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Volume 8902
Contents

xi Conference Committee
xvii Introduction

PLENARY SESSION

8902 02 Electron Technology – ELTE 2013 (Plenary Paper) [8902-138]
P. Szczepański, R. Kisel, R. S. Romaniuk, Warsaw Univ. of Technology (Poland)

SESSION 1 MICROELECTRONICS AND NANOELECTRONICS

8902 03 Modern high power semiconductor devices (Invited Paper) [8902-122]
A. Napieralski, M. Napieralska, Ł. Starzak, M. Żubert, Lodz Univ. of Technology (Poland)

8902 04 ASICs in nanometer and 3D technologies for readout of hybrid pixel detectors [8902-127]
P. Maj, P. Grybos, P. Kmon, R. Szczygiel, AGH Univ. of Science and Technology (Poland)

8902 05 Nanostructures in thin film opto-electronics (Invited Paper) [8902-109]
A. Kołodziej, AGH Univ. of Science and Technology (Poland); A. Jakubowski, Warsaw Univ. of Technology (Poland); M. Kołodziej, AGH Univ. of Science and Technology (Poland)

8902 06 The behavioral approach to silicon carbide power components modeling [8902-124]
M. Żubert, A. Napieralski, M. Napieralska, G. Jabłoński, Ł. Starzak, M. Janicki, Lodz Univ. of Technology (Poland)

8902 07 Low noise charge pump (Invited Paper) [8902-2]
A. Grodzicki, W. A. Pleskacz, Warsaw Univ. of Technology (Poland)

8902 08 Miniature plasma jet for mass spectrometry [8902-4]
M. Babij, T. Gotszalk, Z. W. Kowalski, K. Nitsch, Wrocław Univ. of Technology (Poland); J. Silberring, M. Smoluch, AGH Univ. of Science and Technology (Poland)

8902 09 The analysis of filling pulse parameters influence on ICTS data of GaAs MIS structures [8902-9]
Ł. Drewniak, S. Kochowski, Silesian Univ. of Technology (Poland); K. Nitsch, R. Paszkiewicz, B. Paszkiewicz, Wrocław Univ. of Technology (Poland)

8902 0A Effective aluminum oxide thin films deposition using reactive pulsed magnetron sputtering: possibilities and limitations [8902-16]
M. Gruszka, W. Posadowski, Wrocław Univ. of Technology (Poland); Z. Sidor, A. Piotrowska, Institute of Electron Technology (Poland); A. Wiatrowski, Wrocław Univ. of Technology (Poland)
8902 OB Selected properties of multi-terminal resistors embedded in printed circuit boards [8902-17]
A. Kłossowicz, R. Kukuła, P. Winiarski, A. Dziedzic, Wrocław Univ. of Technology (Poland); W. Stępielewski, J. Borecki, Tele and Radio Research Institute (Poland)

8902 OC AC properties of low-pass RC filters embedded in printed circuit boards [8902-18]
P. Winiarski, A. Kłossowicz, Wrocław Univ. of Technology (Poland); W. Stępielewski, J. Borecki, Tele and Radio Research Institute (Poland); K. Nitsch, A. Dziedzic, Wrocław Univ. of Technology (Poland)

8902 OD Instruction set extension for software defined radio in mobile GNSS applications [8902-19]
K. Marcinek, W. A. Pleskacz, Warsaw Univ. of Technology (Poland)

8902 OE Ultra-shallow fluorine and nitrogen implantation from r.f. plasma and its effect on electro-physical parameters of Al/HfO2/Si MOS structures [8902-26]
M. Kalisz, Warsaw Univ. of Technology (Poland) and Motor Transport Institute (Poland); R. Mroczynski, Warsaw Univ. of Technology (Poland); M. Szymanska, Warsaw Univ. of Technology (Poland) and Motor Transport Institute (Poland)

8902 OF Investigation of deep-level defects in InGaAsN/GaAs 3xQWs structures grown by AP-MOVPE [8902-35]
Ł. Gelczuk, M. Dąbrowska-Szata, P. Kamyczek, E. Placzek-Popko, Wrocław Univ. of Technology (Poland); K. Kopalko, Institute of Physics (Poland); B. Ściana, D. Pucicki, D. Radziewicz, M. Tłaczała, Wrocław Univ. of Technology (Poland)

8902 OG Microfabricated support structures for investigations of mechanical and electrical graphene properties [8902-40]
K. Gajewski, T. Gotszalk, Wrocław Univ. of Technology (Poland); A. Sierakowski, P. Janus, P. Grabiec, Institute of Electron Technology (Poland)

8902 OH Influence of annealing temperature on electrical parameters and structure of Al contacts on p-type 4H-SiC substrate [8902-47]
A. Kubiak, J. Rogowski, Ł. Ruta, Z. Lisik, Lodz Univ. of Technology (Poland)

