

**2014 IEEE 20th International Symposium for
Design and Technology in Electronic Packaging**

23rd – 26th October 2014, Bucharest, Romania

Advanced Programme

SIITME2014

SIITME 2014 - Conference program

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Welcome to the 20th edition of the International Symposium for Design and Technology in Electronic Packaging

This edition of SIITME marks two decades since the issue of electronic packaging started being promoted in this part of the European continent. At the time the first edition was held the organizers and/or participants were not familiarized with the expression (electronic packaging), although their activities were closely related to it. I have discovered the definition of this term a little bit later, just after I got in touch with the members of the academia during ISSE, The International Spring Seminar on Electronics Technology. Thanks to ISSE, which for us was a real school, I came in contact with the CPMT Society, I got to know some of the people who have started and built the field of electronic packaging in the universities (Prof. Herbert Reichel, Prof. Wilfred Sauer, Prof. Nihal Sinnaduray, Prof. Rao Tummala, and many others whom we would like to thank for their support), I worked with people who have developed ISSE (Prof. Zsolt Illyefalvi- Vitéz, Prof. Paul Mach, Prof. Johann Nicolics, Prof. Klaus Wolter, Dr. Heinz Wohlrabe) and have received the support that we, as beginners, needed from Prof. Jim Morris and, hopefully, we managed, as the years passed by, and as 20 editions of SIITME took place, to get closer to reaching the goal we set when our manifestation was initiated.

Similar to other, extremely prestigious international events in the field of packaging that are taking place on both sides of the Atlantic Ocean, such as ECTC, ESTC, EMPC our conference has set the goal (and in some measure managed to achieve it) to be a platform to debate the many aspects concerning electronic products (from conception to production), and to ensure the bridge that is absolutely necessary between the industry and academia. In order to underline this, SIITME 2014 also includes booths of companies that promote electronic packaging and are fully interested in product innovation.

An important step in the evolution of SIITME was the creation, 15 years ago, in the frame of the CPMT Society, of the IEEE CPMT Hu&Ro Joint Chapter. The close collaboration between the members of the new chapter ensured the synergy required for a positive evolution of our conference; in the last six years the event

was held under the banner of IEEE and the papers were indexed in the IEEE Xplore database.

All these achievements would not have been possible without the major commitment, over time, of the many volunteers who have made considerable efforts for the smooth running of our conference. The locations that hosted SIITME in these two decades were numerous; they are practically scattered all over Romania: Alba Iulia, Baia Mare, Braşov, Cluj-Napoca, Iaşi, Timişoara, Bucharest and Gyula in Hungary. The number of those who were involved in ensuring the smooth running of SIITME was huge. To all, as the initiator of SIITME, thank you!

Finally, to all those present at the 20th edition of SIITME, I wish a pleasant participation, fruitful discussions and professional satisfaction.



Prof. Dr.h.c.mult. Paul SVASTA, Ph.D.
SIITME General Chair

Dear participants to SIITME 2014 Conference, Dear friends,

It is our great pleasure and honour to welcome you to **2014 IEEE 20th International Symposium for Design and Technology in Electronic Packaging (SIITME)**, a solid scientific event in Central and Eastern Europe and we would like to cite a saying from the famous Chinese Philosopher Confucius: “It is always a pleasure to greet a friend coming from a far”. So, greetings to all of you coming to this “round” edition from near, far or very far.

To celebrate the 20th edition, great ideas, innovations and contributions of electronic packaging scientists, we are privileged to hold **SIITME 2014** in Bucharest, the same location where the first **SIITME** took place. It is not only our honour, but also our happiness to welcome many leading experts from Romania, Europe and United States, and to see them together in Bucharest. We have, as participants, prestigious professors coming from universities, their Ph. D. students, researchers and specialists from important companies, including IEEE members and distinguished lecturers, as keynote speakers. In the frame of **SIITME 2014**, we also organize an industrial exhibition, with companies involved in electronic packaging and electronics industry, to show their recent progress.

In 1995, **SIITME** had only a few topics, being focused mainly to Electronic Design Automation (EDA). Now, at the 20th edition, **SIITME 2014** has sparkling topics, matching the trends of the electronics industry: Emerging Technologies & Trends in Advanced Packaging, Power Electronics and Microsystems Packaging, Assembly and Manufacturing Technology, Design of Electronic Circuits and Systems, Electronics Simulation & Modelling, Electronics Applications, Optoelectronics & Communication Packaging, Applied Reliability and Challenge in Global Education.

SIITME 2014, as a premier conference on almost all aspects of electronic packaging in our region, provides a range of oral and poster presentations, keynote speeches, an AFCEA session, industrial session & exhibition, and lets the

attendees exchange ideas of the latest developments in electronic packaging and emerging applications of them.

On behalf of the Organising Committee of **SIITME 2014**, as chairmen of this event, we look forward to seeing you in Bucharest for an exciting and enjoyable conference.

Welcome to SIITME 2014!



Prof. Norocel CODREANU, Ph. D.
Conference Chair



Assoc. Prof. Ciprian IONESCU, Ph. D.
Conference Co-Chair

SIITME after 20 Years – The beginnings...



Happy birthday SIITME

I'm trying to imagine SIITME2034 conference program.

I hope that I will be invited to this future jubilee edition and that I can follow through with this invitation. I will be able to talk to those who just today are beginning to discover their passion for electronic packaging. Sure, my presentation will not be a technical one, but I will try to convey something of the spirit and effervescence of the first editions of the conference. It will be an honor for me to talk about the personality of professor Svasta, about the persuasion with what he managed to promote this event from local to international recognition. I will then try to convey something of the charisma of professor Illyelfalvi and the professional sobriety of professor Wolter. I will remind those present that the poster evaluation system is the same as that proposed 20 years ago by Dr. Wolhrabe, even if meanwhile the technology for poster presentations will probably use holograms. I will try afterwards to memorize some of endeavors of all my colleagues from universities in Romania made so that each new edition was a step towards enshrining an international conference.

