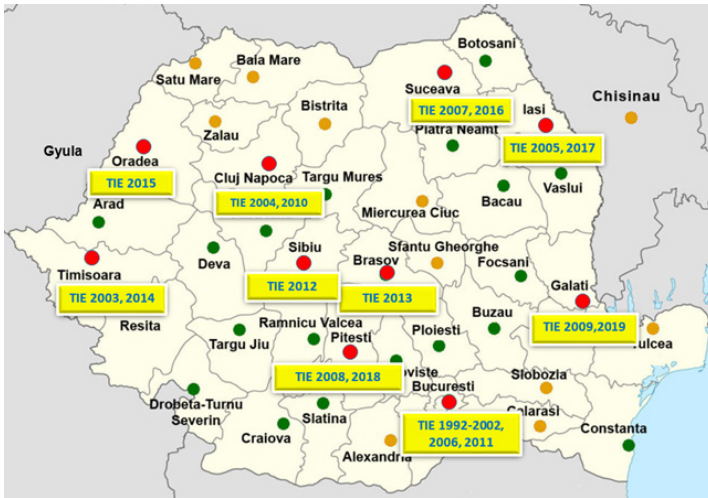
TIE^{Plus} 2020 Registered Participants:

Petre Adrian-Razvan, University Politehnica of Bucharest
Dumitrașcu Elena Valentina, University Politehnica of Bucharest
Ghincu Romulus Andrei, University of Oradea
Ghinet Dragos, Technical University of Cluj-Napoca

TIE^{Plus} University Licensing Sponsors:



TIE Past, Present and Future Editions



Year	University	Event
1992-2002	University Politehnica of Bucharest	TIE
2003	Politehnica University of Timișoara	TIE
2004	Technical University of Cluj-Napoca	TIE
2005	Gh. Asachi Technical University of Iași	TIE
2006	University Politehnica of Bucharest	TIE
2007	Ștefan cel Mare University of Suceava	TIE
2008	University of Pitești	TIE
2009	Dunărea de Jos University of Galați	TIE
2010	Technical University of Cluj-Napoca	TIE
2011	University Politehnica of Bucharest	TIE
2012	Lucian Blaga University of Sibiu	TIE
2013	Transilvania University of Brașov	TIE
2014	Politehnica University of Timișoara	TIE



Year	University	Event
2015	University of Oradea	TIE, TIE^{Plus} Kick-off
2016	Ștefan cel Mare University of Suceava	TIE, TIE^{Plus}
2017	Gh. Asachi Technical University of Iași	TIE, TIE^{Plus}
2018	University of Pitești	TIE, TIE^{Plus} 1 st TIE bootcamp
2019	Dunărea de Jos University of Galați	TIE, TIE^{Plus}
2020	University Politehnica of Bucharest - Virtual Event	TIE, TIE^{Plus} , TIEm Kick-off
2021	Technical University of Cluj-Napoca	TIE, TIE^{Plus}

Previous TIE Winners



Year	Name	University
2020	Victor Țurcă	Ștefan cel Mare University of Suceava
2019	Ghineț Dragoș Chiraș Ovidiu Marius	Technical University of Cluj Napoca Ștefan cel Mare University of Suceava
2018	Goglea Alexandru Nicolae	University of Pitești
2017	Cojocariu Gheorghe	Ștefan cel Mare University of Suceava
2016	Voina Radu Technical	University of Cluj Napoca
2015	Luchian Teodor	Ștefan cel Mare University of Suceava
2014	Grigoraș Eduard	Ștefan cel Mare University of Suceava
2013	Bostan Adrian	University Politehnica of Bucharest
2012	Aldea Alin	University of Pitești
2011	Precup Călin	Politehnica University of Timișoara
2010	Dungă Tudor Dan	Politehnica University of Timișoara
2009	Răducanu Bogdan	University Politehnica of Bucharest
2008	Oșan Adrian	Politehnica University of Timișoara
2007	Tamaș Cosmin Andrei	University Politehnica of Bucharest
2006	Moscalu Dragoș	Gh.Asachi Technical University of Iași

Year	Name	University
2005	Andreiciuc Adrian	Politehnica University of Timișoara
2004	Cristian Berceanu	Politehnica University of Timișoara
2003	Munteanu George	University Politehnica of Bucharest
2002	Rangu Marius	Politehnica University of Timișoara
2001	Toma Corneliu	University Politehnica of Bucharest
2000	Vlad Andrei	University Politehnica of Bucharest
1999	Savu Mihai	University Politehnica of Bucharest
1998	Alexandrescu Dan	University Politehnica of Bucharest
1997	Gavrilaș Cristian	University Politehnica of Bucharest
1996	Vintilă Mihai	University Politehnica of Bucharest
1995	Ștefan Marius Sorin	University Politehnica of Bucharest
1994	Bucioc Mihai	University Politehnica of Bucharest
1993	Teodorescu Tudor	University Politehnica of Bucharest
1992	Teodorescu Tudor	University Politehnica of Bucharest



Politehnica University of Bucharest
 Faculty of Electronics, Telecommunications and Information Technology
 Center for Technological Electronics and Interconnection Techniques

DIPLOMA
First prize
 awarded to the student
Name_Surname,
University

The International Student Contest
Interconnection Techniques in Electronics, TIE 2020
29th Edition

DESIGN OF ELECTRONIC
 MODULES & ASSEMBLIES

supported by:

TIE Steering Committee Chair,
Prof. univ. Dr.H.C mult. Paul SVASTA, Ph.D.

TIE 2020 Chair,
Prof. univ. Ciprian IONESCU, Ph.D.

TIE General Industrial Co-Chair,
Cosmin MOISA
Continental Automotive România

TIE Technical Committee Chair,
Prof. univ. Norocel CODREANU, Ph.D.

România, October 19-20, 2020

Recognition by the industry of student competences in PCB design



TIE 2020 Certificate of Competence

The „PCB Designer” certificate is awarded, after evaluation, by the TIE IC (Industrial Committee) to selected contestants, as recognition of their high level of knowledge in the field of EDA and CAD for development of electronic modules/assemblies. The evaluation is based on the worldwide known and accepted IPC standards. The certificate is offered under the “umbrella” of the Association for Promoting Electronics Technology (APTE).

TIE Industrial Committee Recommended PCB designers 2020

Participant Name	University	Year
Victor Țurca	Ștefan cel Mare University of Suceava	2020
Veres-Vitályos Álmos	Technical University of Cluj Napoca	2020
Petre I. Adrian-Răzvan	Politehnica University of Bucharest	2020
Adam Cseke	Technical University of Cluj Napoca	2020
Onache Mădălin-Daniel	University of Pitești	2020
George Lucaci	Technical University of Cluj Napoca	2020

Participation Diplomas

<i>Bădița Vasile</i>	<i>University of Pitești</i>	2020
<i>Elisei C. Nicolae</i>	<i>Politehnica University of Bucharest</i>	2020
<i>Dumitriu Mihnea-Nicolae</i>	<i>“Dunărea de Jos” University of Galați</i>	2020
<i>Andreea Popovici</i>	<i>Ștefan cel Mare University of Suceava</i>	2020
<i>Ciopac I. Teodor</i>	<i>University of Craiova</i>	2020
<i>Ștefan Daniel Dumitru</i>	<i>Politehnica University Timișoara</i>	2020
<i>Cornel Bejan</i>	<i>Politehnica University Timișoara</i>	2020
<i>Marii V. Lidia</i>	<i>Politehnica University of Bucharest</i>	2020
<i>Niculescu A. Ana-Maria</i>	<i>Politehnica University of Bucharest</i>	2020
<i>Bogdan Torodoc</i>	<i>Ștefan cel Mare University of Suceava</i>	2020
<i>Cercel D.D. Ionuț-Alexandru</i>	<i>Univeristy of Craiova</i>	2020
<i>Pițigoi C. Cristian – Ionuț</i>	<i>Univeristy of Craiova</i>	2020
<i>Drugă Andrei Ionuț</i>	<i>Univeristy of Pitești</i>	2020
<i>Pițigoi Gheorghe-Cosmin</i>	<i>“Lucian Blaga” University of Sibiu</i>	2020
<i>Galaon C.C. Andreea-Izabela</i>	<i>Univeristy of Craiova</i>	2020
<i>Lavinia Raluca Grozoni</i>	<i>Politehnica University Timișoara</i>	2020
<i>Șandru Alexandru-Daniel</i>	<i>“Lucian Blaga” University of Sibiu</i>	2020

Awarding the “Industrial certification” at TIE - What does it really mean?

Almost every year, someone keeps reminding all of us involved in this academic event, what TIE is all about. Well, this year is no exception either. To quote from the official website: “The TIE Event is a major project our Chapter holds on annual basis and has become a tradition for the technical academic environment in the area. ...The aim of this competition is to accustom students with the real requirements of the industrial and business environment. The selection of the participants takes place in stages, with the first being held locally and then moving on to the final stage. The best three participants from each university center are selected at the local stage and they will meet with other future engineers at the final stage.”

Simply put, this academic event is aiming to identify and promote, all those passionate students, who have the necessary technical skills to pass the challenges given by the industry. In this case “the industry” generically refers to a group of former TIE participants or highly passionate engineers who commonly believe in the positive aspects of this concept.

We are all well aware of the fact that our current educational system is not really facing all the technological progressivism and challenges constantly fueled by the industry and there had to be a way to at least create a form of “awareness” in this direction. This would be the simplest explanation for the growing complexity of the proposed contest themes and our constant stubbornness to even consider differently. We have to somehow introduce the students to the “art” of making a product, from the concept phase, to the finished product and to a form of discipline when it comes to exchanging data with colleagues or customers (hence the schematic readability requirements, drawing requirements, output files, etc.). Practically, we have set an engineering threshold for the participants, a minimum set of requirements they have to meet, in order to qualify as future engineers in the modern industrial environment.

Although this year was very difficult for each and every one of us, we really hope you will enjoy our proposed subject for this “pandemic” edition and we also hope it is sufficiently interesting to spark some engineering debates afterwards.

Cristian GORDAN:
EE Integrator/PCB Designer
TIE Industrial Committee Chair



Mihai BURGHEAUA
PCB Layout Engineer
TIE Industrial Committee Co- Chair



TIE



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University of Craiova

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The Electronic Industry Week Central and South Eastern Europe

*International Symposium for Design
and Technology in Electronics
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- Conference & Exhibition -*

26th Edition, October, 21-23, 2020

Programme Brochure

SIITME 2020

Wednesday, October 21

EEST | GMT +3h

08:30 – 09:30	Professional Development Hour – Executive summary HIR Chairman: Paul Svasta, UPB-University Politehnica of Bucharest Romania, IEEE EPS Hu&Ro Joint Chapter, EIWCSE General Chair Co-chair: Cosmin MOISA – Head of Product Development Center - Camera Products Timisoara at Continental Automotive Romania Presentation session: Ana Bărar Faculty of Electronics, Telecommunications and Information Technology, Polytechnic University of Bucharest
09:30 – 09:40	Coffee Break
09:40 – 12:00	Human Resource workshop
12:00 – 12:30	Lunch Break
12:30 – 13:30	TIE and TIEplus 2020 subject demystification
13:30 – 14:00	TIE and TIEplus Awarding ceremony
14:00 – 15:30	Industrial Panel Discussion: Introduction to HIR Modeling goals & application challenges
15:30 – 19:30	Professional Development Course
19:30 – 21:30	IEEE – Hu & RO EPS&NTC Joint Chapter Meeting

Joint Event Workshop HR Strategic Partnership for Education ONLINE

Wednesday, October 21, 2020 - 09:40 – 12:00

- 9:40 - 9:50 **Workshop opening, Strategic Partnership for Education**
Dan PITICĂ, Ph.D., Vice-rector at Technical University of Cluj-Napoca
Florin MUREȘAN, General Manager Miele Romania
- 9:50-10:05 **Strategic Partnership for Education working group activities - follow-up**
Aurelia FLOREA, HR Director Miele Romania and Working Group Coordinator - Industry and Academic Environment
Presentation Session: Relationship: Educational environment - Industrial environment – under construction actions
Chairman: Dan PITICĂ, Ph.D., Vice-rector at Technical University of Cluj-Napoca
Co-chair: Cosmin MOISA – Head of Product Development Center - Camera Products Timisoara at Continental Automotive Romania
Remote Virtual Prototype Design Approach Assessment - (Study case: Embedded Systems for mini Wash Machine) UPB ETTI & MIELE Romania
- 10:05 -11:00 **Introduction in Virtual Prototyping Design** - Vasile Mădălin MOISE, UPB, ETTI
Modelling and Simulation of the Mini Washer Machine Modules - Ana-Maria NICULESCU, Nicolae ELISEI, Andreea DUMITRAȘCU, Ana-Maria NICULESCU, Lidia MARIU, UPB ETTI, members of IEEE-EPS Student Branch Chapter
Compatibility between Virtual Prototype and the Real Product - Dragoș-Vasile BRATU, Marian SECĂREA, Rareș Ștefan Tiberius ILINOIU, Miele Tehnica Romania
Q&A session
TIE_m - an important part in TIE Education & Training Environment
- 11:00-11:50 **Aurelian KOTLAR**, Vitesco Technologies
Q&A session
- 11:50-12:00 **Summary and further actions**
Aurelia FLOREA, HR Director Miele Romania and Working Group Coordinator - Industry and Academic Environment

Industrial Panel Discussion: Introduction to HIR Modeling goals & application challenges

Wednesday, October 21, 2020 - 14:00 – 15:30

Session Chairs:

Chair: Christopher Bailey, University of Greenwich UK

Co-chair: Pop Ovidiu Aurel, Technical University of Cluj-Napoca, Romania

14:00-14:15

Introduction Session

Short introduction to the goals of HIR Modeling mission-
Christopher Bailey, President of the IEEE Electronics Packaging Society, Co-chair for the Modelling and Simulation technical working group on the Heterogeneous Integration Roadmap.