8902 OI Surface passivation of MSM photodetectors made on GaAsN epitaxial layers [8902-58]
I. Zborowska-Lindert, B. Ściana, D. Pucicki, D. Radziewicz, M. Panek, B. Boratyński, A. Słafiniak, M. Ramięczak-Krasowska, M. Tłaczała, Wrocław Univ. of Technology (Poland)

8902 OJ Influence of the AP MOVPE process parameters on properties of (In, Ga)(As, N)/GaAs heterostructures for photovoltaic applications [8902-59]
B. Ściana, D. Radziewicz, D. Pucicki, J. Serafinczuk, W. Dawidowski, K. Bielak, M. Badura, Ł. Gelczuk, M. Tłaczała, M. Łatkowska, P. Kamyczek, Wrocław Univ. of Technology (Poland); J. Kováč, M. Florovič, A. Vincze, Slovak Univ. of Technology (Slovakia)

8902 OK On-wafer measurements and characterization of poly-si resistors for evaluation of selected CMOS manufacturing processes [8902-61]
G. Głuszko, D. Tomaszewski, J. Malesińska, K. Kucharski, Instytut Technologii Elektronowej (Poland)

8902 OL Modeling the current of a double-gate MOSFET with very thin active region taking into account mobility dependence on the transverse electric field [8902-66]
Ł. Łukasiak, B. Majkusiak, Warsaw Univ. of Technology (Poland)
8902 0M  **Bipolar transistor in VESTIC technology** [8902-78]
W. Kuźnicz, P. Mierzwiński, Warsaw Univ. of Technology (Poland)

8902 0N  **Fabrication and characterization of thin-film transistors with amorphous In-Ga-Zn-O layers** [8902-84]
A. Taube, Institute of Electron Technology (Poland) and Warsaw Univ. of Technology (Poland); J. Kaczmarski, M. Ekielski, Institute of Electron Technology (Poland); D. Pucicki, Wroclaw Univ. of Technology (Poland); E. Kamińska, A. Piotrowska, Institute of Electron Technology (Poland)

8902 0O  **Influence of series resistance determination on the extracted mobility in MOS transistors with Ge channel** [8902-89]
J. Jaśński, L. Łukasiak, A. Jakubowski, Warsaw Univ. of Technology (Poland); C. Casteleiro, T. E. Whall, E. H. Parker, M. Myronov, D. R. Leadley, The Univ. of Warwick (United Kingdom)

8902 0P  **Description of tunneling through a metal-insulator-metal junction considering Coulomb Blockade** [8902-92]
D. Tanous, B. Majkusiak, Warsaw Univ. of Technology (Poland)

8902 0Q  **Thin film metal oxide gas sensor array for gas detection** [8902-93]
P. Gwizdż, A. Brudnik, K. Zakrzewska, AGH Univ. of Science and Technology (Poland)

8902 0R  **Investigation of temperature effect on electrical characteristics of the double barrier metal-oxide-semiconductor structure** [8902-97]
D. Tanous, A. Mazurak, B. Majkusiak, Warsaw Univ. of Technology (Poland)

8902 0S  **Investigation of current-voltage characteristics of the transistor structures with double-potential barrier DBMOS** [8902-99]
A. Mazurak, D. Tanous, B. Majkusiak, Warsaw Univ. of Technology (Poland)

8902 0T  **Aspects of SiC diode assembly using Ag technology** [8902-104]
M. Myśliwiec, Warsaw Univ. of Technology (Poland) and Institute of Electron Technology (Poland); M. Guziwicz, Institute of Electron Technology (Poland); R. Kisiel, Warsaw Univ. of Technology (Poland)

8902 0U  **Electrical characterization of GaN-channel MOSFETs** [8902-106]
J. Jaśński, L. Łukasiak, A. Jakubowski, Warsaw Univ. of Technology (Poland); D.-K. Kim, D.-S. Kim, S.-H. Hahn, J.-H. Lee, Kyungpook National Univ. (Korea, Republic of)

8902 0V  **Fabrication of nanocrystallites in the SiOx matrix applicable in microelectronics** [8902-112]
T. Kołodziej, AGH Univ. of Science and Technology (Poland)

8902 0W  **Resistive shorts characterization in CMOS standard cells for test pattern generation** [8902-117]
A. Wielgus, B. Potrykus, Warsaw Univ. of Technology (Poland)

8902 0X  **Nanostructures applied to bit-cell devices** [8902-118]
A. Kołodziej, AGH Univ. of Science and Technology (Poland); L. Łukasiak, Warsaw Univ. of Technology (Poland); M. Kołodziej, AGH Univ. of Science and Technology (Poland)

8902 0Y  **CURRENT source with controlled power supply voltage** [8902-119]
J. Sikora, Lublin Univ. of Technology (Poland)
SESSION 2