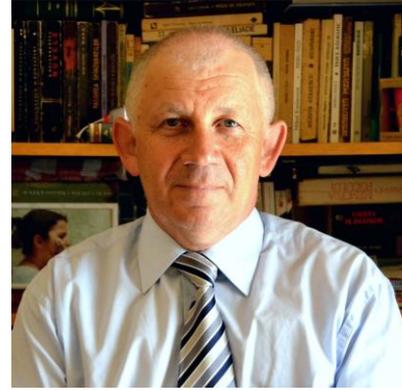
I live with the certainty that these dreams can become a reality by looking at this jubilee edition, at which the SIITME conference, in its 20th year, represents a manifestation at which the maturity is expressed by the elegance with which knowledge is taught from one generation to another.

Prof. Dan PITICĂ, Ph.D.
SIITME General Co-Chair
and
SIITME 2002 & SIITME 2005 Chair



SIITME 2008 – Predeal, Romania

My first experience as a local conference chair was within the 2008 SIITME conference. I was lucky to participate in a highly professional level conference along with exceptional people and colleagues. Thus organizing and conducting the conference were a pleasure. The conference took place in a hotel- cottage in Predeal, in a stunning natural setting. It attracted the interest of specialists in the area, and many students attended and even presented papers in special sections. As in every edition of the conference, specialized companies participated and presented their work.



Prof. Petre Ogrușan, Ph. D. – SIITME 2008 Conference Chair
 Electrical Engineering and Computer Science Faculty
 Transilvania University of Brașov



SIITME 2011 – Timisoara, Romania

SIITME is far more than a scientific conference: it is a bridge between Academia and Industry, a bridge between students, teachers and researchers, a bridge between universities and cities.

Prof. Aurel Gontean, Ph. D. – SIITME 2011 Conference Chair



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Thursday, October 23

- 14:00 – 19:00** **Registration** (Registration desk, Hotel Lobby)
18:00 – 19:00 **AFCEA Romanian Student Club Meeting** (Steering Committee Room)
19:00 – 21:00 **Welcome reception** (Hotel Yesterday restaurant)
21:00 – 22:00 **Steering Committee Meeting** (Steering Committee Room)
22:00 – 23:00 **IEEE – CPMT Hu & Ro Joint Chapter Meeting** (Steering Committee Room)

Friday, October 24

- 07:00 – 08:00** **Breakfast** (Hotel Yesterday restaurant)
08:00 – 12:00 **Registration** (Registration desk, UPB Central Library, 3rd floor)
08:15 – 08:30 **Opening ceremony, Welcome words** (Conference Room, UPB Central Library, 3rd floor)
 Paul SVASTA, SIITME General Chair, “Politehnica” University of Bucharest
 Norocel CODREANU, SIITME Conference Chair, “Politehnica” of University Bucharest
08:30 – 09:45 **Plenary Session - Keynote Speakers** (Conference Room)
09:45 – 11:30 **Oral Session I – Applied Electronics** (Conference Room)
11:30 – 12:30 **AFCEA Romania students poster session** (Conference and Poster Room)
12:45 – 14:00 **Lunch** (UPB Central Library, 3rd floor)
14:00 – 15:30 **Oral session II – Education** (Conference Room)
15:30 – 17:00 **Poster Session I**
17:00 – 17:30 **Coffee Break**
17:30 – 19:00 **Poster Session II**
19:30 – 22:30 **Dinner & wine tasting joint session** (Hotel Yesterday restaurant)

Saturday: October 25

- 07:00 – 08:15** **Breakfast** (Hotel Yesterday restaurant)
- 08:00 – 10:00** **Registration** (Registration desk, UPB Central Library Lobby, 3rd floor)
- 08:30 – 09:45** **Plenary Session - Keynote Speakers**
- 09:45 – 10:15** **Coffee Break**
- 10:15 – 11:15** **Industrial Session** (plenary discussion, Conference Room)
 Moderators:
 Alexandru BORCEA, ARIES
 Ciprian IONESCU, “Politehnica” University of Bucharest
- 11:15 - 13:00** **Poster session III**
- 13:00 – 14:00** **Lunch**
- 14:00 – 15:15** **Oral Session III – Technology** (Conference Room)
- 15:15 – 19:30** **Cultural Program**
- 19:00 – 19:30** **Steering Committee Meeting** (Voievodal restaurant)
- 19:30 – 23:00** **Conference Dinner and Awarding session** (Voievodal restaurant)

Sunday: October 26

- 07:30 – 09:00** **Breakfast** (Hotel Yesterday restaurant)
- 09:00 – 10:00** **Closing ceremony, looking forward to SIITME 2015** (Conference Room)
- 10:00 – 11:00** **Farewell coffee, End of Symposium**

Keynote speaker:**James E. Morris**

Department of Electrical & Computer Engineering,
Portland State University, USA

jmorris@pdx.edu | j.e.morris@ieee.org

Presentation:

"Polymer composites for electronics packaging applications"

Jim is a Professor of Electrical & Computer Engineering at Portland State University, Oregon, and Professor Emeritus at the State University of New York at Binghamton. His B.Sc. and 1st Class Honors M.Sc. degrees in Physics are from the University of Auckland, New Zealand, and his Ph.D. in Electrical Engineering is from the University of Saskatchewan, Canada. He has served as Department Chair at both Binghamton and Portland, and was the founding Director of Binghamton's Institute for Research in Electronics Packaging. Other positions have included Senior Technician and Post-Doctoral Fellow at the U of S, brief periods with Delphi Engineering (NZ) and IBM-Endicott (New York), and industrial consulting. Jim is an IEEE Fellow and an IEEE Components, Packaging, & Manufacturing (CPMT) Society Distinguished Lecturer. He has served as CPMT Treasurer (1991-1997) and Vice-President for Conferences (1998-2003), and currently sits on the CPMT Board of Governors (1996-1998, 2011-2016) and on the joint Oregon CAS/CPMT Chapter executive committee, and co-chairs the CPMT Nanotechnology technical committee. He was awarded the IEEE Millennium Medal and won the CPMT David Feldman Outstanding Contribution Award in 2005. He is an Associate-Editor of the IEEE CPMT Transactions and has been General Chair of three CPMT-sponsored conferences, Treasurer or Technical Chair of others, and serves on several CPMT conference committees. As the CPMT Society representative on the IEEE Nanotechnology Council (NTC), he instituted a regular Nanopackaging series of articles in the IEEE Nanotechnology Magazine, established the NTC Nanopackaging technical committee, (which also acts as a program committee for annual IEEE NANO conferences,) served as the 2010-2012 NTC Awards Chair, chaired the IEEE NANO 2011 conference in Portland, serves as NTC Vice-President for Conferences (2013-2014,) and is VP-elect for Finances (2015-2016.) He also co-founded the Oregon Chapter of the IEEE Education Society in 2005 and sits on its executive committee, and was Program Chair for the 1st and 2nd IEEE Conferences on Technology for Sustainability (2013/14). His research activities are focused on electrically conductive adhesives, the electrical conduction mechanisms in discontinuous nanoparticle thin metal films, with applications to nanopackaging and single-electron transistor nanoelectronics, and on an NSF-funded project in undergraduate nanotechnology education. He has edited or co-authored five books on electronics packaging and two on nanodevices, and lectures internationally on nanopackaging and electrically conductive adhesives.



