




# IEEE International Microwave Biomedical Conference IEEE-IMBioC 2018

June 14-15, 2018

Pennsylvania Convention Center, Philadelphia, USA

www.imbioc-ieee.org

Thursday, 14 JUNE 2018

15:00-18:00	<p>IMBioC Opening Event</p> <p>Plenary session: Renal Denervation for Uncontrolled Hypertension: Complexity After Symplicity</p> <p>Speaker: Dr. Nicholas J. Ruggiero II, MD, Thomas Jefferson University</p> <p>Room: Grand Ballroom</p>	
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## FRIDAY, 15 JUNE 2018, 8:00 to 10:00

	Session FR1A Transistor-level biosensor techniques Chairs: Simon Hemour, Christian Damm Room: 201A	Session FR1B Neuroimplants & miniaturized devices Chairs: Yongxin Guo, Ifana Mahbub Room: 201B	Session FR1C Bio-tissue and cell modeling Chairs: James Hwang, Pai-Yen Chen Room: 201C
8:00	<p>Integrated Millimeter-Wave and THz Analyzer Platforms for Miniature Biosensors (Invited)</p> <p><i>D. Kissinger - IHP, Germany</i></p> 	<p>Multiscale Modeling and Electroneural Interfaces for Neuroimplants: from a Retinal Prosthesis to Restore Vision to the Blind to a Hippocampus Implant for Memory Restoration (Invited)</p> <p><i>G. Lazzi, University of Southern California, USA</i></p> 	<p>Shared Knowledge, Gaps and Challenges of Microdosimetry: Realistic Models of Cells and Endoplasmic Reticulum (Invited)</p> <p><i>A. Denzi<sup>1</sup>, C. Merla<sup>2</sup>, F. M. André<sup>3</sup>, T. Garcia-Sanchez<sup>3</sup>, L. M. Mir<sup>3</sup>, F. Apollonio<sup>1</sup>, M. Liberti<sup>1</sup>, <sup>1</sup>Sapienza University of Rome, Italy, <sup>2</sup>ENEA, Division of Health Protection Technologies, Italy, <sup>3</sup>CNRS UMR 8203, IGV, University Paris Sud, France</i></p> 
8:00-9:30	<p>8:30 A Compact Energy Efficient CMOS Permittivity Sensor Based on Multi-Harmonic Downconversion and Tunable Impedance Bridge</p> <p><i>Gerasimos Vlachogiannakis, Z. Hu, H. T. Shivamurthy, A. Neto, M. A.P. Pertijs, L. de Vreede, M. Spirito, Tu Delft, Netherlands</i></p>	<p>8:30 A Ka-band Beamformer for Wireless Power Transfer to Body Area Networks</p> <p><i>N. Saiz, G. Buckmaster, T. Lee, Stanford University, USA</i></p>	<p>8:30 Development of a Tissue Dielectric Properties Model Based on Maxwell-Fricke Mixture Theory</p> <p><i>S. Etoz, W. Greisch, C.L. Brace, - University of Wisconsin-Madison, USA</i></p>
8:50	<p>8:50 Homodyne and Heterodyne Terahertz Dielectric Sensors: Prototyping and Comparison in BiCMOS Technology for Lab-on-Chip Applications</p> <p><i>D. Wang<sup>1</sup>, K. Schmalz<sup>1</sup>, M. H. Eissa<sup>1</sup>, J. Borngraeber<sup>1</sup>, M. Kucharski<sup>1</sup>, M. Elkhoully<sup>2</sup>, M. Ko<sup>1</sup>, Y. Wang<sup>1</sup>, H. J. Ng<sup>1</sup>, J. Yun<sup>1</sup>, B. Tillack<sup>1</sup>, D. Kissinger<sup>1</sup>, <sup>1</sup>IHP Microelectronics, Germany, <sup>2</sup>Robert Bosch GmbH, Germany</i></p>	<p>8:50 NEMS Magnetolectric Antennas for Biomedical Application</p> <p><i>H. Lin, M. Zaeimbashi, N. Sun, X. Liang, H. Chen, C. Dong, A. Matyushov, X. Wang, Y. Guo, Y. Gao, N. Sun, Northeastern University, USA</i></p>	<p>8:50 Reproducibility Evaluation of Composite Dielectric Materials Based on an Error Propagation Model</p> <p><i>B. Hattenhorst, C. Baer, T. Musch, Ruhr University Bochum, Germany</i></p>
9:10	<p>9:10 Towards high-transconductance graphene high-speed biosensors</p> <p><i>W. Wei<sup>1</sup>, S. Mhedhbi<sup>1</sup>, P. Tilmant<sup>1</sup>, H. Happy<sup>2</sup>, E. Pallecchi<sup>1</sup>, <sup>1</sup>IEMN, Lille, France, <sup>2</sup>Univ. Lille &amp; IEMN, France</i></p>	<p>9:10 UHF RFID Sensor Tag Antenna Concept for Stable and Distance Independent Remote Monitoring</p> <p><i>L. Görtschacher, W. Bösch, J. Grosinger, Graz University of Technology, Austria</i></p>	<p>9:10 Molecular dynamics simulations in service of microwave dielectric analysis of biomolecules</p> <p><i>M. Cifra, P. Jiří, D. Havelka, O. Krivosudský, Institute of Photonics and Electronics of The Czech, Czech Republic</i></p>
9:30-10:00	<p>Interactive forum, student paper competition, coffee break</p> <p>Room: 204AB</p>		





