

2018 41st International Spring Seminar on Electronics Technology (ISSE 2018)

**Zlatibor, Serbia
16 – 20 May 2018**



**IEEE Catalog Number: CFP18509-POD
ISBN: 978-1-5386-5732-4**

**Copyright © 2018 by the Institute of Electrical and Electronics Engineers, Inc.
All Rights Reserved**

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

****** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP18509-POD
ISBN (Print-On-Demand):	978-1-5386-5732-4
ISBN (Online):	978-1-5386-5731-7
ISSN:	2161-2528

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

CURRAN ASSOCIATES INC.
proceedings
.com

TABLE OF CONTENTS

ENDOGENOUS HEATING OF PRINTED CIRCUIT BOARDS BY MEANS OF ELECTROMAGNETIC INDUCTION ON SUITABLE SUSCEPTORS.....	1
<i>Dirk Seehase ; Christian Kohlen ; Arne Neiser ; Andrej Novikov ; Mathias Nowotnick</i>	
INVESTIGATION INTO THE CHARACTERISTICS OF DC NITROGEN PLASMA USED FOR GROUP III-N SEMICONDUCTOR THIN-FILM GROWTHS	8
<i>Berek Kadikoff ; Robert Dubreuil ; Jonny Tot ; Dimiter Alexandrov</i>	
SELF-HEATING PRINTED CIRCUIT BOARD - A CHALLENGE TO CONTACT AND CONTROL FOR A REFLOW SOLDERING PROCESS	13
<i>Arne Neiser ; Dirk Seehase ; Andreas Reinhardt</i>	
MULTILAYER THICK PRINTED COPPER STRUCTURES.....	17
<i>Jiri Hlina ; Jan Reboun ; Ales Hamacek</i>	
ALTERNATIVE INSPECTION METHODS OF VAPOUR PHASE SOLDERING WORK ZONE	21
<i>Attila Geczy ; Mohamed Amine Alaya ; Gusztav Hantos ; Balazs Illes</i>	
EXPLORATION OF THE POSSIBILITIES OF LOW TEMPERATURE SOLDERING ALLOY LMPA AT SELECTIVE WAVE SOLDERING (SWS)	27
<i>Valentin Tsenev</i>	
FLEXIBLE AND LEAD-FREE BARIUM STRONTIUM TITANATE BASED GENERATORS.....	31
<i>Mariya Aleksandrova ; Georgi Dobrikov ; Georgi Koley ; Yordan Marinov ; Todor Vlahov ; Krassimir Denishev</i>	
BIOPOLYMERS FOR SENSOR AND ELECTRICAL APPLICATIONS.....	37
<i>Daniel Firzlaff ; Henry Kettwig ; Vera Krönert ; Patrick Otto ; Kathrin Harre ; Gunther Naumann</i>	
ASPECTS OF ADDITIVE COPPER DEPOSITION ON BIODEGRADABLE AND ENVIRONMENTALLY FRIENDLY PCB SUBSTRATES (PLA, CA, GPTE-DETDA)	43