Keynote speaker:

Prof. Dr.-Ing. habil. Dr. H. C. Mult.

Klaus-Jürgen Wolter

Technische Universität Dresden, Germany

Presentation:

”Through Silicon Vias Annealing: A thermo-mechanical assessment”

Professional Experience:

- Between 2006-2014 - Deputy Head of Fraunhofer IZFP Dresden
- Between 2003-2014 - Director of the Electronic Packaging Lab at Dresden University of Technology
- Between 2002-2012 - Director of the Centre of Microtechnical Manufacturing
- 1992 Appointment to the chair of Procedure Technology of Electronics

Fields of research:

- Substrate technologies
- Assembly technologies of devices, components, MEMS
- Joining technologies
- Reliability of electronic packages
- Non-destructive test methods

Publications:

- Co-author of four books in Electronics Packaging
- Editor of book series: „Elektronik-Technologie in Forschung und Praxis“
- Verlag Dr. Markus Detert, Templin, Band 1 - 16
- Editor of book series: „System Integration in Electronic Packaging“
- Verlag Dr. Markus Detert, Templin, Band 1 - 5
- The research activities result in more than 80 conference presentations/proceedings and in 3 patents.

Fellowships and Honours

- Member of: IEEE-CPMT (since 2005), IMAPS, VDE
- General Chair of “International Spring Seminar on Electronic Technology” since 2003
- Chair of the 5th and 8th International Academic Conference on Electronic Packaging Education and Training
- General Chair of 1st Electronics System- Integration Technology Conference 2006
- Governor of IEEE-CPMT board since 2006



Keynote speaker:

Hervé FANET

Director CEA LETI
Minatec Campus
Grenoble/France

Presentation:

"Energy efficient nanoelectronics"

Hervé Fanet was born in 1949. He received the engineer's diploma from the "Ecole Supérieure d'Electricité".

He was involved in detectors and electronic developments for High Energy Particle Physics. After that he was in charge of medical imaging research in LETI and has been the manager of integrated circuits design department.

Hervé Fanet is research engineer at CEA LETI. He is in charge of scientific cooperation and training activities within the MINATEC pole (micro and nanotechnologies) in Grenoble.

He has published 40 papers in journals and is author or co-author of five books.

**Keynote speaker:****Traian Cornel Cucu**

Global Product Manager Solder Paste, Alpha, USA
tcucu@alent.com

Presentation:

"Advances in Automotive Electronics Soldering Technology -Low Temperature Solder Paste, the why's and the how's-"

Traian Cucu is presently working as Global Product Manager Solder Paste at Alpha (former Cookson Electronics Assembly Materials) and is responsible for Planning, organizing and controlling all aspects of the solder paste product line from conceptual stage through product life cycles. He received his B.Sc degree from "Politehnica" University of Timisoara, Faculty of Electrical and Power Engineering, Specialization: Industrial Power Systems and his PhD. from Politehnica University of Bucharest, Faculty of Electronics, Telecommunications and Information Technologies, Specialization: Electronic Technology. He was part of the technical team from Cookson Electronics that was implementing tin-lead SMT process in late 1990s during the transition from THT to SMT. Early 2000s he was involved in the development and implementation of the lead free technology for both wave and SMT processes, working for Cookson Electronics and Brady. He was working with major mobile phone OEMs in order to implement new processes that will enable a quicker transition to finer pitch designs and 3D assembly systems for the next generation devices. He was also actively involved, while working with Brady, in the process traceability in electronics with a big accent on the automotive industry. As part of the Alpha technical team he was continuing his work in the assembly process focusing on tin-lead and lead free processes for automotive, during a 3 year period starting 2007.

Friday, October 24

08:30 – 9:45 Plenary session **Keynote speakers**

Session Chairs:

Zsolt ILLYEFALVI-VITÉZ, Budapest University of Technology and Economics, Hungary

Dan PITICA, Technical University of Cluj-Napoca, Cluj-Napoca, Romania

K1 Polymer composites for electronics packaging applications

James E. MORRIS

K2 Energy efficient nanoelectronics

Hervé FANET

Friday, October 24

09:45 – 11:30 **Oral Session I – Applied Electronics**

NOTE: Each author must deliver a 20 minutes slide show presentation of his/her work.

Session Chairs:

Heinz WOHLRABE, Dresden University of Technology, Dresden, Germany

Eugen COCA, "Ștefan cel Mare" University of Suceava, Romania

Test and Measurement Procedures for RFID Systems

D. T. VUZA, R. FROSCHE, M. GUGGANIG, and M. VLADESCU

Network Management and Monitoring using M2M Sensor Systems

G. SUCIU, V. SUCIU and C. G. BUTCA

FPGA-Based System for Data Acquisition and Remote Communication

A. MAZARE, L. IONESCU, G. SERBAN, I. LITA

An Experimental Monitoring System for Thermoelectric Modules

A. SFIRAT, A. GONTEAN

Friday, October 24

14:00 – 15:20 **Oral Session II** - Education

NOTE: Each author must deliver a 20 minutes slide show presentation of his/her work.

Session Chairs:

Alena PIETRIKOVA, Technical University of Kosice, Slovakia

Jim MORRIS, Portland State University, USA

Virtual and Practical Applications to Electronic Assembling Technology

E. SENYUREK, Zs. ILLYEFALVI-VITÉZ, P. SVASTA, and A. PIETRIKOVA, E. ORUN

Global Networks on Nanotechnology Education

Zs. ILLYEFALVI- VITÉZ

FPGA-Based Single Precision Iterative Floating Point Multiplier for Educational Use

F. OPRITOIU, S. CARAPENEA, M. VLADUTIU

Saturday, October 25

08:30 – 09:45 Plenary session **Keynote speakers**

NOTE: Each author must deliver a 20 minutes slide show presentation of his/her work.