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**FRIDAY, 15 JUNE 2018, 10:00 to 13:20**

<b>10:00-10:40</b>	<b>Plenary session: Is There a Fundamental Law of Health and Disease?</b> <b>Speaker: Dr. Chung-Kang Peng, Beth Israel Deaconess Medical Center/Harvard Medical School (BIDMC/HMS)</b> <b>Room: 201A</b>				
<b>Session FR2A</b> <b>Microwave imaging and MRI</b> Chairs: Abbas Omar, Xudong Chen Room: 201A	<b>Session FR2B</b> <b>Microwave and antenna for wireless power &amp; wearables</b> Chairs: Aydin Farajidavar, Simon Hemour Room: 201B	<b>Session FR2C</b> <b>Biosensors</b> Chairs: Arnaud Pothier, Pingshan Wang Room: 201C			
<b>10:50</b> Recent advances in RF Aspects of Magnetic Resonance Imaging (Invited) <i>R. Caverly, Villanova University, USA</i>		<b>10:50</b> RF in Medicine: Current Status and Future Directions of Antennas and Wireless Power (Invited) <i>Y. Guo, National Univ. of Singapore, Singapore</i>		<b>10:50</b> Biosensors for Measuring the Dielectric Response of Single Cells to Applied Stress (Invited) <i>G. Bridges, University of Manitoba, Canada</i>	
<b>11:20</b> Real-time Microwave Imaging of Breast Phantoms with Constrained Deconvolution of Planar Data <i>D. Tajik, F. Foroutan<sup>1</sup>, D. S. Shumakov<sup>2</sup>, A. D. Pitcher<sup>1</sup>, E. A. Eveleigh<sup>1</sup>, N. K. Nikolova<sup>1</sup>, <sup>1</sup>McMaster University, Canada, <sup>2</sup>Health Canada, Canada</i>	<b>11:20</b> Evaluating the Microwave Performance of Epidermal Electronics with Equivalent Transmission Line Modeling <i>T. Chang, J. A. Fan, T. H. Lee, Stanford Univ., USA</i>	<b>11:20</b> A Four-Layer Phantom for Testing In-Vitro Microwave-Based Sensing Approach in Intra-Cranial Pressure Monitoring <i>J. C. Velandar, S. R. Mohd Shah, M.D. Perez, N. B. B. Asan, D. Nowinski, A. Lewen, P. Enblad, R. Augustine, Uppsala University, Sweden</i>			
<b>11:40</b> A fast algorithm for microwave biomedical imaging with inhomogeneous background <i>K. Xu<sup>1</sup>, Y. Zhong<sup>2</sup>, X. Chen<sup>3</sup>, <sup>1</sup>Hangzhou Dianzi University, China, <sup>2</sup>Institute of High Performance Computing, Singapore, <sup>3</sup>National Univ. of Singapore, Singapore</i>	<b>11:40</b> High Efficiency Wireless Power Transfer System using Spiral DGS Resonators through Biological Tissues <i>S. Chalise, F. Tahar, M. R. Saad, A. Barakat, K. Yoshitomi, R. K. Pokharel, Kyushu Univ., Japan</i>	<b>11:40</b> Microwave Noninvasive Blood Glucose Monitoring Sensor: Penetration Depth and Sensitivity Analysis <i><sup>3</sup>H. Choi, <sup>2</sup>S. Luzio, <sup>1</sup>J. Beutler, <sup>3</sup>A. Porch, <sup>1</sup>University of Luxembourg, Luxembourg, <sup>2</sup>Swansea University, United Kingdom, <sup>3</sup>Cardif University, United Kingdom</i>			
<b>12:00</b> Realization of breast tissue-mimicking phantom materials: dielectric characterization in the 0.5-50 GHz frequency range <i>S. D. Meo, L. Pasotti, M. Pasian, G. Matrone, - Univ. of Pavia, Italy</i>	<b>12:00</b> High-Q Implantable Resonator for Wireless Power delivery <i>L. D. Trocchio<sup>1</sup>, J-L. Lachaud<sup>1</sup>, C. Dejous<sup>1</sup>, A. Kuhn<sup>2</sup>, S. Hemour<sup>3</sup>, <sup>1</sup>Univ. of Bordeaux, Talence, France, <sup>2</sup>Univ. of Bordeaux, Bordeaux, France, <sup>3</sup>Univ. of Bordeaux, Pessac, France</i>	<b>12:00</b> Microwave Sensing Based on Peelable Microfluidic Thin Film Resonator <i>R. Wang, L. Jiang, Univ. of Hong Kong, Hong Kong</i>			
<b>12:20-13:20</b> <b>Boxed Lunch</b>					