<i>Laszlo Gal ; Attila Geczy ; Gergely Horvath ; Daniel Rigler ; Istvan Hajdu</i>	
METHODS FOR DETERMINING THE LEAKAGE CURRENT OF SUPERCAPACITORS	49
<i>R. Negroiu ; P. Svasta ; A. Vasile ; C. Ionescu</i>	
A BOWTIE ANTENNA PREPARED BY AEROSOL JET AND EMBROIDERING TECHNOLOGY	53
<i>Martin Pavec ; Jiri Navratil ; Radek Soukup ; Ales Hamacek</i>	
DESIGN AND TESTING OF MICROFLUIDIC MICROMIXER FABRICATED USING XUROGRAPHIC TECHNIQUE	57
<i>Sanja Kojić ; Dajana Milićević ; Jovana Lazarević ; Mihailo Drljača ; Goran Stojanović</i>	
PERMEABILITY VARIATION OF COMPOSITES WITH LTCC FERRITE FLAKY FILLERS.....	62
<i>Nelu Blaž ; Milica Kisić ; Ljiljana Živanov ; Čedo Žlebić ; Mirjana Damnjanović</i>	
INFLUENCE OF PROCESS PARAMETERS ON QUALITY AND PROPERTIES OF MICROFLUIDIC COMPONENTS MADE IN KEKO SK47 SUBSTRATES.....	66
<i>Patryk Palmka ; Jan Macioszczyk ; Karol Malecha</i>	
GAS FLOW AND HEAT TRANSFER IN REFLOW OVEN	72
<i>Milan Hurban ; Ivan Szendiuch ; Edita Hejátková</i>	
SOLDER JOINT ANALYSIS ON COATED ALUMINUM FOR SILICON SOLAR CELL INTERCONNECTION	75
<i>Angela De Rose ; Achim Kraft ; Ulrich Eitner ; Mathias Nowotnick</i>	
SOLID-LIQUID INTERDIFFUSION BONDING BASED ON AU-SN INTERMETALLIC FOR HIGH TEMPERATURE APPLICATIONS.....	81
<i>Ryszard Kisiel ; Marcin Myśliwiec</i>	
SMD COMPONENTS ASSEMBLY ON A FLEXIBLE SUBSTRATE BY NON-CONDUCTIVE ADHESIVES	86
<i>Martin Hirman ; Jiri Navratil ; Frantisek Steiner ; Tomas Dzugan ; Ales Hamacek</i>	
EXAMINING THE TIMES FOR MELTING OF DIFFERENT SOLDER PASTES AT THE SAME TEMPERATURE PROFILE.....	92
<i>Valentin Videkov ; Valentin Tsenev ; Aleksei Stratev</i>	
PROPERTIES INVESTIGATIONS ON COPPER BASED PRINTED CONDUCTIVE PASTES ELECTRICAL JOINTS	97
<i>Mihai Brânzei ; Ciprian Ionescu ; Ioan Plotog ; Gădențiu Vârzaru</i>	
TEMPERATURE DEPENDENT MECHANICAL PROPERTIES OF SINTERED SILVER-COPPER JOINTS	103
<i>Zeynep Gökdeniz ; Golta Khatibi ; Thomas Walter ; Johann Nicolics</i>	
X-RAY INSPECTION OF CERAMIC STRUCTURES	109
<i>Josef Skácel ; Alexandr Otáhal ; Ivan Szendiuch ; Edita Hejátková</i>	