PHOTONICS

8902 0Z  Robustness of digital approach to mismatch compensation in analog circuits realized in nanometer technologies [8902-132]
Z. Jaworski, P. Wysokiński, Warsaw Univ. of Technology (Poland)

8902 10  Analysis of e-beam impact on the resist stack in e-beam lithography process [8902-133]
K. Indykiewicz, B. Paszkiewicz, Wrocław Univ. of Technology (Poland)

8902 11  The influence of mounting and thermal strains on defects disclose during ageing test for laser diodes for 808nm and 880nm bands [8902-12]
E. Dąbrowska, A. Kozłowska, M. Teodorczyk, J. Zawisłowska, G. Sobczak, A. Maląg, Institute of Electronic Materials Technology (Poland)

8902 12  Design and properties of silicon charged-particle detectors developed at the Institute of Electronic Technology (ITE) [8902-52]
M. Węgrzec, J. Bar, T. Budzyński, M. Cież, P. Grabiec, Instytut Technologii Elektronowej (Poland); R. Kozłowski, Instytut Technologii Materiałów Elektronicznych (Poland); J. Kulawik, A. Panas, Instytut Technologii Elektronowej (Poland); J. Sannecki, Instytut Technologii Materiałów Elektronicznych (Poland); W. Słysz, D. Szmit, Instytut Technologii Elektronowej (Poland); M. Wielunski, Helmholtz Zentrum München, GmbH (Poland); K. Witek, Instytut Technologii Elektronowej (Poland); A. Yakushev, GSI Helmholtzzentrum für Schwerionenforschung GmbH (Poland); M. Zaborowski, Instytut Technologii Elektronowej (Poland)

8902 13  Optoelectronic and photonic sensors of mastitis in cow milk [8902-24]
M. Borecki, Warsaw Univ. of Technology (Poland) and Warsaw Univ. of Life Science (Poland); T. Niemiec, Warsaw Univ. of Life Science (Poland) and Warsaw Univ. of Technology (Poland); M. L. Korwin-Pawlowski, Univ. du Québec en Outaouais (Canada); B. Kuczyńska, Warsaw Univ. of Life Science (Poland); P. Doroz, Warsaw Univ. of Technology (Poland); K. Urbanska, M. Szymt, Warsaw Univ. of Life Science (Poland) and Warsaw Univ. of Technology (Poland); J. Szymt, Warsaw Univ. of Technology (Poland) and Warsaw Univ. of Life Science (Poland)

8902 14  Development of elliptical nanostructured gradient index microlens (Invited Paper) [8902-85]
R. Buczynski, Univ. of Warsaw (Poland) and Institute of Electronic Materials Technology (Poland); A. J. Waddie, Heriot-Watt Univ. (United Kingdom); J. Nowosielski, A. Filipkowski, Univ. of Warsaw (Poland) and Heriot-Watt Univ. (United Kingdom); D. Pysz, R. Stepień, Institute of Electronic Materials Technology (Poland); M. R. Taghizadeh, Heriot-Watt Univ. (United Kingdom)

8902 15  Octave spanning supercontinuum in normal dispersion photonic crystal fiber [8902-101]
B. Siwicki, Univ. of Warsaw (Poland) and Institute of Electronic Materials Technology (Poland); M. Klimczak, Institute of Electronic Materials Technology (Poland); P. Skibiński, Institute of Physical Chemistry (Poland); T. Martynkien, Wrocław Univ. of Technology (Poland); D. Pysz, R. Stepień, A. Szolno, Institute of Electronic Materials Technology (Poland); C. Radzewicz, Univ. of Warsaw (Poland); R. Buczynski, Univ. of Warsaw (Poland) and Institute of Electronic Materials Technology (Poland)
Two methods of determining the birefringence of the planar waveguides [8902-113]
K. Gut, Silesian Univ. of Technology (Poland)

Characterization of the optical beam emitted by high-power phase-locked arrays of diode lasers (P = 1 W CW) [8902-11]
G. Sobczak, Institute of Electronic Materials Technology (Poland) and Warsaw Univ. of Technology (Poland); E. Dąbrowska, M. Teodorczyk, J. Kalbarczyk, A. Malag, Institute of Electronic Materials Technology (Poland)

Compact diode-side-pumped Yb:YAG slab laser operating in room temperature [8902-13]
M. Kaskow, W. Zendzian, J. K. Jabczynski, J. Firak, L. Gorajek, J. Kwiatkowski, K. Kopczynski, Military Univ. of Technology (Poland)

Diode pumped, q-switched Tm:YLF laser [8902-14]
L. Gorajek, Military Univ. of Technology (Poland)

Three-octave spanning supercontinuum generation in a fluoride (ZBLAN) fiber [8902-27]
M. Michalska, J. Swiderski, Military Univ. of Technology (Poland)

Pulse shape distortion in a 2-stage all-fiber Er-doped amplifier [8902-28]
M. Michalska, M. Mamajek, Military Univ. of Technology (Poland)