Session Chairs:

Pavel MACH, Technical University of Prague, Czech Republic

Hervé FANET, CEA LETI, Minatec Campus, France

K3 Through Silicon Vias Annealing: A thermo-mechanical assessment

K.-J. WOLTER

K4 Advances in Automotive Electronics Soldering Technology -Low Temperature Solder Paste, the why's and the how's-"

T. C. CUCU

Saturday, October 25

14:00 – 15:15 **Oral Session III** - Technology

NOTE: Each author must deliver a 20 minutes slide show presentation of his/her work.

Session Chairs:

Klaus WOLTER, Dresden University of Technology, Germany

Vlad CEHAN, Technical University “Gheorghe Asachi” Iași, Romania

Examination of Voiding at the Drain Pad of High-power FETs

R. BATORFI, M. RUSZINKO

Low Cost, Rigid-to-Flex Interposer using a Spray Coated Intrinsically Conductive Polymer in a Roll-to-Roll Process

I. BOSE, D. BONFERT, S. HEIM and K. BOCK

A Numerical Analysis of Thermal Management Schemes of a LED Array in TFT TV

O. MERMER, M.NIL, and B. AKGUL

Friday, October 24 Presenter: Stick- up poster before session !

11:30– 12:30 AFCEA Romania **Poster Session I** (Conference and Poster Room)

Session Chair: Liviu COȘEREANU, AFCEA Romania

Session Co-Chair: Aurel-Ștefan GONTEAN, “Politehnica” University of Timișoara, Romania

Evaluators:

Detlef BONFERT, Fraunhofer EMFT, Munich, Germany

Mihaela HNATIUC, Maritime University of Constanța, Romania

Zsolt ILLYEFALVI-VITÉZ, Budapest University of Technology and Economics, Hungary

Mihai JURBĂ, Electro Optic Components S.R.L.

Norocel CODREANU, “Politehnica” University of Bucharest, Romania

Oliver KRAMMER, Budapest University of Technology and Economics, Hungary

Dan PITICĂ, Technical University of Cluj-Napoca, Cluj-Napoca, Romania

Paul SVASTA, “Politehnica” University of Bucharest, CETTI, Bucharest, Romania

PA.1 Thermo-Electric Cooler for Power LEDs

N. Bădălan, P. Svasta

PA.2 Adapting a Ring Oscillator-based True Random Number Generator for Zynq System on Chip Embedded Platform

A. Marghescu, G. Teseleanu, D.-S. Maimut, T. Neacsu and P. Svasta

PA.3 Cryptographic Key Generator Candidates based on Smartphone built-in Sensors

A. Marghescu, G. Teseleanu, and P. Svasta

PA.4 Robotic Arm Detection in the 2D Space

R. Szabó, A. Gontean

PA.5 Robotic Arm Movement Using Color Detection with FPGA Vision

R. Szabó, A. Gontean

PA.6 Cooling with Mentor Graphics HyperLynx Thermal

M. Hnatiuc, C. J. Iov

PA.7 Programmable Pulsed Current Driver for High Power LEDs Applications

M. Vidraşcu, M. Vlădescu

PA.8 Flow Simulations for Component Spacing Optimization on PCB Boards

Al. Fodor, R. János, D. Pitică

PA.9 Planar Windings Design Analysis regarding Power Transfer Aspects of a Ferrite Core Planar Transformer in the MHz Region

C. Ropoteanu, P. Svasta, C. Ionescu

PA.10 Offline Self-Test Architecture for the Inversion Operation of Advanced Encryption Standard

F. Opritoiu, M. Vladutiu

PA.11 A Theoretical and Comparative Study of the Thermoelectric Modules

A. Sfirat, A. Gontean

Friday, October 24 Presenter: Stick- up poster before session !

15:30– 17:00 Poster Session I (Conference and Poster Room)

NOTE: Each author must deliver a 3 minutes slide show presentation of his/her work.

Session Chair: Detlef BONFERT, Fraunhofer EMFT, Munich, Germany

Session Co-Chair: Alin MAZĂRE, University of Pitesti, Romania

Evaluators:

Alexandru BORCEA, ARIES, Romania

Eugen COCA, „Ştefan cel Mare” University of Suceava, Romania

Ioan LIȚĂ, University of Pitesti, Pitesti, Romania

Pavel MACH, Technical University of Prague, Czech Republic

Alena PIETRIKOVA, Technical University of Kosice, Slovakia

Nistor Daniel TRIP, University of Oradea

Adrian TULBURE, „1 Decembrie 1918” University of Alba Iulia, Romania

Dan VUZA, Institute of Mathematics of the Romanian Academy, Romania

P1.1 Elastic Modulus and Energy Dissipation Measurements with AFM on Chalcogenide Thin Films

A. Bonyár, I. Csarnovics, and J. Kámán

P1.2 Nanofluids for Electronics Cooling

A. Turgut and E. Elbasan

P1.3 Transducer Platform for Chemical Sensor Array

M. Varga, E. Suthau and K.-J. Wolter

P1.4 Aperiodic Control Method on the Reflow Soldering Machine for Electronic Board Production

A. Tulbure, C. Huțanu and F. Borsan

P1.5 Smart Diagnose Procedure for Data Acquisition Systems Inside Dams

V. Bande, S. Pop, and D. Pitica

P1.6 Indoor Localisation Method based on Existing WLAN Infrastructure

A. Buchman, C. Lung and A. Erdei

P1.7 High Temperature SiC-Sensors

G. Pristavu, R. Pascu, F. Draghici, M. Badila, G. Brezeanu

P1.8 Development of a Non-Contact Angular Transducer

C. M. Fărcaș, M. Gabor, C. Tiusan, A. Cosma and N. Palaghiță

P1.9 Emergency Radio Communication Network Controller Implemented in FPGA

C. Lung, S. Sabou and A. Buchman

P1.10 Study regarding the Optimal Sensors Placement on the Body for Human Activity Recognition

I. Orha, S. Oniga

P1.11 Investigations for Developing a Testing Setup for Sorting Electroluminescent Tapes/Foils for Automotive Applications

P.-I. Duță, M.-C. Dumitrescu, A.-E. Marcu, I. Plotog, N. Codreanu

P1.12 Device for Multiple Environment Parameters Measurements for Agriculture use