CREATION OF CAVITIES IN HIGH-TEMPERATURE CERAMICS	113
<i>Josef Skácel ; Alexandr Otáhal ; Ivan Szendiuch</i>	
DIELECTRIC PROPERTIES' HOMOGENEITY OF VARIOUS SUBSTRATES IN GHZ AREA.....	117
<i>Tibor Rovensky ; Alena Pietrikova ; Peter Lukacs</i>	
SOFTWARE EVALUATION OF CROSS-CUT ADHESION TESTING.....	121
<i>Ondrej Kovac ; Peter Lukacs ; Tibor Rovensky</i>	
ELECTROCHEMICAL MIGRATION OF ENIG SURFACE FINISH IN Na_2SO_4 ENVIRONMENT	126
<i>Bálint Medgyes ; Péter Szabó ; Sándor Ádám ; Lajos Tar ; Miklós Ruzsinkó ; Richárd Berényi</i>	
UNCERTAINTY BUDGET FOR HARDWARE-IN-THE-LOOP TEST SYSTEM	131
<i>Mihai Daraban ; Gabriel Chindris ; Adrian Taut ; Liviu Viman</i>	
PRINT QUALITY ASSESSMENT BY IMAGE PROCESSING METHODS FOR PRINTED ELECTRONICS APPLICATIONS	137
<i>Julian Schirmer ; Jewgeni Roudenko ; Marcus Reichenberger ; Simone Neermann ; Jörg Franke</i>	
ADHESION MEASUREMENTS FOR PRINTED ELECTRONICS: A NOVEL APPROACH TO CROSS CUT TESTING.....	143
<i>Julian Schirmer ; Jewgeni Roudenko ; Marcus Reichenberger ; Simone Neermann ; Jörg Franke</i>	
OPTIMIZATION OF SOLDERING PROCESS TO REDUCE CONTAMINATION AND RELATED CONSEQUENCES	148
<i>František Steiner ; Martin Hirman ; Karel Rendl ; Václav Wirth</i>	
THERMAL DIFFUSIVITY INVESTIGATIONS ON ALUMINA SUBSTRATES USING LASER FLASH ANALYSIS.....	154
<i>Alexander Hensel ; Trung Anh Lê ; Alexander Sauermann ; Joerg Franke</i>	
THERMOMECHANICAL RELIABILITY INVESTIGATION OF INSULATED GATE BIPOLAR TRANSISTOR MODULE	160
<i>Magnus Liedtke ; Golta Khatibi ; Bernhard Czerny ; Johann Nicolics</i>	
DATA DRIVEN PROGNOSTICS FOR FAILURE OF POWER SEMICONDUCTOR PACKAGES	167
<i>Mominul Ahsan ; Stoyan Stoyanov ; Chris Bailey</i>	
THERMAL CYCLE TESTING OF PRINTED CIRCUIT BOARD VIAS (BARREL PLATES).....	173
<i>Karel Dušek ; David Bušek ; Pavel Hrzina ; Jan Ševčík</i>	
DENDRITIC GROWTH AND ITS DEPENDENCE ON VARIOUS CONDITIONS	177
<i>David Bušek ; Karel Dušek ; Jan Kulhavý</i>	
LOW-FREQUENCY NOISE IN THICK-FILM RESISTORS DUE TO LASER AND HIGH-VOLTAGE PULSE TRIMMING	182
<i>Ivanka Stanimirović ; Zdravko Stanimirović</i>	
THERMOGRAPHIC APPROACH FOR RELIABILITY ESTIMATION OF PCB	185
<i>Anna Stoyanova ; Borislav Bonev ; Nikolay Brayanov</i>	
ENERGY MANAGEMENT FOR AN ISLANDED MICROGRID BASED ON HARMONY SEARCH ALGORITHM	192
<i>Eniko Lazar ; Andreea Ignat ; Dorin Petreus ; Radu Etz</i>	
A STUDY OF AN ELECTRICAL VEHICLE BATTERY CHARGER'S DC-DC STAGE.....	198
<i>Tudor Gherman ; Dorin Petreus ; Toma Patarau ; Andreea Ignat</i>	
SOLDERING PROBLEMS OF LARGE SIZE SMD PET CAPACITORS DURING VAPOUR PHASE SOLDERING PROCESS.....	204
<i>Balázs Illés ; Attila Géczy ; Oliver Krammer ; Agata Skwarek ; Krzysztof Witek</i>	
DESIGN, MODELLING AND SIMULATION OF A FIFTH ORDER LOW-PASS GM-C FILTER	210
<i>Elena Mirela Stetco ; Ovidiu Aurel Pop ; Alin Grama ; Doris Csipkes</i>	
DIGITAL MODEM FOR DISTRIBUTED DATA ACQUISITION AND CONTROL SYSTEMS USED IN INTENSIVE FRUIT FARMING.....	216
<i>Daniel Alexandru Visan ; Adrian Ioan Lita ; Alin Gheorghita Mazare ; Laurentiu Mihai Ionescu ; Ioan Lita</i>	
NARROW-BAND DE-EMBEDDING OF MODIFIED FEEDING TRANSMISSION LINES IN ELECTROMAGNETIC SIMULATIONS	220
<i>Ulrich Schumann ; Andreas Jöstingmeier ; Abbas Omar</i>	
SIMULATION METHOD TO EVALUATE THERMAL RUNAWAY OF MOSFETS.....	224
<i>Laszlo Molnar ; Octavian Luca ; Aurel Gontean</i>	
FIELD PROGRAMMABLE GATES ARRAY IMPLEMENTATION OF QUANTUM COMPUTATION STRUCTURES.....	230
<i>Laurentiu-Mihai Ionescu ; Alin Mazare ; Daniel Visan ; Nadia Belu ; Adrian Lita</i>	
THE RELATIONSHIP BETWEEN THE PARAMETERS OF VACUUM EVAPORATION PROCESS.....	236
<i>Ivana Pelikánová Beshajová ; Martin Martin</i>	