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**FRIDAY, 15 JUNE 2018, 13:20 to 15:40**

	<b>Session FR3A</b> <b>Biomedical radar</b> Chairs: Negar Tavassolian, José-María Muñoz-Ferreras Room: 201A	<b>Session FR3B</b> <b>Wireless implantable monitoring</b> Chairs: Xun Gong, Roberto Gómez-García Room: 201B	<b>Session FR3C</b> <b>Bio-tissue characterization I</b> Chairs: Natalia Nikolova, Katia Grenier Room: 201C
13:20-15:10	<b>13:20</b> Biomedical Radars Using Self-Injection-Locking Technology (Invited) <i>T.-S. J. Horng, National Sun Yat-Sen University, Taiwan</i> 	<b>13:20</b> Multi-Channel Wireless and Battery-Less Brain Signal Monitoring System (Invited) <i>J. Volakis, Florida International University, USA</i> 	<b>13:20</b> Low Volume and Label-free Molecules Characterization and Cell Monitoring with Microwave Dielectric Spectroscopy (Invited) <i>K. Grenier<sup>1</sup>, A. Tamra<sup>2</sup>, A. Zedek<sup>2</sup>, G. Poiroux<sup>1</sup>, F. Artis<sup>1</sup>, T. Chen<sup>1</sup>, W. Chen<sup>1</sup>, M. Poupot<sup>3</sup>, J. Fournie<sup>3</sup>, D. Dubuc<sup>1</sup>, <sup>1</sup>LAAS-CNRS, France, <sup>2</sup>Laboratoire d'analyse et d'architecture des systèmes, France, <sup>3</sup>INSERM-CRCT, France</i> 
	<b>13:50</b> Multi-Target Vital-Signs Monitoring Using a Dual-Beam Hybrid Doppler Radar <i><sup>1</sup>M. Nosrati, <sup>2</sup>S. Shahsavari, <sup>1</sup>N. Tavassolian, <sup>1</sup>Stevens Institute of Technology, USA, <sup>2</sup>New York University, USA</i>	<b>13:50</b> Ultrasonic Energy Harvesting Scheme for Implantable Active Stent <i>S. Islam, A. Kim, Temple University, USA</i>	<b>13:50</b> A Noninvasive Human Blood Glucose Measurement by Microwave Dielectric Spectroscopy: Drift Correction Technique <i>M. Nakamura<sup>1</sup>, T. Tajima<sup>1</sup>, M. Seyama<sup>1</sup>, K. Waki<sup>2</sup>, <sup>1</sup>Nippon Telegraph and Telephone Corp., Japan, <sup>2</sup>The University of Tokyo, Japan</i>
