

28th International Spring Seminar on Electronics Technology ISSE 2005

Preliminary Conference Program

May 19-22, 2005, Hotel Corvinus, Wiener Neustadt, Austria

<http://www.isse2005.org/>

Local Organization: Applied Electronic Materials Group
Institute of Sensor and Actuator Systems, Vienna University of Technology
Gusshausstrasse 27-29, A-1040 Vienna, Austria, <http://www.isas.tuwien.ac.at>

Thursday, May 19

Welcome Reception

Delegates are invited to join the welcome reception in the conference hotel, starting at 17:00.

Special Meetings

17:00	CPMT Transactions Editors, Associate Editors, and Guest Editors Chair: Paul Wesling, CPMT Vice President for Publications, IEEE
18:30	IEEE CPMT Regional Promotion meeting Chair: Johan Liu, Chalmers University of Technology, Sweden

20:00 Dinner

Friday, May 20

Opening

08:30	Johann Nicolics, Michiel Vellekoop, Vienna University of Technology, Austria
-------	------------------------------------------------------------------------------

Plenary Session 1: Novel Electronic Materials, Nanomaterials

Chair: Klaus Wolter, Boris Tsyganok

08:50	PROCESSING OF ALUMINA NANO-FILMS (#91) Pavel Mach, Czech Technical University, Prague, Czech Republic
09:15	RESONANT TUNNEL DIODE (RTD) STABILITY (#99) Jim Morris, Portland State University, USA
09:40	ENGINEERED POROUS CERAMICS USING A DIRECTIONAL FREEZE-DRYING PROCESS (#103) Peter Gielisse, College of Engineering, Tallahassee, FL, USA
10:05	CHARACTERIZATION OF THERMALLY CONDUCTIVE EPOXY NANO-COMPOSITES (#52) Johan Liu, Chalmers University of Technology, Sweden

10:30 Poster Session 1: New Packaging Concepts and Sensor Applications

Chair: Alena Pietriková, Peter Gieliessse

SENSOR FOR MEASURING LOAD ON WHEELS OF RUNNING RAILWAY VEHICLES (#18) Nencho Nenov, University of Transport, Sofia, Bulgaria
SENSOR FOR LOWEST FLOW MEASUREMENT (#38) Martin Adamek, Brno University of Technology, Brno, Czech Republic
HIGH-TEMPERATURE THERMAL CONVERTER BASED ON THIN FILM Ge-Sb-V/TiSi ₂ THERMOCOUPLES (#39) Grażyna Beensh-Marchwicka, Wrocław University of Technology, Wrocław, Poland
JONES MATRIX ANALYSIS OF A NEW MAGNETO-OPTIC ANGULAR DISPLACEMENT SENSOR (#42) Hans Hauser, Vienna University of Technology, Vienna, Austria
MCM LOW - COST TRUE TIME DELAY PHASE SHIFTER (#43) Bojidar Avdjiiski, MMIC Department, RaySat BG, Sofia, Bulgaria
PSOC DUAL SENSOR FOR PRESSURE AND TEMPERATURE USING BIPOLAR JUNCTION EFFECTS (#50) Marius Muresan, Technical University of Cluj-Napoca, Cluj-Napoca, Romania
AN ACCURATE METHOD FOR MEASURING RESISTIVE TRANSDUCERS FROM HYDRO-ENERGETIC CONSTRUCTIONS (#75) Septimiu Pop, Technical University of Cluj-Napoca, Cluj-Napoca, Romania
CHEMO-OPTICAL SENSOR FOR TOXIC GASES DETECTION (#76) Ciprian Ionescu, Politehnica University Bucharest, Bucharest, Romania
IMPLEMENTATION OF MICROCONTROLLERS IN RAILWAY AUTOMATIC TRAFFIC CONTROL SYSTEMS (#78) Margarita Georgieva, University of Transport, Sofia, Bulgaria
CALIBRATION OF A THIN FILM SENSOR FOR TRANSEPIDERMAL WATER LOSS MEASUREMENT (#96) Martin Mündlein, Vienna University of Technology, Vienna, Austria
SYNCHRONIZATION MEASUREMENTS OF A POLARIZATION INDEPENDENT MAGNETO-OPTICAL SWITCH (#111) Yuri Didosyan, Vienna University of Technology, Vienna, Austria