COMPONENT DISPLACEMENT AND SOLDER SPREADABILITY DEPENDENCE ON MANUFACTURING CONDITIONS	242
<i>Martin Molhanec</i>	
MODELLING AND MODEL BASED INVESTIGATION OF A UNITY-POWER-FACTOR RECTIFIER FOR ELECTRIC VEHICLE CHARGING APPLICATIONS.....	247
<i>Stoyan Vuchev ; Dimitar Arnaudov ; Nikolay Hinov</i>	
MODELLING AND INVESTIGATION OF MULTI-PHASE RECTIFIERS SUPPLIED BY RESONANT CONVERTERS	253
<i>Dimitar Arnaudov ; Stoyan Vuchev</i>	
DISCRETISATION AND DATA REDUCTION ALGORITHM FOR FE MODELLING OF COMPLEX MULTILAYER PCBs WITH EMBEDDED COMPONENTS	259
<i>Michael Unger ; Johann Nicolics</i>	
OPTIMAL CONTROL OF ENERGY FLOWS IN SMART GRID FOR CHARGING OF ELECTRIC VEHICLE IN PARKING	265
<i>Gergana Vacheva ; Nikolay Hinov ; Hristiyan Kanchev ; Bogdan Gilev</i>	
MODELLING OF DC/DC BOOST CONVERTER IN VISUAL PROGRAMING ENVIRONMENTS.....	269
<i>Gergana Vacheva ; Nikolay Hinov ; Zoran Zlatev</i>	
EXTRACTION OF MODEL PARAMETERS FOR 14-NM BULK FINFET	273
<i>George Angelov ; Mariya Spasova ; Dimitar Nikolov ; Ivelina Ruskova ; Rostislav Rusev</i>	
MODELLING OF ELECTRIC VEHICLE CHARGING STATION FOR DC FAST CHARGING	278
<i>George Angelov ; Miroslav Andreev ; Nikolay Hinov</i>	
PREDICTING COMPONENT SELF-ALIGNMENT BY MACHINE LEARNING TECHNIQUE	283
<i>Péter Martinek ; Olivér Krammer ; Akos Gábor Farkas</i>	
MODEL-IN-THE-LOOP FOR DETERMINING THE SPEED AND POSITION OF A DC MOTOR	289
<i>Marius Alexandru Taut ; Gabriel Chindris ; Adrian Catalin Taut ; Dan Pitica</i>	
RESONANT POWER CONVERTERS USED FOR WIRELESS POWER TRANSFER.....	296
<i>Adrian Taut ; Gabriel Chindris ; Mihai Daraban ; Marius Taut</i>	
SMART BIKE IMPROVEMENT USING EMBEDDED SYSTEMS	302
<i>Alin Grama ; Dorin Petreus ; Calin Baci ; Benjamin Bia ; Octavian Coca ; Vlad Socaciu</i>	
ECO-LABEL AND SELF ENVIRONMENTAL CLAIMS IN ELECTRONICS	306
<i>Ivan Szendiuch ; Edita Hejátková ; Josef Skácel ; Milan Hurban</i>	
COMPARISON OF DIFFERENT BIO-BASED POLYMERS FOR ELECTRONIC SUBSTRATES.....	312
<i>Carolin Henning ; Anna Schmid ; Sophia Hecht ; Kathrin Harre ; Reinhard Bauer</i>	
DECISION SUPPORT SYSTEM FOR PLANT AND CROP TREATMENT AND PROTECTION BASED ON WIRELESS SENSOR NETWORKS	318
<i>Zoran Stamenković ; Sinisa Randjić ; Ignacio Santamaria ; Dušan Marković ; Steven Van Vaerenbergh ; Uroš Pešović</i>	
ENVIRONMENTAL ASSESSMENT OF A NEW DEVELOPED CAMERA SYSTEM FOR AUTOMOTIVE APPLICATION	323
<i>Manuela Franz ; Michael Unger ; Gerhard Schmid ; Johann Nicolics</i>	
VISCOSITY OF SILVER BASED NANO-INKS	331
<i>Peter Lukacs ; Alena Pietrikova ; Tibor Rovensky</i>	
INFLUENCE OF BULK SILVER NANOPARTICLES ON SURFACE LAYER PROPERTIES IN NANOCOMPOSITE CELLULOSE FIBERS.....	335
<i>Olga Rac-Rumijowska ; Marta Fiedot-Tobola ; Iwona Karbownik ; Helena Teterycz</i>	
THE EFFECT OF SURFACE INCLINATION ON AFM FORCE-CURVE CALIBRATION AND EVALUATION	340
<i>Judit Kámá ; Attila Bonyár ; Róbert Huszánk</i>	
APPLICATION OF NANOCRYSTALLINE PSEUDOBROOKITE (Fe₂TiO₃) THICK FILMS FOR HUMIDITY SENSING	344
<i>Maria Vesna Nikolic ; Miloljub D. Lukovic ; Zorka Z. Vasiljevic ; Jelena Vujanecvic</i>	
SOFTWARE-DEFINED RADIO USED IN ASSISTIVE TECHNOLOGY TO COMMUNICATE WITH NEUROMOTOR DISABLED PATIENTS.....	348
<i>Radu Gabriel Bozomit ; Vlad Cehan ; Cristian Rotariu</i>	
SENSORS IN TEXTILES FOR MONITORING PATIENTS WITH EDEMA.....	352
<i>Jan Skřivan ; Tomáš Blecha ; Radek Soukup ; Jan Řeboun ; Vladimír Resl</i>	
SENSOR SYSTEM FOR TESTING THE LEVEL OF THERMAL PROTECTION OF PROTECTIVE GLOVES	357
<i>David Kalas ; Silvan Pretl ; Jan Reboun ; Radek Soukup ; Ales Hamacek</i>	