I. Plotog, G. Vărzaru

P1.13 Magnetic Sensors in Inertial Navigation System

Se. Sabou, S. Oniga, and Cl. Lung

P1.14 System for the Testing of LEDs Colour and Intensity

M. T. Tomșe, C. E. Gordan, and R. Filip

P1.15 Fabrication of Different Morphologies of LiCoO₂ used as Cathode Active Material for Battery

D. Ursu, A. Dabici, P. Sfirloaga, M. Miclau

P1.16 Minilab for Evaluating the Influence of Electromagnetic Field over "In Vitro Cultures"

M. N. Velcea, B. Mihăilescu

P1.17 Mechanical Tests Regarding Low-Temperature Lead-Free Solder Pastes Application in Automotive Electronics

T. C. Cucu, I. Plotog and M. Brânzei

Friday, October 24

17:00 – 18:30 Poster Session II (Conference and Poster Room)

NOTE: Each author must deliver a 3 minutes slide show presentation of his/her work.

Session Chair: Oliver KRAMMER, Budapest University of Technology and Economics, Budapest, Hungary

Session Co-Chair: Mihaela HNATIUC, Maritime University of Constanța, Romania

Evaluators:

Vlad CEHAN, Technical University "Gheorghe Asachi" Iași, Romania

Aurel-Stefan GONTEAN, "Politehnica" University of Timișoara, Romania

Mihaela HNATIUC, Maritime University of Constanța, Romania

Zsolt ILLYEFALVI-VITÉZ, Budapest University of Technology and Economics, Hungary

Ciprian IONESCU, "Politehnica" University of Bucharest, Romania

Pavel MACH, Technical University of Prague, Czech Republic

Jim MORRIS, Portland State University, USA

Dorin PETREUȘ, Technical University of Cluj-Napoca, Romania

Dan PITICĂ, Technical University of Cluj-Napoca, Romania

Dan VUZA, Institute of Mathematics of the Romanian Academy, Romania

P2.1 A New High Frequency Ultrasonic SONAR Head for Airborne Applications

D. Aiordăchioaie, S. Epure and B. Dumitraşcu

P2.2 A New Assistive Technology for Communicating with and Telemonitoring Disabled People

R. G. Bozomitu, V. Cehan, R. G. Lupu, C. Rotariu

P2.3 An Implementation of a 13.56 MHz RFID Reader

V. Cernătescu, M. Vlădescu

P2.4 Rocket Data Logger

I.A Hapenciuc, A. Liţă, I Buşu, A Bostan and F. Radoi

P2.5 The Design of an ADC on a FPGA Used For the Control of a Switched Mode Power Supply

C. Orian, T. Pătărău and D. Petreuş

P2.6 Power LEDs Operating Temperature Measurement Using the Protection Reverse Diode

M. Vlădescu, B. Mihăilescu

P2.7 Automated Platform for Characterization of RFID Readers Antenna

D. T. Vuza, M. Vlădescu, and L. Pascu

P2.8 A VLSI Implementation of a Frequency Synthesizer Based on a Charge Pump PLL

R. G. Bozomitu, V. Cehan, C. Barabaşa, N. Cojan

P2.9 Monitoring System with Applications in Road Transport

I.M. Costea, F.C. Nemtanu, C. Dumitrescu, C.V. Banu, G.S. Banu

P2.10 The Effect of Crosstalk Avoidance Code on Power Distribution Network

M. Dărăban, R. Fizeşan, D. Pitică

P2.11 Modelling, Simulation and Testing of an Autonomous Embedded System Supplied by a Photovoltaic Panel

A. Drumea, and R. Al. Dobre

P2.12 Simulink Test-Bench for a Hybrid Battery-Supercapacitor Power System

A. Grama, T. Pătărău, R. Etz, D. Petreuş

P2.13 Bi-dimensional Radially-Salphasic (Standing Wave) Clock Distribution

A. Paşca

P2.14 PSpice Models of Resistive Transducers Used in Building Management

S. Pop, V. Bande, and D. Pitică

Saturday, October 25

11:15 – 13:00 Poster Session III (Conference and Poster Room)

NOTE: Each author must deliver a 3 minutes slide show presentation of his/her work.

Session Chair: Balázs ILLÉS, Budapest University of Technology and Economics, Hungary

Session Co-Chair: Radu BOZOMITU, “Gheorghe Asachi” Technical University of Iaşi, Romania

Evaluators:

Vlad CEHAN, Technical University “Gheorghe Asachi” Iaşi, Romania

Eugen COCA, “Ştefan cel Mare” University of Suceava, Romania

Mihaela HNATIUC, Maritime University of Constanţa, Romania

Oliver KRAMMER, Budapest University of Technology and Economics, Budapest, Hungary

Ioan LITA, University of Pitesti, Pitesti, Romania

Alin MAZARE, University of Pitesti, Pitesti, Romania

Dorin PETREUS, Technical University of Cluj-Napoca, Romania

Paul SVASTA, “Politehnica” University of Bucharest, Romania

Dan VUZA, Institute of Mathematics of the Romanian Academy, Romania

Klaus WOLTER, Dresden University of Technology, Germany

P3.1 Studies on Thermal Properties of Substrates for Electronics using IR Thermography

C. Ionescu, M. Brânzei, B. Mihăilescu and D. Bonfert

P3.2 Examination of Influence of Electrical Stress on Parameters of PP Film Capacitors

P. Mach, M. Horák

P3.3 Study of Electrical Ageing of Polypropylene Film Capacitors using Third Harmonics Measurement

M. Horák, P. Mach

P3.4 Vapour Phase Soldering on Flexible Printed Circuit Boards

A. Géczy, G. Széles, Á. Luhály, M. Ruzinkó and R. Berényi

P3.5 Application of Assembly and Manufacturing Technology in the field of Biomedical Engineering: Three Dimensional Solid Modeling of Prosthetic Knee Joint

M. A. Khan, T. Mumtaz

P3.6 Finite Volume Modelling of Stencil Printing Process

O. Krammer

P3.7 Testing Method and Platform for Power Device Radiant Flux Emitters in DC and in Impulse