11:15 Coffee break

Plenary Session 2: Lead-free Soldering

Chair: Zdzislaw Drozd, Paul Svasta

11:40	PRESENT STATUS OF TRANSITION TO Pb-FREE SOLDERING (#84) Zsolt Illyefalvi-Vitéz, Budapest Univ. of Technology and Economics, Budapest, Hungary
12:05	LEAD FREE SOLDERING MATERIAL COMPATIBILITY AND TECHNOLOGICAL FACTORS (#20) Jiří Starý, Brno University of Technology, Brno, Czech Republic
12:30	INFLUENCE OF FLUX ACTIVITY ON PROCESS PARAMETERS AND SOLDER JOINTS IN LEAD- FREE WAVE SOLDERING (#37) Janusz Sitek, Tele and Radio Research Institute, Warsaw, Poland
12:55	INCOMPATIBILITY PROBLEMS IN SOLDERING TECHNOLOGY (#45) László Tersztyánszky, Budapest University of Technology and Economics, Hungary

13:20 Lunch

14:20 Poster Session 2: Innovative Electronic Materials, Reliability Physics, Thermal Management

Chair: Reinhard Bauer, Nencho Nenov

FINITE ELEMENT MODELING OF SURFACE MOUNT DEVICES (#21) Marek Novotny, Brno University of Technology, Brno, Czech Republic
MECHANICAL CYCLING IN ACCELERATED LIFE-TIME TESTS OF LEAD-FREE SOLDERED JOINTS (#27) Zdzislaw Drozd, Warsaw University of Technology, Warsaw, Poland
DESIGN OF ANTIREFLECTION WIDEBAND COATINGS FOR THE NEAR INFRARED SPECTRAL REGION (#34) Tamara Pencheva, University of Russe, Russe, Bulgaria
HEAT TRANSFER MODELING FOR SOLDERING PROCESSES OF SMD'S TO PRINTED CIRCUIT BOARDS USING LOW INERT INFRARED HEATERS (#35) Tamara Pencheva, University of Russe, Russe, Bulgaria
THERMAL SIMULATION OF A HIGH POWER LOUDSPEAKER (#41) Ciprian Ionescu, Politehnica University of Bucharest, Bucharest, Romania
TEMPERATURE FIELD SIMULATION OF THICK-FILM MICROCIRCUITS USING FINITE ELEMENT METHOD (#60) Dariusz Klepacki, Rzeszów University of Technology, Rzeszów, Poland
SIMULATING THE CONTACT FORMATION IN ISOTROPICALLY CONDUCTIVE ADHESIVES (#86) Martin Mündlein, Vienna University of Technology, Vienna, Austria
EVALUATION OF LEAD-FREE SOLDER / FLUX / METALLIZATION SYSTEMS BY MEANS OF MODIFIED WETTABILITY TESTS (#90) Bruno Balluch, Vienna University of Technology, Vienna, Austria
HYSTERESIS CALCULATION FOR THIN FILM MULTI-LAYERS NANOSTRUCTURED BY ION IRRADIATION (#97) Diyar Bajalan, Vienna University of Technology, Vienna, Austria
THERMAL SIMULATION AND CHARACTERIZATION OF AlGaIn/GaN/Si HIGH ELECTRON MOBILITY TRANSISTORS (#98) Gernot Hanreich, University of Applied Sciences for Building Technology and Management, Pinkafeld, Austria
USE OF THE DYNAMIC HETEROGENEITIES FOR CREATION OF TEMPORARY OPERATING CONDUCTIVE TRACKS (#106) Borys Tsyganok, Kyiv Polytechnic Institute, Kyiv, Ukraine
DEMONSTRATION OF A SLIPSTREAM SIMULATION FLOW INCLUDING DEVICE AND CIRCUIT SIMULATORS (#110) George Angelov, Sofia Technical University, Sofia, Bulgaria

15:05 Coffee break

Plenary Session 3: New Packaging Concepts, Thick Film Technology, and Applications

Chair: Tamara Pencheva, Walter Smetana

15:30	NEW APPLICATION OF LTCC TECHNOLOGY (#67) Leszek Golonka, Wroclaw University of Technology, Wroclaw, Poland
15:55	SMT GOES GREEN: INVESTIGATIONS ON AND OPTIMIZATION OF LEAD-FREE SOLDER PASTES USING WETTING TESTS, SOLDER BALLING TESTS AND SCREEN PRINTING TESTS WITH SIMULATED PROCESS BREAKS (#11) Markus Detert, Centre of Microtechnical Manufacturing, Dresden, Germany
16:20	CERAMIC PATCH ANTENNA FOR HIGH TEMPERATURE APPLICATIONS (#102) Robert Hauser, Carinthian Tech Research, Villach, Austria
16:45	LTCC RESISTORS AND RESISTIVE TEMPERATURE SENSORS – CHOSEN ELECTRICAL AND STABILITY PROPERTIES (#64) Andrzej Dziedzic, Wroclaw University of Technology, Wroclaw, Poland
17:10	A NOVEL APPROACH TO ELECTRONIC NOSE-HEAD DESIGN, USING A COPPER THIN FILM ELECTRODE PATTERNING TECHNIQUE (#105) Khalil Arshak, University of Limerick, Ireland