MICROCONTROLLER BASED MAGNETOMETER FOR SMART METERS USED IN ELECTRICAL ENERGY MEASUREMENT	362
<i>Adrian Ioan Lita ; Daniel Alexandru Visan ; Mirela Gherghe ; Laurentiu Mihai Ionescu ; Alin Gheorghita Mazare ; Ioan Lita</i>	
RFID ELECTRONIC SENSOR SYSTEM FOR ROLLING STOCK RECOGNITION IN MOTION.....	366
<i>Dimitar Nikolov ; Nencho Nenov ; Desislava Yosifova</i>	
MULTI-MICROCONTROLLER EMULATION OF SENSORS, ACTUATORS AND SYSTEMS FOR FLEXIBLE INTEGRATION OF COMPLEX DEVICES.....	371
<i>Nikolay Brayanov ; Anna Stoyanova</i>	
IMPEDANCE METER BASED ON IQ DEMODULATORS	377
<i>Mihai Alexandru Ili ; Pitică Dan ; Liviu Viman</i>	
AEROSOL JET PRINTED SENSOR ON FIBRE FOR SMART AND IOT APPLICATIONS.....	381
<i>Jiri Navratil ; Tomas Rericha ; Radek Soukup ; Ales Hamacek</i>	
TESTING AND DEVELOPMENT PLATFORM FOR PRINTED SENSOR AND COMPONENTS.....	385
<i>Karel Sima ; David Kalas ; Tomas Syrový ; Silvan Pretl ; Ales Hamacek</i>	
A REVIEW OF ACOUSTIC IMPEDANCE MATCHING METHODS TO VALIDATE ADDITIVE MANUFACTURED METAMATERIAL FOR CAPACITIVE MICROMACHINED ULTRASONIC TRANSDUCERS	391
<i>Severin Schweiger ; Sandro G. Koeh</i>	
THICK FILM THERMISTOR SENSOR FOR MEASURING TEMPERATURE PROFILE OF GROUND TOP LAYER	398
<i>Stanko O. Aleksić ; Nebojša S. Mitrović ; Miloljub D. Luković ; Slobodan Djukic</i>	
EMBEDDED SYSTEM FOR REAL TIME ANALYSIS OF THERMAL IMAGES FOR PREVENTION OF WATER STRESS ON PLANTS	401
<i>Alin Gh. Mazare ; Laurentiu M. Ionescu ; Daniel Visan ; Adrian I. Lita ; Gheorghe Serban</i>	
FAST CONTROL SYSTEM AND ALGORITHMS FOR STABILIZING OF MOBILE PLATFORMS	407
<i>Alexandru Vasile ; Norocel Codreanu ; Mihai-Octavian Dima ; Ciprian Ionescu ; Rodica Negroiu ; Paul Svasta ; Mihaela Pantazică ; Mihai Jurbă</i>	
INNOVATIVE SYSTEM FOR DEVELOPMENT AND ANALYSING SENSORS INTEGRATED IN THE AIRFRAME TO DETERMINE LOSSES ON HIGH-VOLTAGE LINES	412
<i>Ilona Costea ; Badescu Iulian ; Octavian Ghita ; Andrei Banica</i>	
DESIGN NEW CUSTOM INTERFACES FOR SELECTING MAGNETIC COMPONENTS IN SWITCHING POWER SUPPLIES	417
<i>Emilian Ceuca ; V. Trifa ; O. POp</i>	
ANALYZING THE EFFICIENCY OF THE DIFFERENT WAYS OF RECOVERING ENERGY FROM A SYSTEM USING A PMSM	421
<i>V. Trifa ; G. Brezeanu ; Emilian Ceuca</i>	
HETEROGENEOUS INTEGRATED DISPLACEMENT SENSOR WITH AN INNOVATIVE DESIGN.....	425
<i>Milica Kisić ; Nelu Blaž ; Ljiljana Živanov ; Mirjana Damnjanović</i>	
ALD GROWN DIELECTRICS FOR CAP ON A CHIP: FABRICATION AND CHARACTERIZATION	429
<i>Patrik Fillner ; Radim Hrdý ; Jan Prášek ; Dušan Nešpor ; Jaromír Hubálek</i>	
MEMS MICROHOTPLATES FOR CHEMICAL SENSORS.....	433
<i>Jan Prášek ; Silvestr Vančík ; Vojtěch Svatoš ; Jaroslav Klempa ; Imrich Gablech ; Zdeněk Pytlíček ; Vladimír Levek</i>	
ANALYSIS OF EDUCATION REQUIREMENTS FOR ELECTRONICS MANUFACTURING WITHIN CONCEPT INDUSTRY 4.0	438
<i>Andrea Benešová ; Martin Hirman ; František Steiner ; Jiří Tupa</i>	
EVALUATION OF CLOUD-BASED OPEN EDUCATIONAL RESOURCES FOR TEACHING MICROELECTRONICS	443
<i>Attila Bonyár ; Péter Martinek ; Olivér Krammer ; Attila Géczy ; Zsolt Illyefalvi-Vitéz ; Slavka Tzanova</i>	
STATION FOR SOIL HUMIDITY, TEMPERATURE AND AIR HUMIDITY MEASUREMENT WITH SMS FORWARDING OF MEASURED DATA.....	448
<i>Milan Bodić ; Predrag Vuković ; Vladimir Rajs ; Marko Vasiljević-Toskić ; Jovan Bajić</i>	
IMPLEMENTATION OF THE AUDIO SIGNAL TRANSMISSION SYSTEM USING WAVELENGTH DIVISION MULTIPLEXING.....	453
<i>Marko Vasiljević-Toskić ; Jovan Bajić ; Vladimir Rajs ; Milan Bodić</i>	
HARDWARE AND SOFTWARE MODULES FOR EDUCATION IN ELECTRONICS MANUFACTURING.....	457
<i>Liljana E. Docheva ; Ivo N. Dochev</i>	