14:15-14:30

Presentation Session

Simulation driven design flow of high-speed data links in the automotive industry – **Catalin Negrea, Continental Automotive Romania**

Presentation Session

14:30-15:00

Electromagnetic Simulation for EMC/EMI – **Irina Munteanu, Dassault Systèmes SIMULIA, TU Darmstadt**

Presentation Session

15:00-15:15

Finite element analysis in electronics – **Marius Tarnovetchi, Vitesco**

15:15-15:30

Q&A Session: Moderated online session

Simulation driven design flow of high-speed data links in the automotive industry

Abstract: *Virtual prototyping is an essential design technique in the context of today's complexity and reliability requirements of electronic products. In this short presentation we will have a look at the simulation approaches that make gigabit communications under automotive conditions possible.*

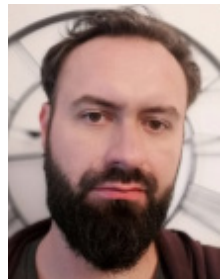
About the presenter: Catalin Negrea is the initiator and coordinator of a virtual prototyping team within Continental Automotive, focused on the development of high-end design solutions for interior HMI and driver monitoring. In 2013 he was nominated as a company level expert in the field of signal and power integrity. He obtained a Ph. D. degree from the Politehnica University of Bucharest in 2013, with a thesis focused on multidisciplinary modeling and electro-thermal simulation of semiconductor devices. Catalin is the author of more than 20 scientific papers in the fields of thermal management and signal integrity.

Timisoara, 08.10.2020

Dr. Catalin Negrea

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Electromagnetic Simulation for EMC/EMI

Abstract: *Today, simulation has become an essential tool in the analysis of the Electromagnetic Compatibility and Electromagnetic Interference (EMC/EMI) characteristics of electronic devices, an area previously almost exclusively reserved to measurements. The presentation will show examples of how simulation can complement measurements, from the conceptual design to the prototype phase, and from package to system level, helping to reach first-time-right products.*

About the presenter: Irina Munteanu has received the MSc and PhD in Electrical Engineering from the Politehnica University of Bucharest. After an academic career in Romania, since 2001 she is with Computer Simulation Technology AG / Dassault Systèmes in Germany. Since 2009 she also holds a professor's position at the Technical University of Darmstadt, Germany.

Her scientific interests include, among others, numerical methods for electromagnetic field computation, Model Order Reduction and bioelectromagnetics. She has authored / co-authored over 120 articles and 6 books.

Darmstadt, 15.10.2020

Prof. dr. Irina Munteanu

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Finite element analysis in electronics

Abstract: *Usage of structural analysis methods (e.g. Finite Element Analysis) beyond state of the art to identify weakness in the design and the manufacturing process which impact Lifetime & Reliability. Improve the mechanical ECU design in order to reduce the stress on electronic parts during the assembly process with reduced number of development cycles.*

About the presenter: Marius Tarnovetchi is Senior Expert, Structural Analysis for Electronics and Manufacturing Optimization. Working with Finite Element Analysis for over 17 years. In 2013 he was nominated as a company level expert with technology related contributions in solder joints reliability simulations, vibration characterization and simulations for Engine Control Units, PCB strain characterization with gauge measurements and simulations, new approach of Tin-whisker simulation and phenomena understanding and experimental assessment of material properties not available in data sheets. His education followed the path of Bachelor degree in Mechanical Engineering, Timisoara, 2000; Master degree in Strength of Materials, Timisoara, 2002 and is now PhD Candidate.

Timisoara, 06.10.2020

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Professional development short course

Wednesday, October 21, 15:30 – 19:30

Selected Tips for Making Successful Power Distribution Designs

Abstract: *This course will highlight four important power-integrity topics in 45-minute sessions. In the first module we will discuss the distribution of DC power. We will look at ways to size and shape our printed circuit board planes and will show with detailed numerical simulation results that sharp right-angle corners in power plane shapes may be risky for high-current applications.*

The second module will discuss the large and sometimes surprisingly unexpected loss of capacitance in some multi-layer ceramic capacitor (MLCC) applications. We will look at the reasons, explain the mechanisms how this can happen, look at the resulting potential signal integrity and power integrity problems in different applications and will also suggest generic remedies.

Based on the learnings from the first two topics, the third block will explore power distribution filters, power distribution networks with a series inductor or ferrite bead. We will devise a straightforward process to find the component values, will show the effect of DC bias voltage and DC load current and will show the proper ways to characterize power filters.

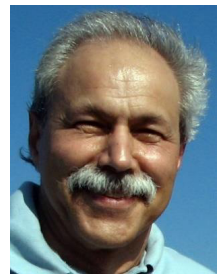
The fourth module will focus on the scattering parameters of bypass capacitors. We will explain with measured and simulated data, how to use the Touchstone models that are created for series or parallel connected capacitors.

Istvan Novak,

Principal Signal and Power Integrity Engineer,

SAMTEC

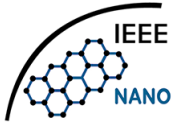
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SIITME 2020



IEEE HU&RO EPS&NTC JOINT CHAPTER

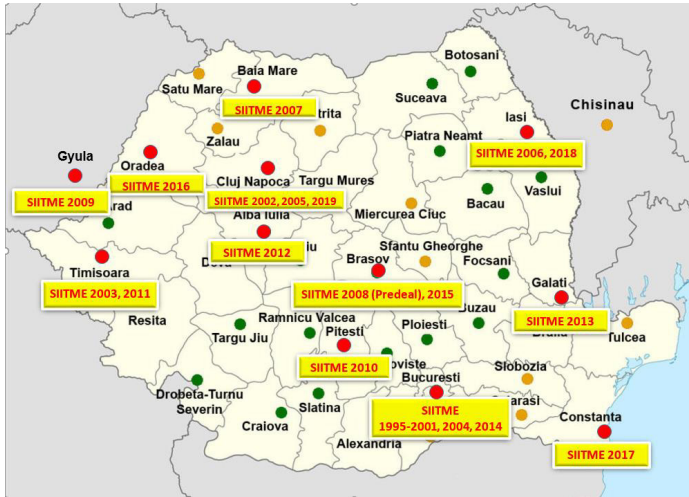


IEEE Meeting of Hungary/Romania Section Joint EPS & NTC Chapter, EP21/NANO42

19:30 - 19:35	Welcome, introduction of the agenda and vote on acceptance Norocel Codreanu (Vice-Chair, Moderator)
19:35 - 20:15	Chapter Chair's yearly report Attila Bonyár (Chapter Chair)
20:15 - 20:35	Conference progress report - SIITME 2021, Timișoara Aurel-Ștefan Gontean (Organizing Chair)
20:35 - 21:00	Conference progress report - ESTC 2022, Sibiu Paul Svasta, Ovidiu Aurel Pop (Conference General and Executive Chairs)
21:00 – 22:00	Correlated activities between IEEE, academia, and industry: Norocel Codreanu (Vice-Chair, Moderator) “Future Perspective - vision for tomorrow” Christian von Albrichsfeld Open discussion - Future mobility visions in the context of Heterogeneous Integration Roadmap
Invited persons:	Christian von Albrichsfeld (Country Head & General Manager Continental Automotive Romania) Marian Petrescu (Head of Location Iasi - Continental Automotive Romania), SIITME General Industrial Co-chair Dan Lazarescu, Robert Bosch SRL Klaus-Juergen Wolter, TU Dresden Christopher Bailey, University of Greenwich UK Heinz Wohlrabe, Dresden University of Technology Detlef Bonfert, Fraunhofer – EMFT, Munich Tanja Braun, Fraunhofer IZM, Berlin (To be confirmed) Toni Mattila, IEEE EPS Director Region 8 All Key-Note Speakers

SIITME 2020

SIITME History



1995 - Utilizarea calculatoarelor în Tehnologia Subansamblelor electronice CAE-CAD-CAM, UPB, București, România

SIITME'96, Al II-lea Seminar Internațional de Informatică Tehnologică în domeniul Fabricației Modulelor electronice, 23-24 Octombrie 1996, București, România

SIITME'97, The 3rd International Seminar for Informatics and Technology in the domain of Electronic modules, 22-23 October 1997, Bucharest, Romania

SIITME'98, The 4th International Symposium for Informatics and Technology in Electronic Modules Domain, September 22-24 1998, Bucharest, Romania

SIITME'99, The 5th International Symposium for Design and Technology in Electronic Modules, September 23-26 1999, Bucharest, Romania

SIITME 2000, The 6th International Symposium for Design and Technology for Electronic Modules, September 21-24, 2000, Bucharest, Romania

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SIITME 2001, The 7th International Symposium for Design and Technology of Electronic Modules, September 20-23, 2001, Bucharest, Romania

SIITME 2002, The 8th International Symposium for Design and Technology of Electronic Modules, September 19-22, 2002, Cluj-Napoca, Romania

SIITME 2003, The 6th International Symposium for Design and Technology of Electronic Packages, September 18-21, 2003, Timișoara, Romania

SIITME 2004, The 10th International Symposium for Design and Technology for Electronic Modules, September 23-26 2004, Bucharest, Romania

SIITME 2005, International Symposium for Design and Technology of Electronic Packaging, 11th Edition, September 22-25, 2005, Cluj-Napoca, Romania

SIITME 2006, International Symposium for Design and Technology of Electronic Packaging, 12th Edition, September 21-24, 2006, Iași, Romania

SIITME 2007, International Symposium for Design and Technology of Electronic Packaging, 13th Edition, September 20-23, 2007, Baia Mare, Romania

SIITME 2008, International Symposium for Design and Technology of Electronic Packaging, 14th Edition, September 18-21, 2008, Predeal, Romania

SIITME 2009, 15th International Symposium for Design and Technology of Electronic Packages, 17-20 September 2009, Gyula, Hungary

SIITME 2010, 16th International Symposium for Design and Technology in Electronic Packaging, September 23-26, 2010, Pitești, Romania.

SIITME 2011, IEEE 17th International Symposium for Design and Technology in Electronic Packaging, October 20-23, 2011, Timișoara, Romania.

SIITME 2012, IEEE 18th International Symposium for Design and Technology in Electronic Packaging, Alba Iulia, Romania

SIITME 2013, IEEE 19th International Symposium for Design and Technology in

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Electronic Packaging, Galati, Romania

2014 IEEE 20th International Symposium for Design and Technology in Electronic Packaging, October 23–26, 2014, Bucharest, Romania

2015 IEEE 21st International Symposium for Design and Technology in Electronic Packaging, October 22-25, 2015, Brasov, Romania

2016 IEEE 22nd International Symposium for Design and Technology in Electronic Packaging, October 20-23, 2016, Oradea, Romania

2017 IEEE 23rd International Symposium for Design and Technology in Electronic Packaging - October 26-29, 2017, Constanta, Romania

2018 IEEE 24th International Symposium for Design and Technology in Electronic Packaging - October 25–28, 2018, Iași, Romania

2019 IEEE 25th International Symposium for Design and Technology in Electronic Packaging - October 23–26, 2019, Cluj-Napoca, Romania

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Thursday, October 22

EEST | GMT +3h

- 08:15 - 08:30 Registration and Webcast Connection
- 08:30 - 08:50 Opening ceremony, Welcome words
- 09:00 - 11:10 Plenary Oral Session 1
- 11:10 - 11:20 Coffee Break
- 11:20 - 13:30 Plenary Oral Session 2
- 13:30 - 13:50 Lunch Break
- 13:50 - 14:50 Industrial Session 1
- 14:50 - 16:20 Poster Session 1
- 16:20 - 16:30 Coffee Break
- 16:30 - 18:40 Plenary Oral Session 3
- 18:40 - 20:00 **Networking IEEE, IMAPS Student Branch Chapter Kick-off Meeting – see next page for detailed agenda**

Thursday, October 22

EEST | GMT +3h

- 08:30 - 10:00 Poster Session 2
- 10:00 - 10:10 Coffee Break
- 10:10 - 10:50 Special Session
- 10:50 - 12.20 Plenary Oral Session 4
- 12:20 - 12:50 Industrial session 2
- 12:50 - 13:10 Lunch Break
- 13:10 - 14:40 **Technical sponsored workshop: Switched Mode Power Supply with high efficiency and best EMI design**
- 14:40 - 16:10 Poster Session 3
- 16:10 - 16:20 Coffee Break
- 16:20 - 17:50 Plenary Oral Session 5
- 17:50 - 19:30 Steering Committee Meeting
- 19:30 - 20:30 Awarding session

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Networking IEEE, IMAPS Student Branch Chapter Kick-off Meeting

Thursday, October 22, 18:40 - 20:00

18:40 – 18:50: Welcome, introduction of the agenda

Paul SVASTA – IEEE SBC UPB Advisor, Alin GRAMA – IEEE SBC TUC-N Advisor

18:50 – 19:20: Student Chapter's activities presentation

IEEE EPS SBC – University POLITEHNICA of Bucharest – Valentina Dumitrascu

IEEE EPS SBC – Technical University of Cluj-Napoca – Elena Stetco

IEEE NTC Student Chapter at the Politehnica University of Bucharest – Madalin

Moise

IMAPS Romania Chapter, Student Chapter - Viorel Nicolau

SBC under constructions:

IEEE EPS SBC – „Gheorghe Asachi” Technical University of Iasi - Radu Bozomitu

IEEE EPS SBC – “Politehnica” University of Timisoara – Roland Szabo

19:20 – 19:30: IEEE EPS Student Branch Chapter Program

Andrew Tay - EPS Program Director, Student Programs

19:30 – 20:00: Open Discussions

Paul SVASTA – Moderator

On going projects EPS SBC UPB & EPS SBC TUC-N

Joint Chapters – IMAPS C & EPS SBC

Future opportunities for collaboration – how Student Chapters can be involved in the activities of the EPS HU & RO Chapter.