Influence of construction and technology on the time stability of the neutron sensors [8902-30]
M. Stolarski, M. Węgrzecki, J. Kulawik, B. Synkiewicz, Institute of Electron Technology (Poland)

Digital controlling system to the set of high power LEDs [8902-42]
M. Gilewski, L. Gryko, A. Zajac, Białystok Univ. of Technology (Poland)

Light generation of DBR/F-P laser based on Raman effect in a silicon-on-insulator rib waveguide [8902-43]
A. Tyszka-Zawadzka, Warsaw Univ. of Technology (Poland); P. Szczepański, Warsaw Univ. of Technology (Poland) and National Institute of Telecommunications (Poland); M. Karpierz, A. Mossakowska-Wyszyńska, M. Bugaj, Warsaw Univ. of Technology (Poland)

Determination of carrier concentration in VECSEL lasers [8902-45]
W. Jung, A. Jasik, K. Gołaszewska, E. Maciejewska, Institute of Electron Technology (Poland)

Optical fibers for FTTH application [8902-46]
B. Guzowski, G. Tosik, Z. Lisik, M. Bedyk, A. Kubiak, Lodz Univ. of Technology (Poland)

Designing of Raman lasers with Bragg mirrors [8902-53]
A. Mossakowska-Wyszyńska, A. Tyszka-Zawadzka, R. Mroczynski, R. B. Beck, Warsaw Univ. of Technology (Poland); P. Szczepański, Warsaw Univ. of Technology (Poland) and National Institute of Telecommunications (Poland)
8902 1I Technology of silicon charged-particle detectors developed at the Institute of Electron Technology (ITE) [8902-54]
I. Wegrzecka, A. Panas, J. Bar, T. Budzyński, P. Grabiec, Instytut Technologii Elektronowej (Poland); R. Kożłowski, J. Sarnecki, Instytut Technologii Materiałów Elektronicznych (Poland); W. Słysz, D. Szemigiel, M. Węgrzecki, M. Zaborowski, Instytut Technologii Elektronowej (Poland)

8902 1J Detection of nitric oxide in exhaled air using cavity enhanced absorption spectroscopy [8902-67]
R. Mędrzycki, J. Wojtas, B. Rutecka, Z. Bielecki, Military Univ. of Technology (Poland)

8902 1K Selective deep wet etching of fused silica optical fibers for sensing applications [8902-71]
K. Krogulski, M. Śmietana, N. Kwietniewski, K. Król, Warsaw Univ. of Technology (Poland)

8902 1L Development of the technology related to the selective covering of detectors surface with dielectric light-proof layer [8902-76]
H. Kłos, B. Synkiewicz, J. Bar, Institute of Electron Technology (Poland)

8902 1M The use of photonic techniques in tunable microwave oscillators [8902-87]
K. Madziar, A. Szymańska, B. Galwas, Instytut Mikroelektroniki i Optoelektroniki (Poland)

8902 1N Sensing characteristics of polymer highly birefringent side-hole fiber [8902-116]
P. Mergo, J. Klimek, K. Skorupski, Maria Curie-Skłodowska Univ. (Poland); K. Gąsior, M. Grzonko, T. Martynkien, Wrocław Univ. of Technology (Poland); G. Wójcik, A. Walewski, J. Pędzisz, J. Kopec, Maria Curie-Skłodowska Univ. (Poland); W. Urbańczyk, Wrocław Univ. of Technology (Poland)

8902 1O Preparation of long-period gratings (LPGs) for biological substances detection [8902-130]
A. K. Dębowska, M. Śmietana, Warsaw Univ. of Technology (Poland); E. Brzozowska, S. Górska-Frączak, Institute of Immunology and Experimental Therapy (Poland); W. J. Bock, P. Mikulic, Univ. du Québec en Outaouais (Canada)

8902 1P Silicon nitride (SiN) plasma deposition on optical fiber sensors: coating symmetry perspective [8902-136]
A. Krysiński, M. Śmietana, R. Mroczynski, N. Kwietniewski, Warsaw Univ. of Technology (Poland); W. J. Bock, P. Mikulic, Univ. du Québec en Outaouais (Canada)

SESSION 3 MICROSYSTEMS

8902 1Q Application of mobile computers in a measuring system supporting examination of posture diseases (Invited Paper) [8902-25]
J. Piekarski, E. Klimiec, W. Zaraska, Instytut Technologii Elektronowej (Poland)

8902 1R The effect of the temperature value on the accuracy of time constant measurements for the platinum voltammetry electrodes [8902-32]
K. Mazur, Gdańsk Univ. of Technology (Poland)