STABILITY ANALYSIS AND DESIGN OF WIDEBAND HOWLAND CURRENT PUMPS USING MONOLITHIC CURRENT-FEEDBACK AMPLIFIERS	463
<i>Ivailo Pandiev</i>	
DESIGN OF TWO LNA TOPOLOGIES IN 0.35 μM CMOS TECHNOLOGY FOR 2 GHZ FREQUENCY RANGE.....	470
<i>Mátyás Varga ; Jelena Radić</i>	
THE IMPACT OF THE SINTERING TEMPERATURE OF FERRITE LTCC MATERIALS ON THE CHARACTERISTICS OF DC TUNABLE INDUCTOR	475
<i>Čedo Žlebić ; Ljiljana Živanov ; Miodrag Milutinov ; Nelu Blaž ; Goran Radosavljević ; Andrea Marić ; Mirjana Damnjanović</i>	
INVESTIGATIONS ON ACTIVE BALANCING CIRCUITS FOR SUPERCAPACITOR BANKS	481
<i>Ciprian Ionescu ; Andrei Drumea ; Alexandru Vasile ; Norocel Codreanu</i>	
VOLTAGE TUNABLE MN-ZN RING CORE WITH LARGE INDUCTANCE TUNABILITY	486
<i>Miodrag Milutinov ; Ljiljana Živanov ; Nelu Blaž ; Čedo Žlebić</i>	
Author Index	