Collaboration between academia and industry – research projects

Invited persons:

Christopher Bailey, President of the IEEE Electronics Packaging Society

Attila Bonyár, IEEE Hu&Ro EPS&NTC Chapter Chair

Dan Ciocirlan, IEEE Chair at UPB IEEE Student Branch

Rodica Constantinescu, Vice-dean of ETTI UPB

Ioana Manea, Systems Architect, Cisco Systems

Denise Manning, IEEE EPS Executive Director

Toni Mattila, IEEE EPS Director Region 8

Cosmin Moisa, SIITME/ TIE Industry Co-Chair

Dan Pitica, Pro – Rector TUC-N

Ovidiu Pop, Vice-dean of ETTI TUC-N

Nihal Sinnadurai, IMAPS Europe International Ambassador

Andrew Tay - EPS Program Director, Student Programs

Lucian Toma, IEEE Romania Section Vice-Chair

SIITME 2020

SIITME 2020 Keynote speakers

(in alphabetical order)



Keynote speaker:

Name: Christopher Bailey

Job position: Professor

Company: University of Greenwich UK

E-mail: C.Bailey@greenwich.ac.uk

Title of the Presentation:

“Design Challenges for Advanced Packaging of Electronic Systems”

Chris Bailey is President of the IEEE Electronics Packaging Society and Director of the Computational Mechanics and Reliability Group at the University of Greenwich, UK. He has a PhD in Computational Modelling and an MBA in Technology Management. He has published over 300 papers on the topic of Design, Modelling and Simulation of Electronics Packaging.

Chris has served on several external government committees, which includes the 2014 UK Research Excellence Framework, to assess research outputs and research impact across UK universities. He is a member of the EPSRC College (UK Equivalent to the NSF in the USA); and associate editor for the IEEE Transactions of Components, Packaging, and Manufacturing Technology.

He is also co-chair for the Modelling and Simulation technical working group on the Heterogeneous Integration Roadmap.

Abstract:

Summary: The Electronics Packaging Society (EPS), through its strategic plan (2019-2024) [1], is supporting the Heterogeneous Integration Roadmap (HIR) [2], which contains 23 chapters covering future trends and innovations in electronics packaging. Design and Modelling Tools are a key part of this roadmap, which details the need for new developments in these key enabling technologies.

Motivation and Results: Heterogeneous Integration, through Advanced Packaging, is a critical enabling technology for future electronic systems. The 2019 edition of the HIR details the technical challenges and potential solutions for advanced packaging and its applications over a 15-year timeframe. In terms of design, modelling and simulation, there is a need for new methodologies - including co-design, multi-physics, and AI - to address these challenges (see figure 1).

This presentation will discuss the state-of-the-art in co-design and modeling tools, the challenges that need to be overcome, and potential technical solutions to these challenges for the design of future electronic systems.

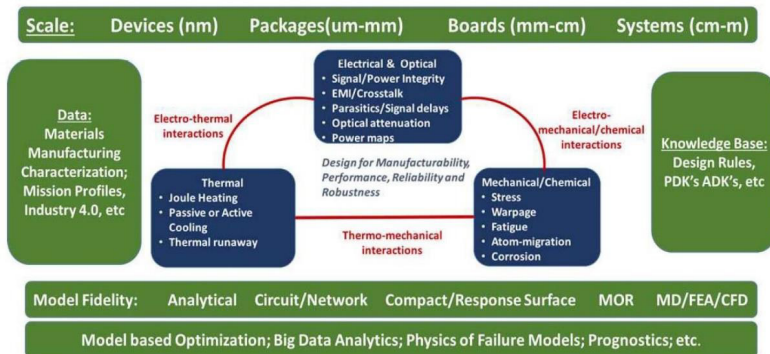


Figure 1: Design, Modelling and Simulation needs for Advanced Packaging

References:

- 1) Electronics Packaging Society Strategic Plan (2019-2024), https://eps.ieee.org/images/files/BoG/EPS-Strategic-Plan-BoGVersion_FINAL_VERSION_NEW_FOI_Feb_2020.pdf
- 2) HIR, 2019 Edition, <https://eps.ieee.org/technology/heterogeneous-integrationroadmap/2019-edition.html>.



Keynote speaker:

Name: Kristine Kotte-Eriksen

Job position: Diversity & Inclusion Advisor

E-mail: kristinekotte@gmail.com

Title of the Presentation:

The “masculine norm” of organisations

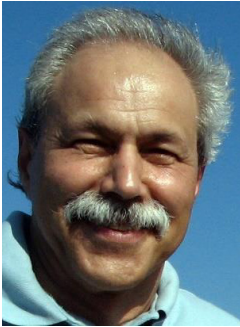
Kristine Kotte-Eriksen is a Norwegian diversity and inclusion advisor. She has a master’s degree in gender studies, specialising in gender equality in the workplace. Her background is in marketing & communications, and she has several years of experience working with gender related challenges in the global IT industry, start-up community, oil and gas industry, and the Norwegian Navy. Kotte-Eriksen is an experienced speaker on gender, diversity and inclusion topics, and has lived and worked in the UK, France and Switzerland. She believes that equality in organisations is best achieved through openness, transparency and communication.

The “masculine norm” of organisations

To achieve gender equality in organisations, we have to involve the entire organisation - not only the gender in minority. By creating an inclusive culture - led by the top management - we can attract and retain a broader diversity in the workforce. But how can we work towards equality without focusing too much on people’s gender?

Organisational cultures consist of “masculine” and “feminine” traits. In organisations and industries heavily dominated by men, the masculine attributes can overshadow the feminine, and thus create a culture that rewards masculine attributes - a culture where men (in general) fit more authentically in. How can we create a more balanced culture by keeping the best of the masculine and giving space to more of the feminine? And how does this benefit men, women, and the organisations going forward?

SIITME 2020



Keynote speaker:

Name: Istvan Novak

Job position: Principal Signal and Power Integrity Engineer

Company: Samtec

E-mail: istvan.novak@verizon.net

Title of the Presentation:

“Power Integrity Challenges, Trends and Promises”

Biography: Istvan Novak is a Principal Signal and Power Integrity Engineer at Samtec, working on advanced signal and power integrity designs. Prior to 2018 he was a Distinguished Engineer at SUN Microsystems, later Oracle. He worked on new technology development, advanced power distribution, and signal integrity design and validation methodologies for SUN’s successful workgroup server families.

He was engaged in the methodologies, designs and characterization of power-distribution networks from silicon to DC-DC converters. He is a Life Fellow of the IEEE with twenty-nine patents to his name, author of two books on power integrity, teaches signal and power integrity courses, and maintains a popular SI/PI website.

Istvan was named Engineer of the Year at DesignCon 2020.

Abstract: Power integrity is a relatively new discipline and it is quickly becoming the new boogie man for circuit and board designers. Some say that after signal integrity has matured, now power integrity has become the new black magic. We will look into the reasons why power integrity is so difficult, will analyse past predictions and current challenges. We will touch upon the safety and reliability concerns brought on us by the proliferation of electronic circuits in all walks of life from tiny energy-harvesting circuits through consumer electronics products to high-power electronics in autonomous vehicles.



Keynote speaker:

Name: Markondeya Pulugurtha Raj

Job position: Associate Professor

Company: Florida International University

E-mail: mpulugur@fiu.edu

Title of the Presentation:

„Heterogeneous System Component Integration with Nanopackaging“

Biography: Dr. P. M. Raj's expertise is in packaging of electronic and bioelectronic systems, with emphasis on nanoscale RF, power and bioelectronic components, and active and passive integration in ultrathin embedded modules. He is an Associate Professor in Biomedical Engineering and Electrical and Computer Engineering at Florida International University, and Adjunct Professor at Georgia Institute of Technology, Atlanta. His research led to 330 publications, which include 8 patents. He received more than 25 best-paper awards. He is the Chair of Nanopackaging Technical Committee, EPS Representative of IEEE Nanotechnology Council, IEEE Distinguished Lecturer in Nanotechnology for 2020, Associate Editor for IEEE Nanotechnology Magazine and Transactions of Components, Packaging and Manufacturing Technologies (CPMT).

Abstract: Heterogeneous component integration with seamless and 3D connectivity between digital, RF, analog and passive components in a single package with unlimited bandwidth at lower power is the key to realize future electronic and bioelectronic systems. This talk describes the recent nanomaterial and nanoscale component integration breakthroughs that are making heterogeneous integration a reality. Nanomagnetic inductors, high surface area nanocapacitors and innovative 3D component designs will be described for integrated power modules. The second part focuses on material and component integration technologies for high-bandwidth 5G-6G communications. include high-gain antenna arrays in a package with integrated power dividers and

combiners, low-loss THz interconnects with substrate-integrated low-loss waveguides, integrated electromagnetic interference isolation structures between power amplifier (PA) and low-noise amplifier (LNA) interconnects and integrated nanomagnetic and nanodielectrics for nonreciprocal and tunable components. The last part of the presentation describes nanopackaging technologies to enable bioelectronic systems with seamless integration between neural recording arrays, active devices and wireless interfaces for ultra-miniaturized wearable and implantable bioelectronic systems.



Keynote speaker:

Name: Vladimír Sítko

Job position: managing director

Company: PBT Works s.r.o.

E-mail: V.Sitko@pbt-works.com

Title of the Presentation:

“How to fulfill reliability demands for future electronic assemblies”

Biography: Vladimír Sítko is a founder and managing director of PBT Works s.r.o, a recognized manufacturer of cleaning systems for electronic assemblies, stencil, and microelectronic applications.

He was starting his career in the microelectronics industry as a developer of the mechanical and physical measuring instrument and production machines for prototyping for chip process, assembly, and encapsulation. Later he was engaged as a process project engineer for vacuum electronic component production.

In 90-ties, he founded an SMT process machines and materials supply and consulting service company PBT Roznov. He gained deep expertise in the soldering process, paste printing process, and PCBA cleaning. At the same time, he was starting the business with development, design, and manufacturing machines for PCBA and maintenance cleaning, which is now running under PBT Works s.r.o. He is participating in several research tasks for cleaning technology. He sets concepts of PBT cleaning machines and process optimization methods. He is also working on the development of new measuring instruments for cleaning parameters monitoring and performance enhancements. He is an owner or co-owner of several patents.

Abstract: The main drivers of rapid process development are 5G, the Internet of Things, and the development of hybrid, electric, and autonomous electric vehicles. Communication is using transfer frequencies in the GHz band. Such

high rates require a completely new strategy in assembly interconnections. All paths in assemblies must be as short as possible, w/o parasitic inductances and capacities. Packages on assemblies will be almost only BTC (bottom terminated components). In the transport industry, the processed voltages at power transmission are higher than before. The tendency is to increase the voltage in cars from 12 – 24 V to 500 V to save weight and increase the driving distance.

Manufacturers still hope to continue using NO-CLEAN soldering technology for such applications. But all these assemblies are more involved in human safety and life protection. It has to be in the future much more reliable than current status. The vision is to increase the lifetime of automotive electronics from 15000 to 130 000 hrs. Both automotive and communication devices have to work in harsh environments. Ionic cleanliness and high Surface Insulation Resistance (SIR) are critical. This situation will, in a short time, move post soldering cleaning to standard technology for all reliable assemblies.

The big challenge is that for all these requirements on cleanliness, the current test and qualification methods are not suitable.

In modern production, the machine has to communicate important information with the factory MES system (Manufacturing Execution Systems). Information, like machine activity and status for central evidence of process exploitation and effectiveness, operator's logging, process data important for decision about the successfully passed operation, etc.