8902 1S A prototype femtosecond laser system for MEMS fabrication [8902-34]
K. Garasz, M. Kocik, M. Tarński, R. Barbucha, Institute of Fluid-Flow Machinery (Poland); J. Mizeraczyk, Institute of Fluid-Flow Machinery (Poland) and Gdynia Maritime Univ. (Poland); M. Nejbauer, C. Radzewicz, Institute of Physical Chemistry (Poland)
Properties of carbonaceous-palladium hydrogen sensor [8902-37]
A. Kamińska, S. Krawczyk, H. Wronka, E. Czerwosz, Tele and Radio Research Institute (Poland); P. Firek, J. Kalenik, J. Szmidt, Warsaw Univ. of Technology (Poland)

Adjustment of sensitivity of ISFET-type micro- and nanosensors [8902-41]
M. Zaborowski, D. Tomaszewski, P. Grabiec, Instytut Technologii Elektronowej (Poland)

The ink-jet printing of microstrip lines on ferroelectric ceramic-polymer composites and its characterization in sub-THz range [8902-48]
J. Weremczuk, G. Tarapata, R. Jachowicz, Y. Yashchyshyn, K. Godziszewski, P. Bajurko, M. Syafran, E. Pawilkowska, Warsaw Univ. of Technology (Poland)

Fabrication and measurement of micromechanical bridge structures for mass change detection [8902-57]
M. M. Mocząła, Wrocław Univ. of Technology (Poland); A. Sierakowski, R. Dobrowolski, P. Grabiec, Institute of Electron Technology (Poland); T. P. Gotszalk, Wrocław Univ. of Technology (Poland)

Manufacturing, measurement and control of MEMS / NEMS electrostatically driven structures [8902-69]
M. A. Ekwińska, Institute of Electron Technology (Poland); P. Kunicki, T. Piaścicki, Wrocław Univ. of Technology (Poland); P. Janus, K. Domaniński, T. Bieniek, P. Grabiec, Institute of Electron Technology (Poland); T. Gotszalk, Wrocław Univ. of Technology (Poland)

Application of Triton surfactant adsorption on Si surface for fabrication of 45° micromirrors [8902-79]
K. P. Rola, I. Zubel, Wrocław Univ. of Technology (Poland)

Microcontact printing technology as a method of fabrication of patterned self-assembled monolayers for application in nanometry [8902-91]
P. Pateiko, M. Mocząła, Wrocław Univ. of Technology (Poland); P. Janus, P. Grabiec, Institute of Electron Technology (Poland); T. Gotszalk, Wrocław Univ. of Technology (Poland)

Dynamic method of calibration and examination piezoresistive cantilevers [8902-128]
A. Sierakowski, Institute of Electron Technology (Poland); D. Kopiec, Wrocław Univ. of Technology (Poland); M. Ekwińska, Institute of Electron Technology (Poland); T. Piaścicki, Wrocław Univ. of Technology (Poland); R. Dobrowolski, M. Płuska, K. Domaniński, P. Grabiec, Institute of Electron Technology (Poland); T. P. Gotszalk, Wrocław Univ. of Technology (Poland)

Numerical models of magnetic field MEMS sensors used in optoelectronic microsystems [8902-129]
J. Gołębiowski, S. Milcarz, Łódź Univ. of Technology (Poland)

SESSION 4 ELECTRONIC AND PHOTONIC MATERIALS AND TECHNOLOGIES

Fluctuating phenomena in resistive materials and devices (Invited Paper) [8902-6]
A. W. Stadler, Rzeszów Univ. of Technology (Poland)
Characterization and properties of multicomponent oxide thin films with gasochromic effect [8902-8]
J. Domaradzki, K. Baniewicz, M. Mazur, D. Wojcieszak, D. Kaczmarek, Wrocław Univ. of Technology (Poland)

Characterisation and application of WO₃ films for electrochromic devices [8902-29]
T. Stapinski, K. Marszałek, B. Swatowska, A. Stanco, AGH Univ. of Science and Technology (Poland)

Carbon footprint of electronic devices [8902-15]
M. Sloma, Warsaw Univ. of Technology (Poland) and Research and Innovation Ctr. Pro-Akademia (Poland)

Metal oxide nanostructures for gas detection [8902-22]
W. Maziarz, T. Pisarkiewicz, A. Rydosz, K. Wysocka, G. Czyrnek, AGH Univ. of Science and Technology (Poland)

Influence of carbon nanoparticles on the properties of screen printed polymer composites [8902-31]
M. Jakubowska, Warsaw Univ. of Technology (Poland) and Institute of Electronic Materials Technology (Poland); K. Janeczek, Tele and Radio Research Institute (Poland); A. Młoźniak, Institute of Electronic Materials Technology (Poland); G. Koziół, A. Araźna, Tele and Radio Research Institute (Poland)

Wide band antireflective coatings Al₂O₃ / HfO₂ / MgF₂ for UV region [8902-33]
P. Winkowski, PEVIN (Poland); K. W. Marszałek, AGH Univ. of Science and Technology (Poland)