I. Bacîş, C. Marghescu

P3.8 Optimizing Optical Power Loss in Optical Coupling Elements

I. Bacîş, C. Marghescu

P3.9 Genetic Algorithm for Depth Image in RGBD Cameras

G. Danciu, I. Szekely

P3.10 Quantitative Analysis of Ag₃Sn Particle Size in Sn_{3.5}Ag Solder Alloy

T. Garami, O. Krammer

P3.11 Electrochemical Migration Behaviour of Surface Finishes after Vapour Phase Reflow Soldering

B. Illés, B. Medgyes, and A. Horváth

P3.12 The Effect of NaCl on Water Condensation and Electrochemical Migration

B. Medgyes, L. Gál and D. Szivós

P3.13 Investigations of the Fracture Strength of Thin Silicon Dies Embedded in Flexible Foil Substrates

N. Palavesam, C. Landesberger and K. Bock

P3.14 A Fundamental Study of Supercapacitive Cells

A. Rizoiu, S. Enache, M. Varlam, and P. Svasta

P3.15 Training Module with Graphical User Interface for Encryption and Decryption Using Affine Ciphers Applied in Cryptosystems

A. N. Borodzhieva, P. K. Manoilov

P3.16 MATLAB-Based Module for Encryption and Decryption Using Bifid Ciphers Applied in Cryptosystems

A. N. Borodzhieva, P. K. Manoilov

P3.17 Test Module of a Software System for Simulation Study of Convolutional Encoders and Decoders Using MATLAB

A. N. Borodzhieva

P3.18 New Alternatives in the Academic Engineering Instruction “RAeL” and „CmL-plus”, e-Learning Academic Networks

C. Huțanu



UNIUNEA EUROPEANĂ



GUVERNUL ROMÂNIEI



Instrumente Structurale
2007-2013

Romanian Operational Sectorial Program “Increasing Economic Competitiveness
(POS CCE) 2007-2013”

co-funded by European Regional Development Fond

Project: “Advanced Collaborative Support Entity for Innovation of Products and Services”
ESCA-IPS, SMIS 49741

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ELINCLUS Electronic INnovation CLUster

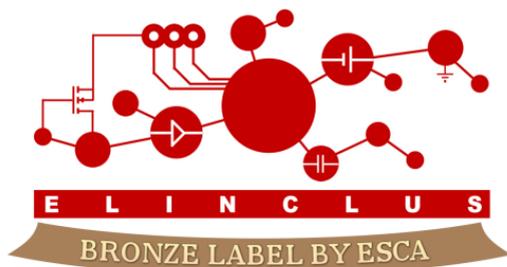
EMC: Association for Promoting Electronic
Technology (APTE)

Founded 2011; 48 registered members

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

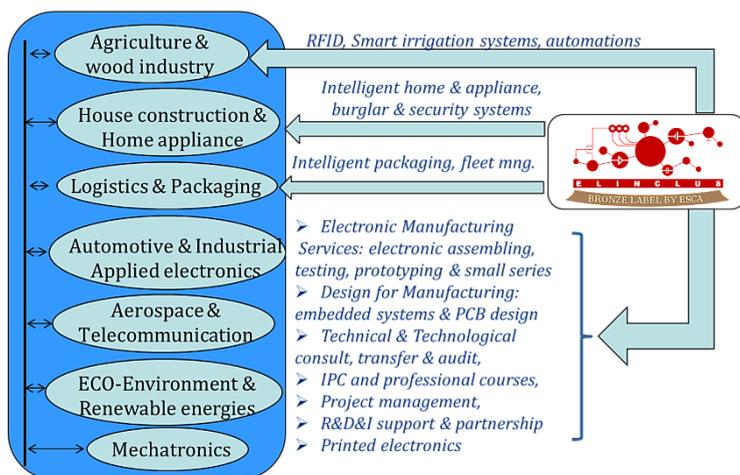
Technical Manager: Senior Lecturer Eng. Ioan PLOTOG Ph.D.

Project Manager: Assist. Prof. Eng. Bogdan Mihăilescu Ph.D.



- Founding member of Cluster Association from Romania - www.clustero.eu
- 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/>)
- European Cluster Excellence Initiative Bronze Label Certificate from ESCA in 2013

ELINCLUS – CLUSTER COMPETENCES



Sector of activity:

- Mechatronics, Automotive electronics, Aerospace electronics, Renewable energies, Communications, Agriculture and wood industry, Home appliance and consumer goods, ECO – environment

Cluster strengths:

- Research & Development of innovative new electronics products in area of mechatronics, aerospace, automotive and s.o.; Technical and technological support for prototyping and small series; IP technology transfer;

Main Profiles of members:

- **Original Equipment Manufacturers:** ROEL Electronics, Samway Electronics, Seletron Software & Automatization, Giga Electronic International, Elarom, Pro Optica, CETTI
- **Electronic Manufacturing Services:** ROEL Electronics, Mibatron, , CETTI
- **Industrial automation:** Antrice, Luca Electric, Seletron Software si Automatizari
- **System integrators:** Antrice, BEIA Consult International, Electro Optic Components, Electrorom Impex, Radio Consult, Rond Electric, 2NCOMM Design
- **Research Centers:** IPE, CCA-AOS, CEMS, CETTI, CCO, ECOMET, IHP, Pro Optica
- **Training & Education:** L&G Advice Serv, UPB
- **Consulting:** Alma Engineering, Elinktron, Magnum CCC
- **Logistics:** ECAS, Elsix, IDEMA Consult, DVB Research, CSC Transmetal SRL, EuroStandard Press,
- **Automated systems for measurements and monitoring (telemetry):** *Top GEOCART*

On-going projects:

Operational Sectorial Program “Growth of Economic Competitiveness (POS CCE) 2007-2013” – co-financed from European Regional Development Fond – Priority Axis 1 “An innovative and eco-efficient production system”; Major intervention domain D1.3 “Long term development of entrepreneurship” Operation “Support for companies for integration in supply chains and clusters”.