	<b>14:10</b> Noise Tolerable Vital Sign Detection Using Phase Accumulated Demodulation for FMCW Radar System <i>W. F. Chang, K. W. Chen, C. L. Yang, National Cheng Kung University, Taiwan</i>	<b>14:10</b> Initial In-Vitro Trial for Intra-Cranial Pressure Monitoring Using Subdermal Proximity-Coupled Split-Ring Resonator <i>S. R. M. Shah<sup>1</sup>, J. C. Velander<sup>1</sup>, M. D. Perez<sup>1</sup>, N. B. B. Asan<sup>1</sup>, D. Nowinski<sup>1</sup>, A. Lewen<sup>1</sup>, P. Enblad<sup>1</sup>, R. Augustine<sup>1</sup>, M. Rajabi<sup>2</sup>, <sup>1</sup>Uppsala University, Sweden, <sup>2</sup>KTH Royal Institute of Technology, Sweden</i>	<b>14:10</b> A 60 GHz Mixer-based Reflectometer in 130nm SiGe BiCMOS Technology toward Dielectric Spectroscopy in Medical Applications <i>R. K. Yadav<sup>1</sup>, M. H. Eissa<sup>2</sup>, J. Wessel<sup>2</sup>, D. Kissinger<sup>1,3</sup>, <sup>1</sup>IHP GmbH, Germany, <sup>2</sup>IHP Microelectronics, Germany, <sup>3</sup>Technische University Berlin, Germany</i>
	<b>14:30</b> Monitoring of Healing Progression of Cranial Vault using One-dimensional Pulsed Radar Technique <i><sup>1</sup>D. Lee, <sup>1</sup>G. Shaker, <sup>2</sup>D. Nowinski, <sup>2</sup>R. Augustine, <sup>1</sup>University of Waterloo, Canada, <sup>2</sup>Uppsala University, Sweden</i>	<b>14:30</b> Low-Impedance Probes for Wireless Monitoring of Neural Activation <i>C. Moncion, S. Bojja-Venkatakrishnan, J. R. Diaz, J. Volakis, Florida International University, USA</i>	<b>14:30</b> Measurement of Broadband Temperature-Dependent Dielectric Properties of Liver Tissue <i>H. Fallahi, P. Prakash, Kansas State University, USA</i>
	<b>14:50</b> A Supervised Learning Approach for Real Time Vital Sign Radar Harmonics Cancellation <i>J. J. Saluja, J. J. Casanova, J. Lin, University of Florida, USA</i>	<b>14:50</b> Towards A Distributed Multi-Channel System for Studying Gastrointestinal Tract <i>R. Bao, A. Javan-Khoshkholgh, W. Alrofati, A. Farajidavar, New York Institute of Technology, USA</i>	<b>14:50</b> Validation of Clausius-Mossotti Function in Single-Cell Dielectrophoresis <i>X. Du, X. Ma, H. Li, Y. Ning, X. Cheng, J. Hwang, Lehigh University, USA</i>
15:10-15:40	Interactive forum, student paper competition, coffee break Room: 204AB		