Also, such machines have to be ready to cooperate with robots and Autonomous guided vehicles to be integrated into the state of the art manufacturing lines, where a big part of maintenance and handling of material runs without operators.

Such a concept of cleaning machines can satisfy rapidly growing demands on the performance and effectiveness of the cleaning process. The complexity of assemblies and increasing needs for cleaning is a clear trend for the future.



Keynote speaker:

Name: Vesa Vuorinen

Job position: Senior University Lecturer

Company: School of Electrical Engineering, Aalto University

E-mail: Vesa.Vuorinen@aalto.fi

Title of the Presentation:

“Wafer-Level Metal Bonding for MEMS/MOEMS devices”

Biography: Dr. Vesa Vuorinen received his M.Sc. degree 1995 in Materials Science and Engineering and D.Sc. (Tech.) degree in 2006 in the Department of Electronics from the former Helsinki University of Technology. During the last decade, his research has been focusing on materials compatibility in heterogeneous systems with the emphasis on interfacial phenomena. He has also been responsible for teaching physics of failure and reliability assessment in electronics and direct research cooperation with the industrial partners for the last twenty years. He has been involved in the creation of international electronics assembly technology standards (IEC) and contributed to two text books dealing with interfacial compatibility issues and thermodynamics of solid state diffusion as well as authored or co-authored over 50 scientific papers and several book chapters.

Abstract: Functional structures utilized in Micro Electro Mechanical Systems (MEMS/MOEMS) have to be electrically connected and hermetically encapsulated. Wafer-level (WL) bonding through 3D-integration enables multi-sensor fusion with logic in a vertical high-speed package. The major driving forces for the opting WL- metal bonding methods are the enhanced performance due to higher vacuum, possibility of further downsizing and simultaneously providing vertical electrical interconnections when utilizing through silicon vias (TSVs). However, such complex levels of integration require a thorough understanding, for example, on the manufacturing processes integration, the influence of residual stresses and trace impurities on sensitive MEMS/MOEMS devices.



Keynote speaker:

Name: Heinz Wohlrabe, PhD, Dr.habil

Job position: Professor

Company: Dresden University of Technology

E-mail: heinz.wohlrabe@tu-dresden.de

Title of the Presentation:

“Quality and Reliability Influences of SMD-Devices due to Warpage Behavior of SMD-Packages and Boards during Soldering”

Biography: Dr.-Ing. habil. Heinz Wohlrabe (born 1955) studied 1974-1978 electro techniques at Technische Universität Dresden (Dresden University of Technology). He has got the PHD in 1984 at the same university. The main important topic was the usage of statistical quality control in electronics technology.

The focus of his scientific work over all this time was the application of mathematical-statistical methods (namely statistical process control, machine and process capability analysis, Design of Experiments) for the quality assurance in electronic production processes. The creation and execution of lectures in these fields belong also to his working field. Special measurement procedures for the quality assurance (placing and printing accuracy), the measurement of the warpage behavior during soldering and the numerical calculation of reliability data complete his research field.

He habilitated in Dec. 2008. The focus of his research remained the quality assurance in the SMD-production.

Abstract: Printed circuit boards (PCB) and SMD-packages are built up of different materials with at least uneven but partly strong different thermal expansion coefficients. Under thermal load, e.g. board assembly or field conditions, a deformation and deviation from the initial state often occur as warpage. This warpage can cause defects such as open solder joints, like head in pillow, bridges of solder joints and pad cratering. There exist

also influences on the reliability. The speech will show the principles to measure this behavior. Typical measurement and evaluation results of substrates and selected SMD-packages will be presented.

Quality and reliability experiments with special test boards were carried out, to find new limits for the maximum warpage of SMD-packages. The reliability evaluations will be completed by FEM-calculations. Finally the results were put in a “Warpage database”.



Keynote speaker:

Name: Klaus-Juergen Wolter

Job position: Senior Professor

Company: TU Dresden

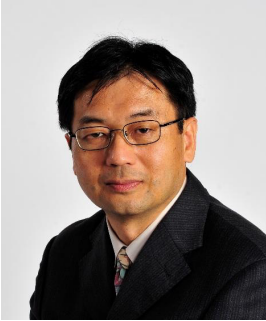
E-mail: klaus-juergen.wolter@tu-dresden.de

Title of the Presentation:

“Robust electronics for automotive applications including autonomous driving“

Biography: Prof. Klaus Wolter’s research interests have embraced many aspects of microelectronics packaging, including substrate technologies, assembly technologies, photonic packaging, MEMS, joining technologies, reliability of electronic packages, and non-destructive test methods. He is well known as co-author of six textbooks, co-editor of three book series with a total of 39 books, author and co-author of more than 200 papers. He is a senior member of IEEE-EPS. Prof. Wolter was the Director of the Electronic Packaging Lab at TU Dresden from 2003 to 2014. Currently he is a senior professor at TU Dresden.

Abstract: Autonomous driving demands highly robust surround-sensing of the entire vehicle. New packaging technologies have to be qualified for the reliability and safety of automotive standards. E-mobility increases the today’s life time requirements of automotive electronics. Additional to the driving time the charging operations have to be considered. To meet this new life time requirements the qualification of electronics module is changing from the detection of defects to the robustness validation. This approach to qualification is based on knowledge of physics of failure mechanisms relates to specific mission profiles. Based on broad practical experience along complete supply chain examples of robustness validation will be demonstrated.



Keynote speaker:

Name: Qing Zhang

Job position: Professor

Company: School of EEE, Nanyang Tech Univ, Singapore

E-mail: eqzhang@ntu.edu.sg

Title of the Presentation:

“Electric Generators Based on Semiconductor Junctions”

Biography: Qing Zhang is a Professor at Centre of Micro-/Nano-electronics, School of Electrical and Electronic Engineering, Nanyang Technological University, Singapore. His main research interests cover the electronic properties and applications of carbon based materials and other low dimensional electronic materials, energy storage devices and energy harvesting devices, etc.

Prof Qing Zhang and his team were one of the early groups who studied electron and heat transport in carbon nanotubes (CNTs). They found that heat transport in the CNTs is dominated by phonons, rather than electron transport. They have been studying the influences of metal/CNT contacts, adsorbed molecules and functional chemical agents on electron transport in CNTs since 1998 and have successfully demonstrated a variety of CNT electronic devices, including CNT logic gates, CNT OLED drivers, CNT flexible logic gates, CNT bio/chemical sensors, optical configurable CNT and ITO complementary logic gates, etc. They have made a significant contribution to enhance the stability of high specific capacity of carbon based anodes for Li-ion batteries. In 2014, they demonstrated high performance flexible Li-ion batteries with flexible coaxial Ni/PVDF nanofiber network and carbon fiber network. In 2017, Prof Zhang and his team successfully developed a unique electric generator with intermittently contacted p- and n-type doped semiconductor as the electrodes, in which both conduction and displacement current are generated. This is the first generator that possesses these characteristics.

Abstract: Electric generators convert mechanical power into electric power and they provide most of electric power for industry and our daily life nowadays. Since the first electrostatic generator was invented more than 370 years ago, many types of electric generators have been reported till now. Electromagnetic generators produce conduction current based on Faraday's law. In contrast, electrostatic generators and piezoelectric generators create displacement current under electrostatic induction and piezoelectric effect, respectively. In this talk, I shall outline the recent development in electric generators based semiconductor junctions. I shall concentrate on our recent work, i.e., p-n junction electric generators which could generate conduction current. These generators can be simply constructed using a pair of semiconducting or/and metallic electrodes which possess distinct chemical potentials. The generators can work in one of two working modes, i.e. the contact-separation mode and the sliding mode. In the contact-separation mode, electrons could diffuse from the high into the low chemical potential electrode once the two electrodes are brought in contact. A p-n junction, as well as a depletion region, is formed across the contacted surfaces. When the two electrodes are being separated, the space charges in the depletion region are then pumped to the external circuit and flow back to the high chemical potential electrode, converting the mechanical power to electrical power. With a small load resistance, conduction current and displacement current are clearly seen in the contact-separation cycles. By contrast, one electrode can be slid on the other electrode in the sliding mode. Electrons are generated through triboelectrification process at the contacted surfaces and they are then quickly swept out of the p-n junction by the built-in electric field, forming a conduction current across the contacted surfaces.



Technical sponsored workshop speaker:

Name: Lorandt Foelkel

Job position: Global Business Development Manager for Energy Harvesting, Field Application Engineer for Eastern Europe, Baltic countries, Russia and Turkey

E-mail: Lorandt.Foelkel@we-online.de

Title of the Presentation:

“Switched Mode Power Supply with high efficiency and best EMI design”

Biography: Lorandt Foelkel is our application engineer for EMI/EMC situation and switched mode power supply (SMPS) design for industrial- and automotive electronics applications. He is the company spokesperson for EMC & RF Electronic Design seminars and holds over the World, since 2005, more than 700 seminars to design engineers, giving training to easy understanding the EMC problems at board level.

With over 30 years’ experience in electronic design, including 20 years in product management for passive components at Würth Elektronik eiSos, Lorandt has widespread experience for EMC, filter design and efficiency improvement for SMPS. After his study at “University Transylvania Brasov” in Kronstadt, he works for 9 years as service engineer for consumer electronics then 4 years as design engineer for ATEX (explosion safety) remote controllers.

Abstract: How can a developer solve EMC problems on the circuit board or prevent them from occurring? What has to be considered and where does it make sense to use a filter? Which system impedances are there and which differences decide which filter topology should be used. We will show you how to correctly use a simplified filter calculation for a switching regulator.

Requirements in EMC:
EMI Noise Sources

Filter Design

PCB Layout recommendations

Shielded vs. Unshielded

3 use cases of DC/DC converter design

In our workshop we will pay attention to 3 use cases, where we will consider the efficiency, the EMI and the cost of a 100W DC/DC power supply. Those 3 use cases are based on:

1. Lowest cost possible
2. Compromised cost
3. No cost limits

All this 3 use cases must fulfill following criteria:

- Eff. Higher as 90%
- Size limitation to fit in the box
- EMC requirement for conducted and radiated emissions EN55022

The use cases where first simulated then later in the own pre-compliant Laboratory measured, and after that in an EMC Accredited Lab .

We will compare those measurements and try to reproduce them with the own set up.

Oral & Industrial sessions

Thursday, October 22

08:30 – 08:50 **Opening ceremony, Welcome words**
EEST | GMT +3h

Marian PETRESCU, Continental Automotive, Iași, Romania
Paul SVASTA, University Politehnica of Bucharest, Romania
Ioan LIȚĂ, University of Pitești, Romania

Thursday, October 22

09:00 – 11:10 **Plenary Oral Session 1**
EEST | GMT +3h

Session Chair: Pavel MACH, Technical University of Prague, Czech Republic
Session Co-Chair: Ioan LIȚĂ, University of Pitești, Romania

09:00 KN1 Robust electronics for automotive applications including autonomous driving

Klaus-Juergen Wolter, TU Dresden

09:40 KN2 Quality and Reliability Influences of SMD-Devices due to Warpage Behavior of SMD-Packages and Boards during Soldering

Heinz Wohlrabe, Dresden University of Technology

10:20 O1 Simulation Model of a GMR Based Current Sensor

Elena-Mirela Stetco (Technical University of Cluj-Napoca)

10:45 O2 Analysis of single-cell force-spectroscopy data of Vero cells recorded by FluidFM BOT

Agoston G Nagy (Budapest University of Technology and Economics)

Thursday, October 22

11:20 – 13:30 **Plenary Oral Session 2**
EEST | GMT +3h

Session Chair: Klaus-Jürgen WOLTER, TU Dresden, Germany
Co-Chair: Dan PITICĂ, Technical University of Cluj-Napoca, Romania

11:20 KN3 Electric Generators Based on Semiconductor Junctions
Qing Zhang, School of EEE, Nanyang Tech Univ, Singapore

12:00 KN4 How to fulfill reliability demands for future electronic assemblies
Vladimír Sítko, PBT Works s.r.o.