Signal detection and processing system for three-dimensional imaging of nonconductive surfaces in SEM [8902-36]
W. Słowko, M. Krysztof, Wrocław Univ. of Technology (Poland)

Formation of ultrathin silicon layers by PECVD and their modification for nanoelectronic and nanophotonic applications [8902-39]
K. Ber, R. B. Beck, Warsaw Univ. of Technology (Poland)

Nematic liquid crystals in inverted microstrip structures [8902-38]
J. Piotrowski, Warsaw Univ. of Technology (Poland); J. Parka, Warsaw Univ. of Technology (Poland) and Military Univ. of Technology (Poland); E. Nowinowski-Kruszelnicki, Military Univ. of Technology (Poland)

Properties of hydrogen sensitive C-Pd films obtained by PVD/CVD method [8902-49]
E. Kowalska, M. Kozłowski, A. Kamińska, J. Radomska, H. Wranka, E. Czerwosz, Tele and Radio Research Institute (Poland); K. Sobczak, Institute of Physics (Poland)

The influence of MOVPE process parameters on the buffer resistivity used in AlGaN/GaN heterostructures [8902-56]
T. Szymański, M. Wośko, B. Paszkiewicz, R. Paszkiewicz, Wrocław Univ. of Technology (Poland)

Liquid crystal tunable microwave band stop filters [8902-62]
J. Skulski, A. Szymańska, Warsaw Univ. of Technology (Poland)
8902 2G  Influence of rapid thermal annealing on optical properties of (In, Ga)(As, N)/GaAs quantum wells [8902-64]
W. Dawidowski, B. Ściana, M. Latkowska, D. Radziwielcz, D. Pucicki, K. Bielak, M. Badura, M. Tłaczała, Wrocław Univ. of Technology (Poland)

8902 2H  Characterization of Diamond-like Carbon (DLC) films deposited by RF ICP PECVD method [8902-65]
W. Oleszkiewicz, W. Kijaszek, J. Gryglewicz, A. Zakrzewski, K. Gajewski, D. Kopiec, P. Kamyczek, E. Popko, M. Tłaczała, Wrocław Univ. of Technology (Poland)

8902 2I  Behavior of tensioactive compounds in the solutions for silicon anisotropic etching [8902-73]
I. Żubel, K. Rola, J. Zalewska, Wrocław Univ. of Technology (Poland)

8902 2J  Investigation of ITO layers for application as transparent contacts in flexible photovoltaic cell structures [8902-74]
K. Znajdek, M. Śbiński, Łódź Univ. of Technology (Poland)

8902 2K  Low-resistance contact layers on the basis of polymer composites containing silver nanoparticles dedicated to semiconductor devices [8902-75]
J. Kalbarczyk, A. Młoźniak, K. Krzyżak, M. Teodorczyk, Institute of Electronic Materials Technology (Poland)

8902 2L  Silicon nanowires reliability and robustness investigation using AFM-based techniques [8902-80]
T. Bieniek, G. Janczyk, P. Janus, P. Grabiec, M. Nieprzecki, Instytut Technologii Elektronowej (Poland); G. Wielgoszewski, M. Moczała, T. Góździk, Wrocław Univ. of Technology (Poland); E. Buitrago, M. F. - B. Badia, A. M. Ionescu, EPFL (Switzerland)

8902 2M  Characterization of thin Gd₂O₃ magnetron sputtered layers [8902-81]
J. Gryglewicz, Wrocław Univ. of Technology (Poland); P. Firek, J. Jaśński, R. Mroczyński, J. Szmidt, Warsaw Univ. of Technology (Poland)

8902 2N  In-Ga-Zn-O amorphous thin films for transparent electronics [8902-86]
J. Kaczmarski, Institute of Electron Technology (Poland); A. Taube, Institute of Electron Technology (Poland) and Warsaw Univ. of Technology (Poland); E. Dynowska, Institute of Electron Technology (Poland) and Institute of Physics (Poland); J. Dyczewski, Institute of Physics (Poland); M. Ekielski, Institute of Electron Technology (Poland); D. Pucicki, Wrocław Univ. of Technology (Poland); E. Kamińska, A. Piotrowska, Institute of Electron Technology (Poland)

8902 2O  Reactive impulse plasma ablation deposited barium titanate thin films on silicon [8902-88]
A. Werbowy, P. Firek, N. Kwietniowska, A. Olszyna, Warsaw Univ. of Technology (Poland)

8902 2P  Influence of selected environmental factors on electrical and physical properties of polymer-semiconductor layers [8902-107]
M. Mroczkowski, J. Kalenik, J. Szmidt, Warsaw Univ. of Technology (Poland)