Headquarters ELINCLUS: Bucharest, Bd. Iuliu Maniu nr.1- 3

E-mail: elinclus@elinclus.ro

Web page: www.elinclus.ro

Management Authority for Operational Sectorial Program: Romanian Ministry of European Funds (www.fonduri-ue.ro)



ANTRICE

SC ANTRICE SA was founded in the fall of 1994, by the Research Institute of Electronics Bucharest in association with Italian companies in the field of professional electronics Antresud Rome (later the Omicron Industriale) and OSAE Turin. After an initial period of management and technological assistance provided by OMICRON Industriale, SC ANTRICE SA has become a leading manufacturer of power supply equipment mainly for the professional telecommunication. Due to competitive prices and promptness in delivery of services and products, SC ANTRICE SA gained in just a few years the full confidence of Romtelecom as well as of a large number of operators TLC that operates in Romania, but not only, becoming a leader in telecommunications power systems for both mobile networks and the fixed ones. SC ANTRICE SA has over 75 employees that work in flexible teams tailored to customer requirements. Company employees frequently attend trainings organized with the Italian side, so that the products obtained correspond to the latest standards and technologies used in the telecommunications industry. Average turnover recorded by SC ANTRICE SA in the last three years is 4-5 million EURO/year.

The main activities of ANTRICE are:

- 1) Production of industrial goods in telecommunication and professional electronics or consumer electronics;
- 2) The research, development, design, production, installation, commissioning and service in equipment and telecommunication networks;
- 3) engineering services, consulting, expertise, staff training, technical assistance and service;
- 4) import / export, brokering and / or representatives and other commercial operations including marketing and selling of products and services resulting from its own activity or indigenous and foreign suppliers.

**DIGILENT**

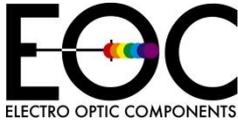
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Digilent's mission is to make electrical engineering and design technologies understandable and accessible to all, by enabling educators and students with low cost-fundamental tools and curriculum.

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ELECTRO OPTIC COMPONENTS S.R.L.

Str. Coman Ion Nr. 7B, Sect. 5, Bucuresti, tel/fax:

+40 21 4574592, e-mail: office@electro-optic.ro



Electro Optic Components S.R.L.

Company profile: Optoelectronic modules and systems

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

- warning systems against laser and radar illumination;
- optoelectronic sensors and interfaces for their integration into complex systems;
- oem laser rangefinders with $\lambda=1.06 \mu\text{m}$ and $\lambda=1.54 \mu\text{m}$;
- laser rangefinders subassemblies for integration in other optical systems (binoculars, optical aiming devices);
- aiming pointers and intelligent pointers, equipped with laser diodes in the visible and infrared spectrum;
- ruggedized PC computers with framegrabbers for image processing of different video sources such as CCD and night vision cameras, which can be integrated in complex surveillance systems;
- DC/DC and AC/DC convertors;
- various types of microcontroller boards for automation;
- PC and microcontroller software development.

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



Ideama Consult SRL

Ideama Consult SRL (Ltd.) is a small private company located in Bucharest, joining skilled and creative people strongly focused in supporting industrial customers with expertise for:

- ☒ Bonding solutions (tapes & adhesives) for industrial applications
- ☒ PCB protection and encapsulating materials and technologies including overmolding
- ☒ ESD protection - materials, tools, equipment
- ☒ Marking, label printing and other print-outs
- ☒ Surface cleaning and restoration systems
- ☒ Technical assistance and ideas originator for various projects

We also cover product selling and servicing, such as:

- ☒ Materials, consumables, tools, equipment, for electronic industry including SMT assembling and rework
- ☒ Equipment installation, fit-in and servicing
- ☒ Upgrading solutions for materials and equipment
- ☒ MRO activities

Our customers are:

- ☒ Electronic industry for: bonding, encapsulating, coating, sealing
- ☒ Automotive and transportation industry for: bonding, lubricating
- ☒ General industry for: bonding and sealing metal confections
- ☒ Advertising and signs production for: bonding and sealing
- ☒ Communications, military, marine for: specialty applications



L & G Advice Serv SRL

L & G Advice Serv SRL is a member of IPC-Association Connecting Electronics Industries, the largest and representative international association, based in USA, which stands for electronics, v. <http://www.ipc.org> for more information. L & G Advice Serv SRL is an IPC authorized for Romania distributor for all IPC standards and documentations.

L & G Advice Serv SRL is a company authorized by the IPC to support and provide all training programs and certification / recertification training for instructors and /or specialists as follows:

- IPC-A-610F "Acceptability of Electronic Assemblies"
- IPC J-STD-001F "Requirements for Soldered Electric and Electronic Assemblies"
- IPC-A-600H "Acceptability of Printed Boards"
- IPC 7711/7721B "Rework, Repair and Modification of Electronic Assemblies"
- IPC/WHMA-A-620B "Requirements and Acceptance for Cable and Wire Harness Assemblies".
- Designer Certification Programs:
 - Certified Interconnect Designer Basic – CID
 - Certified Interconnect Designer Advance – CID+

Personnel of L & G Advice Serv SRL is member of IPC –A-610 Task Group (7-31B) and IPC J-STD-001 Task Group (5-22A).



Microchip Technology

Development center in Bucharest

- Opened in April 2006 and is constantly expanding
- Located near Politehnica University
- Local team keeps growing in a challenging work environment with a free communication style
- Searching for experienced engineers and fresh graduates to join our enthusiastic and dynamic team

Microchip is recruiting for:

- Analog and Digital Design Engineers
- Applications Engineers
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Requirements:

- Passionate, willing to learn and develop new skills
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- Good oral and written communication skills in English

For more information, please visit: www.microchip.com



SAV TECHNOLOGY SOLUTIONS

Company profile:

SAVTEC is a manufacturer and distributor of category-leading security solutions such as of CCTV, IP Video, Access Control and Intruder Detection equipment, with a regional network of specialty resellers. Headquartered in Bucharest, Romania, SAVTEC offers high quality security products for clients all around South Eastern Europe. The company offers various manufacturing and design services to third party customers all over the world.

SAVTEC products are manufactured in a modern environment, on computerized lines, using SIPLACE equipment by means of Surface Mounting Technology (SMT), Through Hole Technology (THT), or combinations of boards assembling, having SMT and THT on both sides. The quality control is ensured by high-end Automated Optical Inspection (AOI) and X-RAY inspection equipment.

Owning wide engineering and design capabilities, SAVTEC engineers consult with clients in order to develop products, and also concerning the products' design, productivity and reliability. Along with design resources involved in product development, SAVTEC engineers keep themselves informed with the latest innovations in production technologies.

Besides pure distribution and manufacturing, we also provide to our partners and resellers engineering services, design and integration of surveillance, fire and intrusion alarm systems together with other custom solutions for specific vertical markets. We have extended expertise in retail, energy and telecom markets.