12:40 O3 - Enhanced X-Ray Inspection of Solder Joints in SMT Electronics Production using Convolutional Neural Networks
Konstantin Schmidt (Friedrich-Alexander-Universität Erlangen-Nürnberg/Lehrstuhl FAPS); Yannik Milde (Friedrich-Alexander-Universität); Jochen Böning (Siemens AG); Gunter Beitingner (Siemens AG); Nils Thielen (Friedrich-Alexander University Erlangen-Nuremberg); Reinhardt Seidel (Friedrich-Alexander University Erlangen-Nuremberg); Jörg Franke (Institute for Factory Automation and Production Systems)

13:05 O4 - Surface-enhanced Raman Spectroscopy Investigation of DNA Molecules on Gold/Epoxy Nanocomposite Substrates
Shereen Zangana, Budapest University of Technology and Economics

Thursday, October 22

13:50 – 14:50 **Industrial Session 1**
EEST | GMT +3h

Session Chair: Aurelian KOTLAR, Vitesco Technologies
Session Co-Chair: Bogdan MIHĂILESCU, University Politehnica of Bucharest, Romania

Robert Bosch SRL
Continental Automotive Romania

MIELE
NAFEMS International Association for
the Engineering Modelling

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Thursday, October 22

16:30 – 18:40 **Plenary Oral Session 3**
EEST | GMT +3h

Session Chair: Gábor Harsányi, Budapest University of Technology and Economics, Hungary

Session Co-Chair: Boris I Evstatiev, University of Ruse Angel Kanchev, Bulgaria

16:30 KN5 - Power Integrity Challenges, Trends and Promises

Istvan Novak, Samtec

17:10 KN6 - Design Challenges for Advanced Packaging of Electronic Systems”

Christopher Bailey, University of Greenwich UK

17:50 O5 - Small-Signal Modelling of the Three Switch 1L2C Boost Converter

Septimiu Lica (Politehnica University Timisoara); Alex Molcuț (Politehnica University Timisoara); Ioan Lie (Politehnica University Timisoara); Dan Lascu (Politehnica University Timisoara)

18:15 O6 - Simulating the evolution of infectious agents through human interaction

Dumitru Iulian Nastac (POLITEHNICA University of Bucharest); Paul-Vasile Vezeteu (POLITEHNICA University of Bucharest)

Friday, October 23

10:10 – 10:50 **Special Oral Session**
EEST | GMT +3h

Session Chair: Daniela TĂRNICERIU, Gh. Asachi Technical University of Iași, Romania

Session Co-Chair: Agata SKWAREK, Łukasiewicz Research Network - Institute of Microelectronics and Photonics, Poland

10:10 SOS - The “masculine norm” of organisations

Kristine Kotte-Eriksen, Diversity & Inclusion Advisor, Norway

SIITME 2020

Friday, October 23

10:50 – 12:20 **Plenary Oral Session 4**
EEST | GMT +3h

Session Chair: Daniela TĂRNICERIU, Gh. Asachi Technical University of Iași, Romania
Session Co-Chair: Agata SKWAREK, Łukasiewicz Research Network - Institute of Microelectronics and Photonics, Poland

10:50 KN7 –Wafer-Level Metal Bonding for MEMS/MOEMS devices
Vesa Vuorinen, School of Electrical Engineering, Aalto University, Finland

11:30 O7 Study of Ceramic Capacitor technology link to Electro Chemical Migration in Automotive Electronics
Francisc Szasz (Continental Automotive Romania)*

11:55 O8 Electromigration in lead-free solder joints on ceramic PCB substrates
Daniel Straubinger (BME-ETT); Attila Géczy (BME-ETT)

Friday, October 23

12:20 – 12:50 **Industrial Session**
EEST | GMT +3h

Session Chair: Radu BOZOMITU, Gh. Asachi Technical University of Iași, Romania
Session Co-Chair: Cristian GORDAN, Continental Automotive, Timișoara, Romania

VITESCO Technology

WÜRTH Elektronik eiSos GmbH&Co.KG

Friday, October 23

16:20 – 17:50 **Plenary Oral Session 5**
EEST | GMT +3h

Session Chair: Detlef BONFERT, Fraunhofer EMFT, Munich Germany

Session Co-Chair: Cosmin MOISĂ, Continental Automotive, Timișoara, Romania

16:20 KN8 Heterogeneous System Component Integration with Nanopackaging

Markondeya Pulugurtha Raj, Florida International University

17:00 O9 Change Detection in the Complexity of Time Series with Information-based Criteria

Dorel Aiordachioaie (Dunarea de Jos University of Galati)

17:25 O10 On the Performance of LMS-Based Algorithms for the Identification of Low-Rank Systems

Roxana-Elena Mihaescu (University Politehnica of Bucharest); Constantin Paleologu (University Politehnica of Bucharest); Jacob Benesty (University of Quebec); Silviu Ciochina (University Politehnica of Bucharest)

Posters Assessor Committee:

General Poster Session Chair: Heinz WOHLRABE, Technical University of Dresden, Germany

Co-Chair: Cristina MARGHESCU, University Politehnica of Bucharest, Romania

AIORDACHIOAIE Dorel “Dunarea de Jos” University of Galati

BANDE Vlad, Technical University of Cluj-Napoca, Romania

BERINDE Florin, Vitesco Technologies, Romania

BONFERT Detlef, Fraunhofer EMFT, Germany

BONYIAR Attila, Budapest University of Technology and Economics, Hungary

BORCEA Alexandru, ARIES, Romania

BOTUDESCU Adrian, Continental Automotive Timisoara, Romania

BOZOMITU Radu Gabriel, Gheorghe Asachi Technical University of Iași, Romania

BRANZEI Mihai, University Politehnica of Bucharest, Romania

BUNEA Radu, Vitesco Technologies, Romania

CHINDRIȘ Gabriel, Technical University of Cluj-Napoca, Romania

CHITU Sorin, University Politehnica of Bucharest, Romania

CIMPONERIU Andrei, Continental Automotive Timisoara, Romania

CIOC Bogdan, University of Pitesti, Romania

CIOLACU Monica, Technische Hochschule Deggendorf, Germany

CODREANU Norocel, University Politehnica of Bucharest, Romania

DOBRE Robert, University Politehnica of Bucharest, Romania

DRUMEA Andrei, University Politehnica of Bucharest, Romania

GONTEAN Aurel-Ștefan, Politehnica University of Timișoara, Romania

GRAMA Alin, Technical University of Cluj-Napoca, Romania;

HEDESIU Horia, Technical University of Cluj-Napoca, Romania;

IFTODE Cora, Continental Automotive Timisoara, Romania

ILLÉS Balázs, Budapest University of Technology and Economics, Hungary

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ILLYEFALVI-VITÉZ Zsolt. Budapest University of Technology and Economics,
Hungary
IONESCU Ciprian, University Politehnica of Bucharest, Romania
IONESCU Laurentiu, University of Pitesti, Romania
IONITA Silviu, University of Pitesti, Romania
LAZARCIUC Emil, Continental Automotive Timisoara, Romania
LICA Septimiu, Universitatea Politehnica Timisoara, Romania
LITA Ioan, University of Pitesti, Romania
LUCA Octavian, Vitesco Technologies, Romania
MACH Pavel, Czech Technical University in Prague, Czech Republic
MAZARE Alin, University of Pitesti, Romania
MEDGYES Bálint, Budapest University of Technology and Economics, Hungary
MIHĂILESCU Bogdan, University Politehnica of Bucharest, Romania
MOISA Cosmin, Continental Automotive Timisoara, Romania
MOISE Madalin, University Politehnica of Bucharest, Romania
NICOLAU Viorel, Dunărea de Jos University of Galați, Romania
PALEOLOGU Constantin, Politehnica University of Bucharest, Romania
PANTAZICA Mihaela, University Politehnica of Bucharest, Romania
PERISOARA Lucian Andrei, University Politehnica of Bucharest, Romania
PETREUS Dorin, Technical University of Cluj-Napoca, Romania;
POP Ovidiu Aurel, Technical University of Cluj-Napoca, Romania;
STIRBU Cosmin, University of Pitesti, Romania
VASILE Alexandru, University Politehnica of Bucharest, Romania
VASILE Ciprian, University Politehnica of Bucharest, Romania
VIMAN Liviu, Technical University of Cluj-Napoca, Romania;
VISAN Daniel, University of Pitesti, Romania
VLADESCU Marian, University Politehnica of Bucharest, Romania
VRANCILA Cristian, Continental Automotive Timisoara, Romania
VUZA Dan, APTE, Romania

Thursday, October 22

14:50 - 16:20 **Poster Session 1 (Start with a pitching session*)**

EEST | GMT +3h * Each author must deliver a maximum 1 minute slide show presentation of her/his work.

Poster Session 1

Session Chair: Ioan LIȚĂ, University of Pitești, Romania

Session Co-Chair: Cosmin MOISA, Continental Automotive, Timișoara, Romania

P1.1 Investigations at the Interface of a Multilayer Structure Made of Non-conductive and Conductive Resins

Mihai Branzei (University POLITEHNICA of Bucharest); Gaudentiu Varzaru (Syswin Solutions); Razvan Ungurelu (SYSWIN Solutions); Ciprian Ionescu (UPB-CETTI); Bogdan Mihailescu (UPB-CETTI); Paul Svasta (UPB-CETTI); Marin Gheorghe (Nanom-MEMS)

P1.2 Realization and Testing of a Supercapacitor, Pouch type cell

Rodica C Negroiu (UPB-CETTI); Paul Svasta (UPB-CETTI); Ciprian Ionescu (UPB-CETTI); Alexandru Vasile (UPB-CETTI); Mihaela Ramona Buga (National Research and Development Institute for Cryogenic and Isotopic Technologies – ICSI)

P1.3 Data Mining System Architecture for Industrial Internet of Things in Electronics Production

Reinhardt Seidel (Friedrich-Alexander University Erlangen-Nuremberg); Mohamadou Hassan Amada (Friedrich-Alexander University Erlangen-Nuremberg); Jonathan Fuchs (Friedrich-Alexander-Universität Erlangen-Nürnberg / Lehrstuhl FAPS); Nils Thielen (Friedrich-Alexander University Erlangen-Nuremberg); Konstantin Schmidt (Friedrich-Alexander-Universität Erlangen-Nürnberg / Lehrstuhl FAPS); Christian Voigt (Friedrich-Alexander-Universität Erlangen-Nürnberg / Lehrstuhl FAPS)

P1.4 Theoretical and Practical Aspects in the Design and Construction of Active Electrodes for EEG

Daniela Andreea Coman (University of Pitesti); Silviu Ionita (University of Pitesti); Ioan Lita (University of Pitesti)

P1.5 Wearable Smart Prototype for Personal Air Quality Monitoring

Attila Géczy (BME-ETT); Lajos Kuglics (BME-ETT); László Jakab (BME-ETT); Gábor Harsányi (“BME-ETT, Budapest, Hungary”)

P1.6 Decision support platform for intelligent and sustainable farming

Mihaela Balanescu (BEIA Consult International); **Andreea D Badicu (BEIA Consult International)**; George Suciu (BEIA Consult & UPB); Alexandru Vulpe (UPB); Carmen Poenaru (BEIA Consult International); Adrian Pasat (BEIA Consult)

P1.7 Study on Unmanned Surface Vehicles used for environmental monitoring in fragile ecosystems

Mihaela Balanescu (BEIA Consult International); George Suciu (BEIA Consult & UPB); **Andreea D Badicu (BEIA Consult International)**; Andrei Birdici (BEIA Consult International); Adrian Pasat (BEIA Consult); Carmen Poenaru (BEIA Consult International)

P1.8 A Pupil Detection Algorithm Based on Contour Fourier Descriptors Analysis

Petronela I Bonteanu (Technical University of Iasi); Arcadie Cracan ("Gheorghe Asachi" Technical University of Iasi); Radu Gabriel Bozomitu ("Gheorghe Asachi" Technical University of Iasi); Gabriel I Bonteanu (Technical University of Iasi)

P1.9 Intelligent Warning System for Drivers

Loredana M Burciu (ETTI,UPB); Radu P Fotescu (ETTI,UPB); Rodica Constantinescu (ETTI, UPB); Paul Svasta (UPB-CETTI)

P1.10 Algorithm to Design Conductive Mesh for Tamperproof Envelope

Sorin Chitu (UPB-CETTI); Daniel-Ciprian Vasile (UPB-CETTI); Tudor Ioan Honceriu (UPB-CETTI); Paul Svasta (UPB-CETTI)

P1.11 Machine Learning algorithms for air pollutants forecasting

Marius Dobrea (BEIA Consult & UPB); **Andreea D Badicu (BEIA Consult International)**; Marina Barbu (BEIA Consult International); Oana Subea (BEIA Consult International); Mihaela Balanescu (BEIA Consult International); George Suciu (BEIA Consult & UPB); Ciprian Dobre (UPB); Andrei Birdici (BEIA Consult International); Oana Orza (BEIA Consult International)

P1.12 Intelligent System for Vehicle Recognition

Radu P Fotescu (ETTI,UPB); Loredana M Burciu (ETTI,UPB); Rodica Constantinescu (ETTI, UPB); Paul Svasta (UPB-CETTI)

P1.13 Investigation on modified SRR for accurate dielectric measurements

Raluca Gavrila (University Politehnica of Bucharest); Iulia Mocanu (UPB)

P1.14 Thermal Effects Based ESR Measurement of Electrolytic Capacitors

Elisei Iliș (Universitatea Politehnica Timișoara); Aurel Gontean (Politehnica Univ. Timisoara)

P1.15 IoT Based Automatic Electronic System for Monitoring and Control of Street Lighting

Seher Kadirova (University of Ruse “Angel Kanchev”)

P1.16 Dynamic adaptation of power emissivity for mobile microstrip antennas in dynamic impedance environment with microcontroller

Baicu Laurentiu (Dunarea de Jos University of Galati); Bogdan Dumitrascu (Dunarea de Jos University of Galati); Mihai Culea (Dunarea de Jos University of Galati); Nistor Nicusor (Dunarea de Jos University of Galati)

P1.17 Software Controlled Radio Receiver for Versatile Wireless Communications

Ioan Lita (University of Pitesti); Daniel Visan (University of Pitesti)