8902 2Q  Characterisation of AP-MOVPE grown (Ga, In)(N, As) structures by Raman spectroscopy [8902-114]
M. Badura, B. Ściana, D. Radziwielcz, D. Pucicki, K. Bielak, W. Dawidowski, P. Kamyczek, E. Płaczek-Popko, M. Tłaczała, Wrocław Univ. of Technology (Poland)
Characterizations of GaInNAs/GaAs quantum wells [8902-115]
K. Bielak, D. Pucicki, B. Ściana, D. Radziewicz, W. Dawidowski, M. Badura, R. Kudrawiec, J. Serafinczuk, M. Tlaczała, Wrocław Univ. of Technology (Poland)

Structural analysis of epitaxial NbTiN films [8902-120]
M. Guziewicz, A. Laszcz, Institute of Electron Technology (Poland); J. Z. Domagala, Institute of Electron Technology (Poland) and Institute of Physics (Poland); K. Golaszewska, J. Ratajczak, R. Kruszka, M. Juchniewicz, A. Czerwinski, W. Słysz, Institute of Electron Technology (Poland)

Synthesis and characterization of polymer composite base on RE3+:Al2O3 nanopowders doped by rare earth metals for application in optoelectronics [8902-123]

Author Index
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   Piotr Grabiec, Institute of Electron Technology (Poland)
   Ryszard Jachowicz, Warsaw University of Technology (Poland)
   Teodor P. Gotszalk, Wrocław University of Technology (Poland)

4  Electronic and Photonic Materials and Technologies
   Marek Tłaczała, Wrocław University of Technology (Poland)
   Jan Szmidt, Warsaw University of Technology (Poland)
   Danuta Kaczmarek, Wrocław University of Technology (Poland)
   Jan Felba, Wrocław University of Technology (Poland)
Introduction

The ELTE 2013 Conference on Electron Technology was the eleventh meeting in a periodical series that deals with advances in state-of-the-art electron technology in Poland. Historically this series of Conferences has evolved since 1980 due to the activity of the national research community active in electronic and photonic materials and components research. This community is located at government laboratories, universities, and recently at business research institutions. At the end of the 1970s and early eighties, representatives of three electron technology research institutions (Warsaw University of Technology, Wroclaw University and AGH–University of Mining and Metallurgy in Kraków) decided to start a cyclic national meeting devoted solely to electronic materials and technologies. Since then, the conference has been organized rotationally between these strong research centers. The original aim of the conference, as defined more than three decades ago, was to build a solid forum for presentation and exchange of national achievements covering broadly understood electron technology.

The first Conference on Electron Technology ELTE’80 was organized in Wroclaw (conference opening ceremony and plenary papers) and in Karpacz, on 24–27 September 1980, and was hosted by the Institute of Electron Technology, Wroclaw University of Technology. The meeting gathered then more than 200 researchers, showing the strength of this branch of science and technology in Poland. The proceedings were published as a separate book in the series Research Works of Wroclaw University of Technology, in the Conference sub-series as Vol 24 (4) in 1980. The volume contains 2 keynote papers, 25 plenary papers and 156 contributed papers. The conference works were divided into the following four topical sessions: Technology of High Vacuum; Technology of Electron, Ion and Photon Beams; Optoelectronics; and Hybrid Microelectronics. The Chairman of the ELTE’80 Conference Scientific Committee was Prof. Bohdan Paszkowski.

Electron Technology II – ELTE’84 was organized by the Institute of Electron Technology (later renamed to Institute of Microelectronics and Optoelectronics), Warsaw University of Technology, in Rynia near Warsaw on 13–16 June 1984. Similar to the first conference, a volume of proceedings was published containing abstracts of plenaries and contributed papers. The volume contains 348 paper abstracts. During the conference, four keynote plenary papers were presented on hot topics of electron technology: microelectronics industry in Poland, physical confinements and technological barriers in MOS VLSI development, material engineering and future of microelectronics, and surface research of electronic materials by electron and ion methods. The contributed papers were divided into the following topical sections: Microelectronics, with four section papers and 59 contributed papers; Optoelectronics, with 5 section papers and 71 contributed papers; High Vacuum, with 6 section papers and 99 contributed papers;
Electronic Materials, with 5 section papers and 44 contributed papers; Passive Electronic Components, with 4 section papers and 47 contributed papers. Full texts of some plenary papers were published in the SEP (Association of Polish Electrical Engineers) Technical Journal Elektronika No. 6, 7, and 8, 1984. The Honorary Chairman of the ELTE'84 Conference Scientific Committee was Prof. Janusz Groszkowski, the Chairman was Prof. Alfred Świt.

Electron Technology III – ELTE'87 was organized by the Institute of Physics of Adam Mickiewicz University in Poznań.

Electron Technology IV – ELTE’90 was organized again by the Institute of Electron Technology, Wrocław University of Technology.

Electron Technology V – ELTE’94 was organized by the Institute of Microelectronics and Optoelectronics, Warsaw University of Technology.