17:35 Poster Session 3: Printed Circuit Board Technology, Circuit Design, and Electromagnetic Compatibility

Chair: Michael Caggiano, Marko Hrovat

THE EFFECT OF LEAD FREE SOLDERING ON FORMATION OF BLACK PAD FAILURE (#13) Oliver Krammer, Budapest University of Technology and Economics, Budapest, Hungary
LASER STRUCTURING OF FINE LINE PRINTED CIRCUIT BOARDS (#23) Wojciech Falinski, Tele and Radio Research Institute, Warsaw, Poland
TECHNOLOGY DOWNSCALE FOR OPTICAL WAVEGUIDES IN COST PERFORMANCE ELECTRICAL-OPTICAL CIRCUIT BOARDS (#32) Krzysztof Nieweglowski, Technische Universität Dresden, Dresden, Germany
ELECTRICALLY CONDUCTIVE ADHESIVES AS VIAS FILL IN PCBs: THE INFLUENCE OF FILL SHAPE AND CONTACT METALLISATION ON VIAS RESISTANCE STABILITY (#48) Ryszard Kisiel, Warsaw University of Technology, Warsaw, Poland
SYSTEM ON CHIP DESIGN FOR MULTIPLE OUTPUT SWITCHING REGULATORS (#49) Gabriel Chindris, Technical University of Cluj-Napoca, Cluj-Napoca, Romania
AN INVESTIGATION INTO EMC EMISSION FROM SEPIC BASED SWITCH MODE POWER SUPPLY IN DISCONTINUOUS CONDUCTION MODE (#54) Gabriel Chindris, Technical University of Cluj-Napoca, Romania
THE SIMPLIFIED CONTROL UNIT OF MATRIX CONVERTER (#57) Tomasz Binkowski, Rzeszow University of Technology, Rzeszów, Poland
FPGA IMPLEMENTED DECIMATING FILTER (#62) Ioan Lie, "Politehnica" University of Timisoara, Timisoara, Romania
ACTIVE GATE DRIVERS (#68) Dariusz Sobczyński, Rzeszów University of Technology, Rzeszów, Poland
GSM SOLUTIONS FOR LOW COST EMBEDDED SYSTEMS FOR INDUSTRIAL CONTROL (#73) Andrei Drumea, "Politehnica" University of Bucharest, Bucharest, Romania
A COST EFFICIENT SOLUTION FOR AN INTEGRATED RANDOM NUMBER GENERATORS (#74) Camelia Popescu, "Politehnica" University of Bucharest, Bucharest, Romania

19:30 Dinner

Saturday, May 21

Plenary Session 4: Thermal Management and Reliability Aspects

Chair: Jim Morris, Johan Liu

08:15	NONLINEAR DISCRETE ELEMENTS IN ELECTRO-THERMAL MODEL OF THICK-FILM STRUCTURE (#61) Dariusz Klepacki, Rzeszów University of Technology, Rzeszów, Poland
08:40	OPTIMIZATION OF VIRTUAL INVESTIGATION METHODS IN THERMAL MANAGEMENT OF ELECTRONIC ASSEMBLIES (#63) Norocel Codreanu, "Politehnica" University of Bucharest, Romania
09:05	INVESTIGATION CONCEPT FOR DETERMINING FATIGUE CASUALS AND LIFETIME PREDICTION FOR SnAgCu BASE SOLDER JOINTS (#16) Mike Roellig, Dresden University of Technology, Dresden, Germany
09:30	POROSITY IN LEAD-FREE Sn95.5Ag3.8Cu SOLDER JOINTS WITH Cu- AND Ag-PAD METALLIZATION (#88) Walter Gschohsmann, Vienna University of Technology, Vienna, Austria
09:55	HEAT SINK MATERIALS WITH TAILORED PROPERTIES FOR THERMAL MANAGEMENT (#100) Erich Neubauer, ARC seibersdorf research GmbH, Seibersdorf, Austria