P1.18 Automation Module for Precision Irrigation Systems

Ioan Lita (University of Pitesti); Daniel Visan (University of Pitesti)

P1.19 LoRa and Bluetooth-based IoT alarm clock device for hearing-impaired people

Catalina Marculescu (UPB); Ana-Maria Dragulinescu (UPB); Ioana Marcu (UPB); Alina Machedon (UPB)

P1.20 Android application for data processing from a gas detection sensor in atmosphere

Dumitru Iulian Nastac (POLITEHNICA University of Bucharest); Andrei Alexandrescu (POLITEHNICA University of Bucharest)

P1.21 Analysis of the driver's state of fatigue through on-board video systems

Ion Nicolae Stancel (Universitatea Politehnica din Bucuresti); Maria Claudia Surugiu (POLITEHNICA University of Bucharest)

P1.22 Application of Ultrasonic Sensors in Mapping Vineyard Parameters

Eniko Szilagy (Technical University of Cluj-Napoca); Serban Meza (Communication Department, Technical University of Cluj-Napoca); Dorin M Petreus (Technical University of Cluj-Napoca)

P1.23 Electronic system for measuring frequency in GHz range

Florentin Vasile (Politehnica University of Bucharest)

P1.24 Portable LED Lighting System for Working in Confined Spaces with Flammable or Explosion Risk

Dan-Alexandru Vladescu (University “Politehnica” of Bucharest)

P1.25 Analysis of energy performance of solutions for measurement and transmission of microclimatic data from sensors in IoT applications

Snezhinka Zaharieva (University of Ruse); Gergana Staevska (University of Ruse)

P1.26 An Approach for Calculating the Temperature at a Point in the Cross Section Formed by Temperature Sensors

Snezhinka Zaharieva (University of Ruse); Iordan Stoev (University of Ruse); Adriana N. Borodzhieva (University of Ruse)

P1.27 Analysing the RFID Failure Impact on Availability of IoT Services

Cosmina Corches (Technical University of Cluj-Napoca); Mihai Daraban (Technical University of Cluj-Napoca)

P1.28 A Metamodel Residual-based Stopping Criterion for Adaptive Verification of Integrated Circuits

Ingrid Kovacs (Technical University of Cluj-Napoca); Topa Marina (Technical University of Cluj Napoca); Monica Ene (Infineon Technologies, Bucharest); Andi Buzo (Infineon Technologies AG Neubiberg); Georg Pelz (Infineon Technologies AG Neubiberg)

P1.29 Prediction algorithms using smart software for steel industry equipment

Elena Raducan (“Dunarea de Jos” University of Galati); Gena-Mihaela Vlej (Liberty Steel group, Galati); Viorel Nicolau (“Dunarea de Jos” University of Galati)

P1.30 Studies upon the Optical Spectrum of LED Backlight Display Panels and the Blue Light Hazard

Marian Vladescu (UPB-CCO); Dan Tudor Vuza (Institute of Mathematics of the Romanian Academy); Alina E Marcu (“Politehnica” University of Bucharest)

P1.31 Numerical Models of the Electrochemical Migration: a short review

Ali Gharaibeh (BME-ETT); Balázs Illés (BME-ETT); Attila Géczy (BME-ETT); Bálint Medgyes (BME-ETT)

Friday, October 23

08:30 – 10:00 **Poster Session 2 (Start with a pitching session*)**

EEST | GMT +3h * *Each author must deliver a maximum 1 minute slide show presentation of her/his work.*

Poster Session 2

Session Chair: Norocel CODREANU, “Politehnica” University of Bucharest, Romania

Session Co-Chair: Viorel NICOLAU, Dunărea de Jos University of Galați, Romania

P2.1 SoC based IoT sensor network hub for activity recognition using ML.net framework

Alexandru Alexan (UTCN); Anca Alexan (UTCN); Stefan Oniga (Technical University of Cluj-Napoca, North University Center of Baia Mare)

P2.2 Machine learning activity detection using ML.Net

Anca Alexan (UTCN); Alexandru Alexan (UTCN); Stefan Oniga (Technical University of Cluj-Napoca, North University Center of Baia Mare)

P2.3 Embedded System for Smart Controlling Consumers

Denisa G Balan (Politehnica University of Bucharest); Andrei DRUMEA (Politehnica University Bucharest); Alina E Marcu (“Politehnica” University of Bucharest)

P2.4 Aspects of design in an experimental multi-sensor based acquisition system for precise agriculture

Calin BIRA (Universitatea Politehnica Bucuresti); **Valentin G Voiculescu (Universitatea POLITEHNICA Bucharest)**

P2.5 Impedance Matching for UHF Band Antennas on Ceramic Substrate

Mircea-Alexandru I Călin (Polytechnic University of Bucharest)

P2.6 Key Expansion in Cryptographic Systems

Sorin Chitu (UPB-CETTI); Daniel-Ciprian Vasile (UPB-CETTI); Ionut Daniel Tramandan (CETTI); Paul Svasta (UPB-CETTI)

P2.7 Blockchain-Based Image Copyright Protection System using JPEG Resistant Digital Signature

Robert A Dobre (Politehnica University of Bucharest); Radu Ovidiu Preda (Politehnica University of Bucharest); Mihai Stanciu (Politehnica University of Bucharest)

P2.8 High performance interconnecting technique using power line communication

Elena-Valentina Dumitrascu (UPB - CETTI); Aurelian KOTLAR (Vitesco Technologies Engineering Romania), Moise Madalin Vasile, Paul Mugur Svasta (UPB - CETTI)

P2.9 Image Compression and Noise Reduction through Algorithms in Wavelet Domain

Catalin Dumitrescu (University "Politehnica" Bucharest); Raboaca Maria Simona (ICSI); **Ioana Manta (National Research and Development Institute for Cryogenic and Isotopic Technologies)**

P2.10 Usage of ZigBee and LoRa wireless technologies in IoT Systems

Vlad Gavra (Technical University of Cluj-Napoca)

P2.11 Towards real-time image classification and detection using CNN: a survey of algorithms, hardware and current trends

Mariana Ilas (Politehnica University Bucharest)

P2.12 New FPGA design solution using quantum computation concepts

Laurențiu Ionescu (University of Pitești); Laurentiu Mihai Ionescu (University of Pitesti); Ioan Lita (University of Pitesti); Alin Gheorghita Mazare (University of Pitesti)

P2.13 Investigating the performance of MicroPython and C on ESP32 and STM32 microcontrollers

Valeriu Ionescu (University of Pitesti)

P2.14 A neuro-model for weather forecasting

Dumitru Iulian Nastac (POLITEHNICA University of Bucharest); Tudor Preduna (POLITEHNICA University of Bucharest); Victor Rusu (POLITEHNICA University of Bucharest)

P2.15 Intelligent Control for Dual-Boiler System with Digital Communication for Smart Buildings

Viorel Nicolau ("Dunarea de Jos" University of Galati)*; Mihaela Andrei ("Dunarea de Jos" University of Galati); George Petrea ("Dunarea de Jos" University of Galati); Elena Raducan ("Dunarea de Jos" University of Galati)

P2.16 On Image Processing System for Robot Control using DSK 6713 DSP Kit

George S Petrea ("Dunarea de Jos" University of Galati); Viorel Nicolau ("Dunarea de Jos" University of Galati); Mihaela Andrei ("Dunarea de Jos" University of Galati)

P2.17 Development and Test of a Data Framework for Prediction of Soldering Quality in Selective Wave Soldering Applying k-Nearest Neighbours

Reinhardt Seidel (Friedrich-Alexander University Erlangen-Nuremberg); Konstantin Schmidt (Friedrich-Alexander-Universität Erlangen-Nürnberg / Lehrstuhl FAPS); Nils Thielen (Friedrich-Alexander University Erlangen-Nuremberg); Christian Voigt (Friedrich-Alexander-Universität Erlangen-Nürnberg / Lehrstuhl FAPS)

P2.18 Resource Utilization Comparison between Plain FPGA and SoC Combined with FPGA for Image Processing Applications Used by Robotic Arms

Roland Szabo (Applied Electronics Department, Faculty of Electronics, Telecommunications and Information Technologies, Politehnica University Timisoara); Aurel Gontean (Politehnica Univ. Timisoara)

P2.19 Smart System for Incubating Eggs

Lorant A Szolga (UTCN)

P2.20 Phosphor Based White LED Driver by Taking Advantage on the Remanence Effect

Lorant A Szolga (UTCN)

P2.21 Integration of Internet of Things technology into a pill dispenser

Moise M Vasile Madalin (UPB-CETTI); Niculescu Ana-Maria (Center for Electronics Technology and Interconnection Techniques Polytechnic University of Bucharest); Dumitrascu Andreea (Center for Electronics Technology and Interconnection Techniques Polytechnic University of Bucharest)

P2.22 Design of a command and control system for an automatic pill dispenser

Moise M Vasile Madalin (UPB-CETTI); Pavel Daniela Mihaela (Center for Electronics Technology and Interconnection Techniques Polytechnic University of Bucharest); Elisei Nicolae (Center for Electronics Technology and Interconnection Techniques Polytechnic University of Bucharest)

P2.23 Design of touch ECG detection system based on STM32 and Android mobile phone

Tian Zeyang (Xian Jiaotong University)

P2.24 New Sensorless BLDC Control Method

Alexandru Zirnea (Politehnica University of Bucharest)

P2.25 Increasing Students' Motivation Using Project-Based Learning on the Topic of Electrical Filters

Adriana N. Borodzhieva (University of Ruse)

P2.26 Computer-Based Education for Teaching the Topic "Galois Linear Feedback Shift Registers"

Adriana N. Borodzhieva (University of Ruse)

P2.27 Computer-Aided Tools for Synthesis and Analysis of Pseudorandom Number Generators

Adriana N. Borodzhieva (University of Ruse); Iordan Stoev (University of Ruse); Snezhinka Zaharieva (University of Ruse); Valentin Mutkov (University of Ruse)

P2.28 Education 4.0: An Adaptive Framework with Artificial Intelligence, Raspberry Pi and Wearables - Innovation for creating value

Monica I. Ciolacu (TH Deggendorf & UPB CETTI); Ali Fallah Tehrani (THD); Paul Svasta (UPB-CETTI); Ioan Tache (UPB); Dan Stoichescu (UPB)

P2.29 Adaptation of Electrical Engineering Education to the COVID-19 Situation: Method and Results

Boris I Evstatiev (University of Ruse Angel Kanchev); Teodora Hristova (University of Mining and Geology)

P2.30 Higher Education with Distance Learning during COVID-19 Pandemic – a Transitional Semester from the Viewpoint of Teachers

Attila Géczy (BME-ETT); Oliver Krammer (BME-ETT); Laszlo Sujbert (BME-MIT)

P2.31 Integrated topics approach for teamwork students projects

Moise M Vasile Madalin (UPB-CETTI); Paul Svasta (UPB-CETTI); Elena-Valentina Dumitrascu (UPB - CETTI)

Friday, October 23

08:30 – 10:00 **Poster Session 3 (Start with a pitching session*)**
EEST | GMT +3h * Each author must deliver a maximum 1 minute slide show presentation of her/his work.

Poster Session 3

Session Chair: Ciprian IONESCU, “Politehnica” University of Bucharest, Romania

Session Co-Chair: Marian VLĂDESCU, “Politehnica” University of Bucharest, Romania

P3.1 Optimization of Silver-PDMS and Gold-PDMS Surface Nanocomposite Fabrication Technologies Considering LSPR and SERS applications

Alexandra Borók (Budapest University of Technology and Economics)

P3.2 Solar Cell Types and Technologies with Applications in Energy Harvesting

Andrei Dragulinescu (University Politehnica of Bucharest); Ana-Maria Dragulinescu (UPB)

P3.3 Characteristics of a Dilute Nitride InGaAsN Double Quantum Well Laser at 1047 nm

Andrei Dragulinescu (University Politehnica of Bucharest); Mihail Dumitrescu (Tampere University of Technology)

P3.4 Dependence of Shear Strength of Adhesive Conductive Joints on Adhesive Modification with the Silver Nanoparticles and Climatic Aging

Pavel Mach (Czech Technical University in Prague)

P3.5 Effect of the (geometrical) parameters of gold/silver nanoisland arrangements on their SERS properties

Petra Pál (University of Debrecen)

P3.6 Refractive index sensitivity of core-shell Ag@Au and Au@Ag nanoparticles

Géza Szántó (Department of Experimental Physics, University of Debrecen)

P3.7 Modeling Thermally-Induced Mechanical Faults in Bond Wire-Pad Assemblies

Adrian Bojita (Technical University of Cluj-Napoca); Raul Onet (Technical University of Cluj-Napoca); Marius Neag (Nil); Marius Purcar (Technical University of Cluj-Napoca); Vasile Topa (Technical University of Cluj-Napoca)

P3.8 Scalable PHEV/EV OBC architecture

Radu Bunea (Viteso Technologies)

P3.9 DC/DC Converter Output Capacitor Bank's Reliability Comparison using Prediction Standard MIL-HDBK-217F and IEC 61709

Dan Butnicu (Technical University of Iasi); Luminita-Camelia Lazar (Institute of Computer Science, Romanian Academy-Iasi Branch Iasi, Romania)