Top GEOCART

Fields of activity:

1. GEOMATICS

Geodesy, topography, GIS activities and Monitoring - Total Stations, GNSS systems, GPS for GIS systems, land Laser Scanner, complete monitoring and alert systems, precision digital levels, accessories, processing and analysis software, etc.

2. METROLOGY & INDUSTRIAL MEASUREMENTS

Industrial measurements such as those in shipbuilding, aviation, robotics - Laser Station, Industrial Theodolites, Laser Tracker, Arm Tracker, accessories, processing and analysis software, etc.

3. CONSTRUCTION & PRECISION TOOLS.

Measurements in the fields of civil engineering, forestry, architecture and others - optical and electronic levels, rotating laser detection systems, electronic theodolites, GPS equipment for construction work, Lasermeter, applications for data download and data processing, etc.

4. UAV, REMOTE DETECTION, PHOTOGRAMMETRY .

Measurements in the field of aerophotogrammetry and to remote sensing - complete systems for photogrammetry: Photogrammetric Cameras, GPS and software for acquisition and processing of satellite images.

Bucharest



Bucharest (/ˈbuːkərəst/; Romanian: *București*, pronounced [buku'reʃtʲ]) is the capital municipality, cultural, industrial, and financial centre of Romania. It is the largest city in Romania, located in the southeast of the country, lies on the banks of the Dâmbovița River, less than 70 km (43.5 mi) north of the Danube River.

Bucharest was firstly mentioned in documents in 1459. It became the capital of Romania in 1862 and is the centre of Romanian media, culture and art. Its architecture is a mix of historical (neo-classical), interbellum (Bauhaus and Art Deco), Communist-era and modern. In the period between the two World Wars, the city's elegant architecture and the sophistication of its elite earned **Bucharest** the nickname of "Little Paris" (*Micul Paris*).

Economically, **Bucharest** is the most prosperous city in Romania and is one of the main industrial centres and transportation hubs of Eastern Europe. The city has big convention facilities, educational institutes, cultural venues, traditional "shopping arcades" and recreational areas.

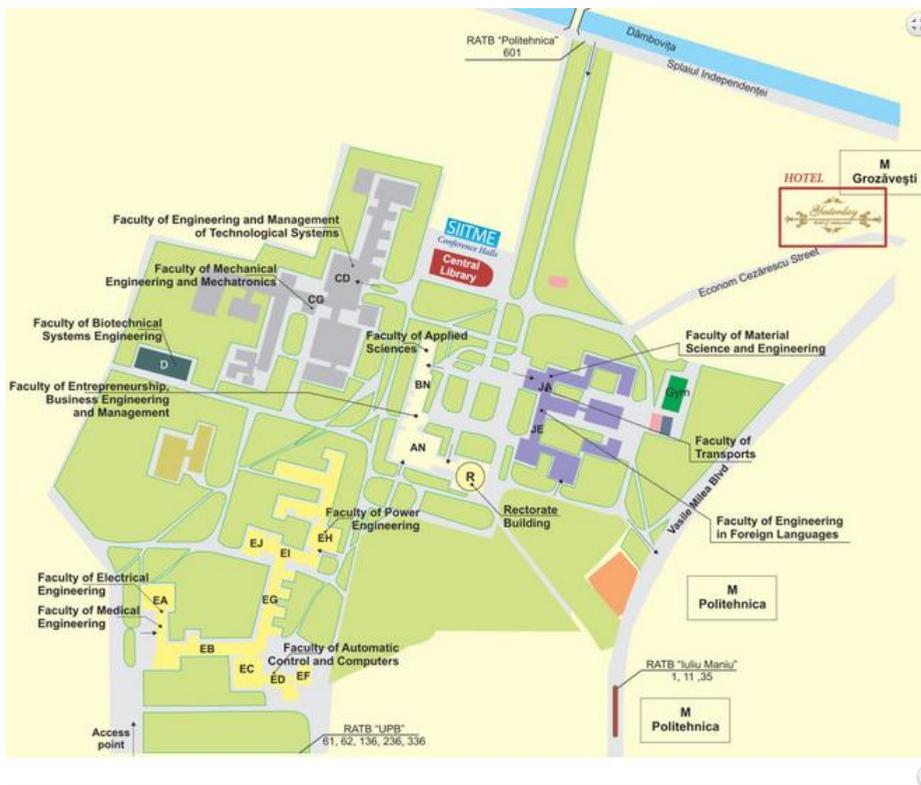
(source: <http://en.wikipedia.org/wiki/Bucharest>)



Location:

The conference and exhibition takes place at:

Central Library of “Politehnica” University of Bucharest, Rectorate Campus (see the map below), Bucharest, Romania.



The accommodation is at:

Hotel Yesterday, Economu Cezărescu 8, Bucharest, Romania

For more information and access: <http://www.yesterday.ro/>

CONFERENCE REGISTRATION

The conference fee includes the opening ceremony and welcome reception, full access to all technical (oral and poster) sessions, exhibition area, all meals (breakfasts, coffee breaks, lunches and dinners), three nights accommodation, printed abstracts proceedings, conference proceedings on memory stick, conference kit (conference bag, badge, booklet, pen, and other related objects), and participation to the cultural programme.

CONTACT INFORMATION

Registration Officer	Delia Lepădatu 0040.720.093.945 0040.769.247.904
Travel Advisor	Andrei Drumea 0040.749.383.098 0040.724.641.096
Multimedia	Bogdan Mihăilescu 0040.723.077.221



Dear participants and guests,

It is my pleasure and honour to welcome you to the 21st Edition of SIITME Conference on behalf of the event organisers from “Transilvania” University of Braşov.

Braşov is one of the largest and most cherished cities of Romania surrounded by mountains, a medieval citadel and a modern city as well. History, culture, science and technology play together in Braşov County.

Transilvania University of Braşov is an important performer in the social, cultural and economical live of the city and of the region. Within the university, electrical engineering studies have a tradition of more than 50 years. The Faculty of Electrical Engineering and Computer Science is a top choice for the students and a hunted partner when it comes to the companies.

We are confident that you will enjoy your stay in Braşov and we look forward welcoming you to SIITME 2015.

Asoc. Prof. Carmen Gerigan, Ph.D.

Dean of Electrical Engineering
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