10:20 Poster Session 4: Manufacturing Processes and Process Simulation

Chair: Philipp Philippov, Heinz Wohlrabe

DATA COUPLING STRATEGIES IN PRODUCTION ENVIRONMENTS (#14) Sven Horn, Dresden University of Technology, Dresden, Germany
APPLICATION OF SCREEN PRINTING BY PHOTOVOLTAIC CELL REALIZATION (#17) Lubos Jakubka, Brno University of Technology, Brno, Czech Republic
ABOUT THE POSSIBILITIES OF A NEW EDGE DEFINITION IN BLACK AND WHITE IMAGES (#29) Yulka Petkova Petkova, Varna Technical University, Varna, Bulgaria
THE IMPACT OF MANUFACTURING ISSUES ABOVE LEAD FREE SOLDERING ALLOYS (#33) Adrian Avram, "Politehnica" University of Timisoara, Timisoara, Romania
TYPICAL FEATURES OF PRINTED CIRCUIT BOARD PRODUCTION ENTERPRISE RESOURCE PLANNING SYSTEMS (#66) Peter Martinek, Budapest University of Technology and Economics, Budapest, Hungary
A SIMPLIFIED OBJECT-ORIENTED MODEL OF ENTERPRISE RESOURCE PLANNING SYSTEMS (#69) Zoltán Szitás, Budapest University of Technology and Economics, Budapest, Hungary
SELF-TEACHING SETUP FOR REFLOW SOLDERING PROCESS (#71) Daniel Simion-Zanescu, "Politehnica" University of Bucharest, Romania
ADHESION OF POLYMER/METAL BONDS FOR MOLDED INTERCONNECT DEVICES (MID) (#80) Angelika Paproth, Dresden University of Technology, Dresden, Germany
CUSTOM DESIGNED FACIAL IMPLANTS MADE USING AN ORIGINAL RAPID PROTOTYPING TOOL (#83) Antonius-Nicolae Stanciu, "Politehnica" University of Timisoara, Romania
USAGE OF THE STEP STANDARD IN CZECH REPUBLIC (#92) Martin Molhanec, Czech Technical University in Prague, Czech Republic
INFLUENCE OF INTERCONNECTION SURFACE FINISHES ON QUALITY OF ADHESIVE JOINTS (#93) Pavel Mach, Czech Technical University in Prague, Czech Republic

11:05 Coffee break

Plenary Session 5: Electromagnetic Compatibility and Signal Integrity Analysis

Chair: Dan Pitica, Hans Hauser

11:30	A MODEL OF LOW-FREQUENCY NOISE IN RU-BASED LOW TEMPERATURE SENSORS (#59) Andrzej Kolek, Rzeszów University of Technology, Rzeszów, Poland
11:55	ERROR REDUCING TECHNIQUES FOR THE SCATTERING PARAMETER CHARACTERIZATION OF DIFFERENTIAL NETWORKS USING A TWO-PORT NETWORK ANALYZER (#79) Michael Caggiano, Rutgers University, Piscataway, NJ, USA
12:20	NOISE BEHAVIOR OF ELEMENTARY TRANSCONDUCTORS STAGES IN BIPOLAR AND CMOS TECHNOLOGY (#40) Vlad Cehan, "Gh. Asachi" Technical University, Iași, Romania