P3.10 An Efficiency Comparative Workbench Study of eGaN and Silicon Discrete Transistor based Buck Converters

Dan Butnicu (Technical University of Iasi); Camelia Lazăr (Institute of Computer Science, Romanian Academy-Iasi Branch Iasi, Romania)

P3.11 Modelling of the Thermal Conditions of a LED Driver

Nadezhda Evstatieva (University of Ruse Angel Kanchev); Boris I Evstatiev (University of Ruse Angel Kanchev)

P3.12 Spent Battery Classification by Electrical Characterization

Albert Fazakas (Technical University of Cluj-Napoca); Marius Purcar (Technical University of Cluj-Napoca); Vonsza Anda (UTCN)

P3.13 Converter topologies for MVDC traction transformers

Izsák F Ferencz (UTCN); Dorin M Petreus (Technical University of Cluj-Napoca)

P3.14 Electro-Thermal Simulation of Power DMOS Devices Operating under Fast Thermal Cycling

Ciprian I Florea (Technical University of Cluj-Napoca (UTCN))

P3.15 Estimating Power Dissipation through Thermal Measurements in Power Circuits

Alexandra Fodor (Technical University of Cluj-Napoca); Gabriel Chindris (UT Cluj-Napoca)

P3.16 A Comparison between State of Charge Estimation Methods: Extended Kalman Filter and Unscented Kalman Filter

Adelina Ilies (Technical University of Cluj-Napoca)

P3.17 Multi-Phase Current Sensor with Integrated Noise Compensation for Electric Vehicles

Teodor B. Iliiev (University of Ruse); Ivaylo Stoyanov (University of Ruse); Grigor Mihaylov (University of Telecommunications and Post); Ivan Beloev (University of Ruse)

P3.18 Cooling technique for M.2 to PCI(e) adapters

Rajmond Jano (Technical University of Cluj-Napoca); Alexandra Fodor (Technical University of Cluj-Napoca)

P3.19 A Generalized Model for Stacked Boost Single-Switch Converters

Septimiu Lica (Politehnica University Timisoara); Vlad Vătău (Politehnica University Timisoara); Dan Lascu (Politehnica University Timisoara); Mircea Tomoroga (Politehnica University Timisoara)

P3.20 Vector Control of Permanent Magnet Synchronous Machine

Ana-Maria Petri (Technical University of Cluj-Napoca)

P3.21 A Nine-Level Transformerless Inverter with Reduced Power Switches and Model Predictive Control Strategy

Babak Rooholahi (University of Rostock)

P3.22 Comparison between LLC and Phase-Shift converter with synchronous rectification for high power, high current applications

Patarau Toma (Technical University of Cluj Napoca)

P3.23 Impact Protection of Vehicles by Automatic Cutting of General Power Supply with GTO

Alexandru Vasile (UPB-CETTI); Irina Bacis (Vasile) (UPB-CETTI); Ciprian Ionescu (UPB-CETTI)

P3.24 Two-Stage Converter for Piezoelectric Energy Harvesting using Buck Configuration

Corina N Covaci (UPT); Aurel Gontean (Politehnica Univ. Timisoara)

P3.25 The Energy Efficiency of a Prosumer in a Photovoltaic System

Marius-Alexandru Dobrea (University Politehnica of Bucharest); Stefan Bichiu (UPB); Mihaela Vasluianu (UTCB); Ioana Opris (University Politehnica of Bucharest)

P3.26 3D tracking system at maximum solar emissivity with microcontroller

Bogdan Dumitrascu (Dunarea de Jos University of Galati); Baicu Laurentiu (Dunarea de Jos University of Galati); Nistor Nicusor (Dunarea de Jos University of Galati); Anisia Culea Florescu (Dunarea de Jos University of Galati)

P3.27 Virtual Investigations of a Stand-Alone Photovoltaic System with Supercapacitor Bank Used to Power an Irrigation System

Boris I Evstatiev (University of Ruse Angel Kanchev); Norocel Codreanu (UPB-CETTI); Katerina Gabrovska-Evstatieva (University of Ruse Angel Kanchev)

P3.28 Islanded Microgrid Simulation and Cost Optimisation

Andreea Ignat (Technical University of Cluj-Napoca); Eniko Szilagy (Technical University of Cluj-Napoca); Dorin M Petreus (Technical University of Cluj-Napoca)

P3.29 Theoretical and numerical aspects concerning the stress in a superconducting solenoid

Jubleanu I Radu (Polytechnic University of Bucharest); Cazacu Dumitru (Faculty of Electronics, Communication and Computers, University of Pitesti)

P3.30 Power Integrity Analysis of a High-Speed Multilayer Circuit Board Design

Razvan Petre (Tensor); Mihaela Pantazica (UPB-CETTI); Andrei DRUMEA (Politehnica University Bucharest)

P3.31 Comparative Analysis of Pad Geometries Used for Multi-Layer Ceramic Capacitors in Power Distribution Networks

Razvan Petre (Tensor); Mihaela Pantazica (UPB-CETTI); Cristina Marghescu (UPB-CETTI)

P3.32 EMC Simulation of Conducted Emissions Produced by a DC-DC Converter

Andrei Marius Silaghi (Politehnica University Timisoara); Florin Berinde (Continental Powertrain Engineering); Ciprian Bleoju (Continental Automotive Timisoara); Aldo De Sabata ("Politehnica" University Timisoara)

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Many thanks to the reviewers for their outstanding effort to assure a high quality of abstracts of conference papers.

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Automated, electric and connected mobility solutions

Bosch Engineering Center Cluj

The world's biggest technology companies and automakers are working today side-by-side with thousands of start-ups on the development of autonomous vehicles. The ultimate common goal is to have accident-free mobility in the future.

We at Bosch think that fully automated driving is probably the biggest challenge in the history of the automotive industry, but at the same time, we firmly believe that autonomous and connected driving are the best solutions for a new, safe era of mobility.

We are on board of this exciting journey, because despite all the challenges, we always follow our mission to help improve people's quality of life by creating technology **"Invented for life"**.

As we did many other times in history when big transformations happened, now, it is time again to embrace change and tackle the great challenges by making use of all our expertise in mobility gained through the past 130 years, and by combining this amazing knowledge with top-notch innovation from our Engineering Centers around the globe and with the latest IoT solutions.

Bosch Engineering Center Cluj plays an essential role in this great transformation ever since its foundation in 2013. With a great team of talented software, hardware and reliability engineers working in close collaboration with other Bosch locations and clients from around the world, we contribute to the development of excellent products and services in the areas of automated driving, connected & electric mobility, connectivity and IoT. We have expertise in four main domains: software engineering, hardware engineering & mechanical design, reliability engineering & quality validation, and last but not least, mobility sales planning. Our state-of-the-art offices and highly equipped laboratories are located in the heart of Cluj-Napoca and in Jucu.



Caelynx Europe ofera servicii de inginerie 3D, consultanta tehnica, proiectare si analiza CAE in domeniile auto, aerospacial, energie, aparare, medicina.



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- **Simulare injectie mase plastice**
- **Design:** piese turnate, materiale plastice, mecanisme, asamblari
- **Analiza la grup motopropulsor:** motoare cu ardere interna, transmisii, generatoare.
- **Optimizare:** optimizare neliniara avand variabile cu forme complexe.
- **Analiza la impact:** analiza de impact conform regulamentelor si directivelor europene, cinematica ocupantilor, impactul cu pasarea.
- **Caracterizarea materialelor:** compozite, hiperelastice, fracturarea metalelor



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Continental. The Future in Motion.

As one of the leading global automotive manufacturer we have hundreds of projects going on simultaneously, these are just a few of them:

- › **AllCharge** is a superfast wireless and cable charger that can charge your car as fast as vehicles with internal combustion engines. In addition, AllCharge enables you to connect any electronic device to your car to charge it, even an entire house in a power outage situation.
- › **Speakerless Audio System** replaces conventional speakers with actuators, which create a high-quality 3D audio experience by vibrating certain surfaces inside the vehicle.
- › **Wireless Key PASE system**, which allows drivers to open the doors without the need for keys. All they need to do is to approach the vehicle with a smartphone or a wearable device, such as a smart watch or ring, and the car will be opened by a virtual key.
- › **Artificial intelligence** used by Continental turns the entire vehicle into a digital companion that remembers and interprets the user's behavior, adapts navigation or infotainment offers and even anticipates the wishes of the driver. To enable a natural conversation between the driver and the vehicle, Amazon's cloud-based voice service, Alexa, has been linked to several vehicles.



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INDUSTRY



ELECTRO OPTIC COMPONENTS is specialized in the development and manufacture of optoelectronic systems for various applications. Some of the company achievements are:

- laser and radar warning systems for military vehicles;
- thermal cameras, optoelectronic sensors and interfaces for their integration into complex systems;
- mobile and fixed border surveillance systems;
- laser rangefinders for integration in other optical systems (binoculars, optical aiming devices);
- high power generators for emergency situations;
- ruggedized PC computers with framegrabbers for image processing of different video sources such as day and night vision cameras, which can be integrated in complex surveillance systems;
- DC/DC and AC/DC converters;
- various types of microcontroller boards for automation;
- PC and microcontroller software development.

ELECTRO OPTIC COMPONENTS is ISO 9001:2008 certified and has the technical ability to develop complex electronic and optoelectronic systems for different applications.



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INDUSTRY



Founded 1991 with origins in the aviation industry, INAS maintains its position of major provider for best-in-class CAD/CAM/CAE/PLM/IoT software solutions, training, technical support and consulting services. With a team of over 50 people, the company is being recognized on the Romanian and international market as a leading technical consulting center for a wide spectrum of industrial applications from automotive, aerospace and heavy equipment to nuclear and defense.

WHY US?

If you need to design and test your products faster and better with lower costs. If you need the best-in-class CAD/CAM/CAE/PLM software or technical expertise. If you need better support and training.

We are a dynamic and flexible company able to respond promptly to customer requirements with modern and efficient solutions for computer aided design and simulation. Implementing our solutions and know-how in your product development process leads to shorter design, optimization, testing and manufacturing cycles, with important implications in time and cost reduction.

PRODUCTS / CAD/CAM/CAE/PLM/IoT software:

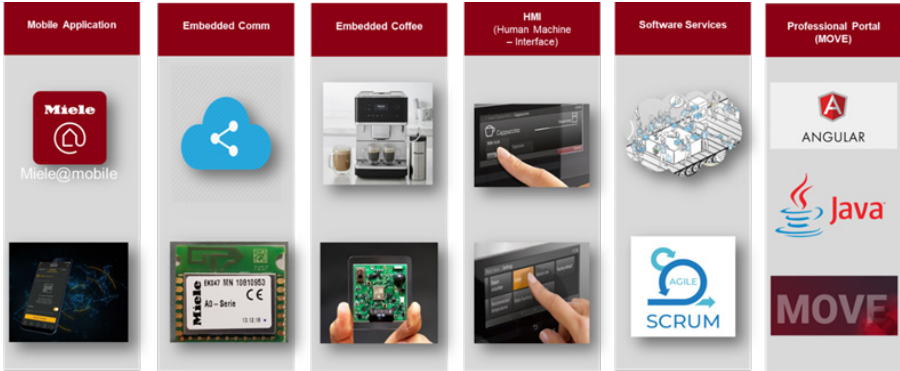
- **ANSYS** (since 1991): Structural Mechanics (implicit and explicit), CFD, Electromagnetics (LF and HF), Electronics Thermal, Multiphysics, System Simulation, Digital Twin, Functional Safety, Embedded Software
- **PTC** (since 1992): Creo (CAD/CAM software), Mathcad, Windchill (PLM), Arbortext (technical illustrator), ThingWorks (IoT)
- **Moldex3D** (since 2009): plastic injection simulation
- **Vericut** (since 2007): CNC simulation
- **NCGCAM** (since 2009): CAM for HSM
- **MAGMASoft** (since 1994): casting simulation
- **Bentley** (since 2008): software solutions for infrastructure

SERVICES

- Consulting (FEA/CFD, CAD/CAM, Injection Molding Simulation, Casting Simulation)
- Research, Technical Support, Training

INDUSTRY

Miele



Premium brand for more than 120 years

Miele is present in Brasov since 2009 with a production plant that provides the group with the necessary electronic components and subassemblies for the control units of the smart home appliances. Since 2015 in the Software & Hardware Development department innovative projects and programs are developed for a variety of Miele home appliances and professional products.

Applying Agile methodology in SWD we transform the product vision into real products, creating top-of-the-range next generation products with flexible designs. The facility in Braşov is equipped with state-of-the-art technology and all quality requirements are respected according to the Miele Group's standards.

The Miele products set the standards for durability, performance, ease of use, energy efficiency, design and service products.

Our philosophy "Immer besser - Always better", determines us to continue to develop and make high quality products. "We at Miele develop ourselves to have a premium experience" - this is our vision in Brasov, a vision that guides us in our daily activity.

Miele premium brand has been built on trust and respect, values that recommend us as a desired employer in Romania.