Electron Technology VI – ELTE’97 was organized by the Chair of Electronics, AGH—Academy of Mining and Metallurgy in Kraków.

Electron Technology VII – ELTE’2000 was organized by the Institute of Microsystems Technology (renamed from Institute of Electron Technology), Wrocław University of Technology.

Electron Technology VIII – ELTE’2004 was organized by the Institute of Microelectronics and Optoelectronics, Warsaw University of Technology. There were presented 10 plenary papers, 39 section papers, and around 150 contributed papers. Conference papers were divided into six topical sessions: Electronic Materials, Microelectronics, Nanoelectronics, Vacuum Science and Technology, Microsystems, and Magnetoelectronics. Honorary Chairman of the Conference was Prof. Witold Rosiński, and Chairman was Prof. Wiesław Woliński.

Electron Technology IX – ELTE’2007 was organized by the Chair of Electronics, AGH—Academy of Mining and Metallurgy in Kraków on 4–7 September 2007. The Conference was associated with the 55th Anniversary of the Faculty of Electrotechnics, Automation, Informatics and Electronics of the AGH University. Conference Proceedings were published as a volume of abstracts and in technical journals: Measurement Science and Technology, Vacuum and Elektronika. The conference was traditionally accompanied by a technical exhibit. Prof. Tadeusz Pisarkiewicz was Chairman of the Scientific Committee of ELTE’2007.

The Jubilee Electron Technology X – ELTE’2010 – was organized by Wrocław University of Technology together with IMAPS-CPMT Poland 2010 Conference, on 22–25 September. Topical scope of the conference was divided into four parts: Microelectronics and Nanoelectronics, Photonics, Microsystems, and Electronic Materials. The scope of the IMPS-CMPT Poland 2010 Conference included: thin
and thick film technologies; thin and thick film sensors; modeling, design and simulation of multichip structures, components and circuits; modern technologies and applications of multichip modules; electrical, optical, mechanical and thermal characterization of film structures, components and circuits; packaging in electronics, photonics and Microsystems; quality and reliability of film structures and packaging processes. During ELTE 2010 there were presented 4 keynote papers, 48 plenary session papers and 146 contributed papers during poster sessions. The conference was accompanied by technical exhibit. Prof. Andrzej Dziedzic was a Chairman of the Scientific Committee of ELTE 2010.

Electron Technology XI – ELTE’2013 was organized by the Institute of Microelectronics and Optoelectronics, Warsaw University of Technology. ELTE’2013 gathered around 270 participants. There were presented 9 plenary papers, 50 oral papers and 165 poster papers. Scientific Committee of ELTE’2013 awarded 12 students and young researchers with the Best Presentation Award funded by the Conference and by the SPIE. The Conference Chairman was prof. Paweł Szczepański.

The topics and sessions of Electron Technology XI – ELTE 2013 were as follows:

1. Photonics:
   - Semiconductor light sources
   - Detectors and photovoltaic
   - New materials for optical applications
   - Passive optoelectronics devices
   - Nonlinear optical materials

2. Microsystems
   - Electrical, mechanical and thermal modeling and design of Microsystems
   - Design and fabrication of MEMS and MOEMS systems
   - Smart sensing structures
   - Lab-on-chip systems
   - Micro- and nanobiosystems

3. Materials Technology for Optoelectronics and Electronics:
   - Fabrication and full characterization of optoelectronics and electronics materials
   - Applying nanotechnology for manufacturing photonics as well as electronics materials
   - Bio- and nanomaterials for photonic, electronic and microelectronic systems
   - Advanced methods for characterization of materials and electronics devices
   - Hybrid and printed circuits boards technology
4. Microelectronics and Nonoelectronics

- Electrical, mechanical and thermal design and fabrication of semiconductor devices and integrated circuits
- Simulation of technological processes
- Micro- and nano technology (with using electron, ion and molecular beams)
- Spintronic and magnetoelectronc
- Characterization and diagnostic of technological processes of semiconductor devices and integrated circuits
- Packaging of photonics and microelectronics devices

The Conference ELTE 2013 provided material for two volumes of proceedings. One of them was published in Polish (a volume of abstracts of all conference presentations) and one in English (SPIE Proceedings). Additionally, a CD-ROM was added to the volume of abstracts containing extended abstracts of all papers. The editors of this volume present the full texts of around 100 chosen and reviewed articles by authors affiliated primarily with university and government-based laboratories.

The conference chairs and editors would like to thank personally the authors and conference contributors who made this book possible. A number of devoted reviewers from the conference Scientific Committee contributed a lot to the betterment of this book. Special thanks are also due to SPIE for supporting the conference by undertaking the publication of this proceedings volume. The Conference Committee announces with pleasure that the next meeting on Electron Technology ELTE 2016 is scheduled to be organized by the AGH University of Science and Technology in Kraków in 2016, under the chairmanship of Prof. Tadeusz Pisarkiewicz.

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