12:45 Lunch

13:45 Poster Session 5: Thick Film Technology

Chair: Pavel Mach, Ivan Szendiuch

AN INVESTIGATION OF THE DEVELOPMENT OF THE CONDUCTIVE PHASE IN SOME THICK-FILM RESISTORS (#19) Marko Hrovat, Jožef Stefan Institute, Ljubljana, Slovenia
LTCC BASED MICROFLUIDIC OPTICAL DETECTOR (#51) Karol Malecha, Wrocław University of Technology, Wrocław, Poland
FLUIDIC MICROMIXER MADE IN LTCC TECHNOLOGY – PRELIMINARY RESULTS (#53) Grzegorz Ostromecki, Wrocław University of Technology, Wrocław, Poland
THERMALLY ACTIVATED NOISE SOURCES IN THICK FILM RESISTORS OF RuO ₂ AND GLASS (#56) Adam Stadler, Rzeszów University of Technology, Rzeszów, Poland
NONLINEAR MICROSCOPIC FLUCTUATORS IN RU-BASED THICK FILM RESISTORS (#58) Andrzej Kolek, Rzeszów University of Technology, Rzeszów, Poland
CHARACTERIZATION OF A CALORIMETRIC FLOW SENSOR BUILT UP IN THICK-FILM TECHNOLOGY (#87) Deniz Güleriyüz, Vienna University of Technology, Vienna, Austria
CHARACTERIZATION OF A PIEZORESISTIVE TORQUE SENSOR BUILT UP IN THICK FILM TECHNOLOGY (#89) Hannes Hochstätger, Vienna University of Technology, Vienna, Austria
RADIATION EFFECTS IN ELECTRICAL AND OPTICAL PROPERTIES OF In ₂ O ₃ /SiO THICK FILMS (#94) Khalil Arshak, University of Limerick, Limerick, Ireland
RADIATION-INDUCED CHANGES IN THE ELECTRICAL PROPERTIES OF TiO ₂ THICK FILMS (#95) Khalil Arshak, University of Limerick, Limerick, Ireland
CHOSEN ELECTRICAL AND RELIABILITY PROPERTIES OF THICK FILM PHOTOIMAGEABLE COMPONENTS (#101) Alena Pietriková, Technical University of Kosice, Kosice, Slovakia

14:30 Cultural Program

19:30 Conference Dinner

20:30 Steering Committee Meeting

Sunday, May 22

Plenary Session 6: Innovative Packaging Concepts and Manufacturing Processes

Chair: Leszek Golonka, Zsolt Illyefalvi-Vitéz

08:30	PHYSICAL DESIGN AND TECHNOLOGY PARAMETERS FOR VERTICAL SYSTEM-IN-PACKAGE INTEGRATION (#82) David Polityko, Technical University Berlin, FSP Mikroperipherik, Berlin, Germany
08:55	APPARATUS AND METHOD FOR SOLDERING ELECTRONIC COMPONENTS TO PRINTED CIRCUIT BOARDS (#36) Tamara Pencheva, University of Rousse, Bulgaria
09:20	SIMULATION AND INDIRECT MEASUREMENT OF TEMPERATURE CHANGE IN POLYIMIDE INDUCED BY LASER ABLATION AT 355 nm (#44) Bálint Balogh, Budapest University of Technology and Economics, Budapest, Hungary
09:45	INTEGRATED ENTERPRISE RESOURCE PLANNING SYSTEMS (#65) Peter Martinek, Budapest University of Technology and Economics, Budapest, Hungary

10:10 Poster Session 6: Quality Assurance and Environmental Issues

Chair: Rupert Chabicovsky, Martin Mündlein

RELIABILITY ANALYSIS IN MICROELECTRONIC PACKAGING BY ACOUSTIC MICROSCOPY (#7) Klaus-Jürgen Wolter, Dresden University of Technology, Dresden, Germany
STATISTICAL MODELING AND SIMULATION OF SMD-MOUNTING PROCESS (#10) Heinz Wohlrabe, Dresden University of Technology, Dresden, Germany
BEST QUALITY STRATEGY FOR ELECTRONICS PRODUCTION (#12) Martin Oppermann, Dresden University of Technology, Dresden, Germany
DISPLACEMENT MEASUREMENT METHOD FOR ADVANCED ELECTRONIC PACKAGING (#22) Joanna Skiba, Wroclaw University of Technology, Wroclaw, Poland
X-RAY INSPECTION OF MICROWIRE BONDS (#24) Robert Kovacs, Budapest University of Technology and Economics, Budapest, Hungary
MEASUREMENT METHOD FOR PLACEMENT CAPABILITY OF WEDGE-WEDGE WIRE BONDING PROCESS (#26) Soeren Krille, University of Applied Sciences, Dresden, Germany
TESTING OF A SIGNAL SYNTHESIS MODULE USING LABVIEW SOFTWARE (#46) Daniel Alexandru Visan, University of Pitesti, Pitesti, Romania
LABVIEW APPLICATION FOR ANALYSIS OF MECHANICAL VIBRATIONS FROM INDUSTRIAL ENVIRONMENT (#47) Daniel Alexandru Visan, University of Pitesti, Pitesti, Romania
FREQUENCY EXCHANGER FROM ELECTRONIC TELEMETERING EQUIPMENT OF MOVEMENT FEATURES (#55) Mihail Eugen Tănase, "Politehnica" University of Timișoara, Romania
ELLIPSOmetry AND THIN FILMS PARAMETERS MEASUREMENT (#72) Ivanka Kalimanova, Technical University, Sofia, Bulgaria

10:55 Coffee break

**11:25 Awarding Session
Closing Session**

12:25 Farewell Lunch