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INDUSTRY

SYSWIN SOLUTIONS delivers high-performance IoT & M2M solutions integrating different technologies, communication protocols and sensors to respond to the connectivity requirements that companies and the public sector need to meet in areas like Environment, Smart City, Smart Building, Metering, Industrial Control, Logistics, Security, Media, and Casino Management. These are outcomes of the successful deployment of a 1 mil € European Union funded project through Priority Axis 1 – Research, Technological Development, and Innovation - The Innovative Platform for Versatile M2M Applications, PRIAMM.

4 NEW IoT SOLUTIONS LAUNCHED IN LESS THAN 3 YEARS



SysAgria system monitors and records vital parameters of soil, air, precipitation and light through the software application and a wide range of sensors for multiple crops



Smart Air City is a compact, integrated sensor-based solution, energetically independent, which provides real-time critical parameter levels, , and alerts about urban pollution levels.



SmartAiar Cube monitors the most critical indoor air quality parameters by following WELL recommendations and sends real-time alerts in the event of non-optimal values detection.



SysParking is an innovative solution designed for non-residential and residential areas that monitors an unlimited number of parking spaces and generates alerts in the event of unauthorized occupation

SYSWIN SOLUTIONS offers research and development services for third parties, like design of electronic circuits using passive, active components (analog and digital), microcontrollers, RF communication modules, sensors, design of simple, double plated or multilayered printed wiring boards using CAD programs; assembly assembly of electronic modules in SMT technology in small series and prototypes; RoHS compliance; acceptability of electronic assemblies according to IPC-A-610 Standard.



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ROMANIA

Vitesco Technologies is a leading international developer and manufacturer of state-of-the-art powertrain technologies for sustainable mobility. With smart system solutions and components for electric, hybrid and internal combustion. In Romania, with 3000 employees, you can meet us in one of the three R&D locations - Timisoara, Sibiu and Iasi – or in the production unit from Brasov.

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INDUSTRY



Würth Elektronik eiSos GmbH & Co.

KG is a manufacturer of electronic and electromechanical components for the electronics industry. Würth Elektronik is part of the Würth Group, the global market leader for fastener technology.

The company employs currently 7,300 people and generated sales of 822 million Euro in 2019. Together with Würth Electronics Midcom, Würth Elektronik iBE, Erwin Büchele and Würth Elektronik Stelvio Kontek Würth Elektronik eiSos ensures a high availability on all markets.

The product range includes EMC components, inductors, transformers, RF components, varistors, capacitors, resistors, quartz crystals, oscillators, power modules, Wireless Power Transfer, LEDs, sensors, connectors, REDCUBE Terminals, switches, push-buttons, connection technology, fuse holders and solutions for wireless data transmission.

As one of Europe's largest manufacturer of passive components, Würth Elektronik eiSos sets itself apart from other component manufacturers in the following ways:

- All catalogue products are available from stock
- Free sample service
- Delivery of samples within 24-48 hrs
- No MOQ
- Design support from technical sales force and Field Application Engineers
- Reference designs with all leading IC manufacturers
- Design kits with free refills
- Free EMC and Power seminars
- Software tools for selection of components

In addition to components, Würth Elektronik eiSos also supplies engineers with expertise. The "Trilogy of Magnetics", "Abc of Capacitors", "Trilogy of Connectors" and "Simulation in LTspice IV" application manuals provide professionals and other interested parties with a compendium of practice-oriented expertise, which is unique of its kind.

Würth Elektronik eiSos is active with direct sales in 43 countries worldwide. 16 manufacturing facilities located in all important markets worldwide guarantee the rapid delivery of components.

RESEARCH



Digitalization and Industry 4.0 are enablers of fundamental business innovation and disruption.

By closely interlinking development processes, logistics and production with Industry 4.0 technologies, iDev40 achieves a disruptive step towards speedup in time to market. By developing and implementing a digitalization strategy for the European electronic components

and systems industry a “breakthrough change” is initialized.

Integrated Development 4.0 leads the digital transformation of singular processes towards an integrated digital value chain based on the “digital twin” concept. Development, planning and manufacturing will benefit from the “digital twin” concept in terms of highly digitized virtual processes along the whole product lifecycle.

Addressing European Policies for 2020 and beyond iDev40 aims to offer solutions to some

difficult societal and organizational challenges, like innovate technologies to master the increasing complexity of development and manufacturing of ECS

“made in Europe” regarding digitalization approaches and high quality knowledge. Strengthen European competitiveness through interdigitated development and production. Due to the creation of skilled jobs specific areas of logistics, products and processes are virtualized. The collaboration of key European ECS actors in terms of digitalization is strengthened. “Knowledge workers” in manufacturing as well as development and assessment of global value chains are supported by smarter machines (AI).

iDev40 covers the whole value chain to provide sustainable, digital and industrial solutions for integrated development and production.

PROJECT FACTS

Name: Integrated Development 4.0

Duration: May 2018 – April 2021

Total Costs: ~ € 47 Mio.

Consortium: 40 partners from 6 nations

Coordinator: Infineon Technologies Austria AG

RESEARCH

APTE



ELINCLUS Electronic INnovation CLUster

EMC: Association for Promoting Electronics Technology – APTE

(www.apte.org.ro)

Founded 2011; 89 registered members

President: Prof.DHC. mult. Paul SVASTA, Ph.D.

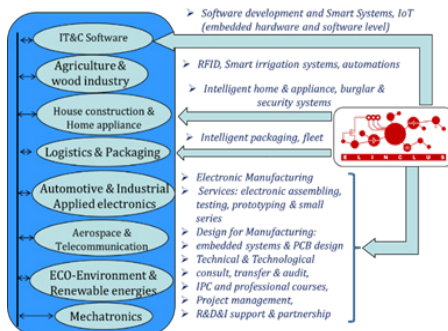
Executive Manager: Lect. Eng. Bogdan Mihăilescu, Ph.D.

Founding member of the Clusters Association from Romania,

CLUSTERO - www.clustero.eu



- European Cluster Excellence Initiative Silver Label Certificate from ESCA since 2016
- Member of Adriatic Danube Mechatronics Cluster Network
- International collaboration with Mecatech Cluster Wallonie and Wallonie Export Agency
- International collaboration with Omnipack Cluster Hungary (<http://omnipack.hu/>)



BRIDGE project:

Building Relations to go International for Data-Driven Growing Enterprises(start-ups and SMEs)

This project is driven by four European clusters (Fondazione Torino Wireless – Italy, Baden-Württemberg: Connected – Germany, ELINCLUS – Romania, Foundation “Cluster Information and Communication Technologies” ICT Cluster - Bulgaria), in the period 2020 – 2022, that have decided to join their forces for strengthening their internationalization approach and provide more professional services to their start-ups and SMEs. The general purpose of BRIDGE Project is to define a joint internationalisation strategy based on a shared European vision integrated with a global perspective and common goals.

RESEARCH

ASSOCIATION FOR PROMOTING ELECTRONICS TECHNOLOGY (ASOCIAȚIA PENTRU PROMOVAREA TEHNOLOGIEI ELECTRONICE) IMAPS ROMANIA

APTE



A globally-competitive workforce with theoretical, as well as applied engineering/hands-on, education must be trained. In addition to the areas of science, engineering, microelectronics, and packaging, this training must encompass the broader areas of business, economics, ethics, foreign culture, and languages.

The Association for Promoting Electronics Technology (APTE, see <https://apte.org.ro/>) is IMAPS Romania. APTE was founded in 2002, by the Center for Technological Electronics and Interconnection Techniques (UPB-CETTI) together with highly respected members of the electronics industry, in order to support the electronics packaging education and engineering, in a climate of trust, ethics, and social responsibility.

APTE/IMAPS Romania is the management entity of the ELINCLUS Cluster (see <http://elinclus.ro/>), which has currently 89 members. ELINCLUS was established starting from the economic relationship existing between UPB-CETTI (which developed a Technological and Business Incubator, entity accredited by the National Innovation and Technology Transfer Network – ReNITT) and companies from Bucharest and Ilfov county. This structure has offered to ELINCLUS the status of a regional cluster in the field of electronics.

APTE offers annually a comprehensive set of short courses and training classes in the area of electronics packaging, IPC standards certification, management, and industrial development, in order to serve the needs of the electronics industry. APTE organises annually The International Symposium for Design and Technology in Electronics Packaging (SIITME, see <http://siitme.ro/>) and the Interconnection Techniques in Electronics (TIE, see www.tie.ro/) Professional Student Design Contest.



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RESEARCH

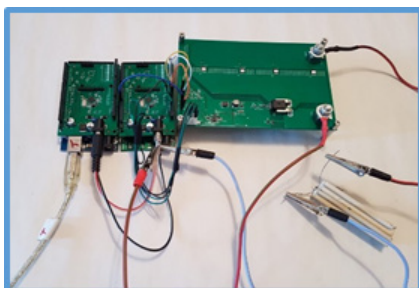
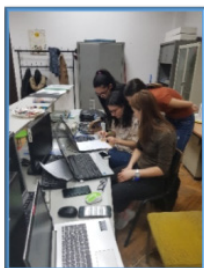


IEEE-UPS Student Branch Chapter University Politehnica of Bucharest

“We have decided to be the change that we want to see in the world.

Our vision encompasses the collaboration between professors, professionals and students alike and we aim to drive the future of technology by improving the quality of education.”

edu.ieee.org/ro-upb



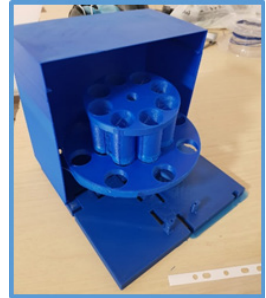
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RESEARCH

IEEE EPS SBC of Univ. Politehnica of Bucharest provides IEEE Student members a networking opportunity to meet and learn from fellow students, as well as faculty members and professionals in the field to share their interests, future professions and ideas. In addition, students can improve their soft and hard skills.

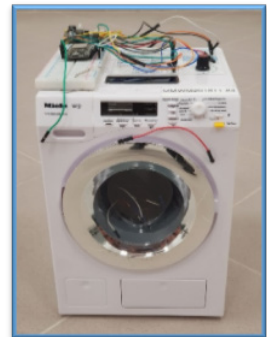
Seminars with guest speakers are taking place where professionals working in the field, enable students to enhance their knowledge outside the classroom. Joint seminars let students meet and talk with other interested students. Program gives teams of the Student Branch Chapter members the opportunity to develop project proposals to increase professional awareness and receive funding to implement the project.

Establishing industrial contacts for the SBC programs and activities including speakers and tutors (i.e project in collaboration with Miele to create an online workshop).



Student Branch Chapter activities offer numerous educational, technical, and professional advantages of IEEE membership through special projects, activities, meetings, tours and field trips. Listed below are some programs and projects that keep students interested in the Branch and its activities and their chosen profession:

- Participation in regional conferences, workshops and competitions.
- Development of leadership, interpersonal and team building skills.
- Participation in awards, scholarships and project/design programs and student paper contests.
- Access IEEE online services and resources.
- Establish web sites.



In the last year, students from SBC developed projects with which they were able to participate in the Student Scientific Communications Session and Conferences.

WELCOME TO SIITME 2021

Welcome to SIITME 2021 – Timisoara!

On behalf of the local organizing committee, I am pleased and honored to welcome you all to the well-established 2021 IEEE 27th International Symposium for Design and Technology in Electronic Packaging (SIITME), to be held in Timisoara, 25 – 30 October. The unforgettable charm of Timisoara, settled on the northern bank of the Bega River, lies in its distinct architectural character, multiethnic diversity and vibrant cultural life. Frequently referred to as “Little Vienna,” Timisoara is the home of year-round musical and theatrical performances, art galleries, museums and a buzzing nightlife. A progressive, cosmopolitan place, Timisoara was the first city in Europe and the second in the world after New York, that used electricity for public illumination. Timisoara was elected as the European Capital of Culture 2021 in Romania (to be postponed in 2023).



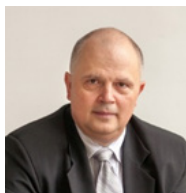
The presented papers published in the Conference proceedings are indexed in the major international data bases (IEEE Xplore and Thomson Reuters Web of Knowledge – former ISI).

WELCOME TO SIITME 2021

Our university has developed a network with all the neighboring companies promoting the innovation and successful cooperation. Our local organizing committee is confident that SIITME 2021, to be held at Timisoara Hotel and in the cyberspace environment, will be a major chance for IT&C companies and Romanian technical academic schools to unite their interests and activities. We wish all SIITME 2021 participants a pleasant stay, a fruitful future collaboration and a successful attendance!

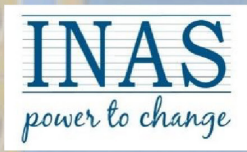


Aurel GONTEAN,
Conference Chair



Cosmin MOISA,
Conference Co-Chair







ELECTRONIC INDUSTRY WEEK

CENTRAL AND SOUTH EASTERN EUROPE

INTERNATIONAL SYMPOSIUM FOR DESIGN AND TECHNOLOGY IN ELECTRONICS PACKAGING

CONFERENCE & EXHIBITION

26th Edition, October, 21-23, 2020