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	<b>Session FR4A</b> <b>Pulsed fields for biomedical applications</b> Chairs: Roberto Gómez-García, Xiaoguang Liu Room: 201A	<b>Session FR4B</b> <b>Biomedical signal monitoring and communication</b> Chairs: Hung Cao, Chung-Tse (Michael) Wu Room: 201B	<b>Session FR4C</b> <b>Bio-tissue characterization II</b> Chairs: Perry Li, Abbas Omar Room: 201C
15:40-17:30	<b>15:40</b> Miniature Flexible Planar Microwave and RF Energy Delivery Structure for New Endoscopic Procedures – Design and Initial Pre-Clinical Data <i>C. P. Hancock, Bangor Univ., United Kingdom</i>	<b>15:40</b> Soft Wearable Sensors for Precise Physiological Signals Measurements Based on the Fabric-Substrate Complementary Split-Ring Resonator <i>P. Chan, T.-C. Chang, K.-W. Chen, C.-L. Yang, National Cheng Kung Univ., Taiwan</i>	<b>15:40</b> Material Characterization for the Detection of African Trypanosomes using RNA-Derivatized Surface Layers with mm-wave and THz Sensors (Invited) <i>M. Mueh<sup>1</sup>, R. Knieß<sup>1</sup>, H. U. Göringer<sup>1</sup>, C. Damm<sup>2</sup>, <sup>1</sup>Technische Univ. Darmstadt, Germany, <sup>2</sup>Ulm Univ., Germany</i> 
	<b>16:00</b> Non-Contact Picosecond Pulsed Electric Fields Up Regulate SOX2 Gene Expression in Mesenchymal Stem Cells <i>R. A. Petrella, P. A. Mollica, M. Zamponi, S. Xiao, R. D. Bruno, P. C. Sachs, Old Dominion Univ., USA</i>	<b>16:00</b> Characterization of Passive Wireless Electrocardiogram Acquisition in Adult Zebrafish <i>S. Gruber<sup>1</sup>, T. Le<sup>1</sup>, M. Huerta<sup>1</sup>, K. Wilson<sup>1</sup>, J. Yang<sup>2</sup>, X. Xu<sup>2</sup>, H. Cao<sup>1</sup>, <sup>1</sup>Univ. of Washington, USA, <sup>2</sup>Mayo Clinic, USA</i>	<b>16:10</b> Measuring Ion-Pairing in Buffer Solutions with Microwave Microfluidics <i>A. C. Stelson, C. E. Little, N. Orloff, C. Long, J. Booth, National Institute of Standards and Technology, USA</i>
	<b>16:20</b> A Microwave Ablation System for the Visualisation and Treatment of Pulmonary Nodules and Tumours <i>S. C. Preston, W. J. Taplin, A. W. Jones, C. P. Hancock, Bangor Univ., United Kingdom</i>	<b>16:20</b> A Miniature Wireless 64-channel System for Monitoring Gastrointestinal Activity <i>A. Javan-Khoshkholgh<sup>1</sup>, W. Alrofati<sup>1</sup>, Z. Abukhalaf<sup>1</sup>, A. Ibrahim<sup>2</sup>, M. Kiani<sup>2</sup>, A. Farajidavar<sup>1</sup>, <sup>1</sup>New York Institute of Technology, USA, <sup>2</sup>The Pennsylvania State University, USA</i>	<b>16:30</b> Discrimination of Glioblastoma Cancer Stem Cells by their UHF-Dielectrophoresis Crossover Frequency <i>M. Rémi - XLIM CNRS - Université de Limoges, France</i>
	<b>16:40</b> Electroporabilization of Isolated Cancer Stem Cells with a Novel and Versatile Nanosecond Pulse Generator <i>I. W. Davies<sup>1</sup>, C. Merla<sup>2</sup>, J. Bishop<sup>3</sup>, C. Palego<sup>1</sup>, C. P. Hancock<sup>1</sup>, <sup>1</sup>Bangor University, United Kingdom, <sup>2</sup>Enea, Italy, <sup>3</sup>Creo Medical, United Kingdom</i>	<b>16:40</b> Wireless Passive Monitoring of Electrocardiogram in Firefighters <i>T. Le, M. Huerta, A. Moravec, H. Cao, Univ. of Washington, USA</i>	<b>16:50</b> Ferromagnetic Resonance Characterization of Magnetic Nanowires for Biolabel applications <i>W. Zhou, J. Um, Y. Zhang, A. Nelson, B. Stadler, R. Franklin, Univ. of Minnesota, USA</i>
	<b>17:00</b> Flexible Ablation Device with Single Applicator Structure that Supports both Radiofrequency and Microwave Energy Delivery <i>P. B. Burn<sup>1</sup>, P. L. Shah<sup>2</sup>, C. P. Hancock<sup>2</sup>, <sup>1</sup>Bangor Univ., United Kingdom, <sup>2</sup>Imperial College London, United Kingdom</i>	<b>17:00</b> Bone Conduction: A Feasible Concept for Ear-to-Ear Communication? <i>J.-C. Edelmann, G. Prokop, T. Ussmueller, Univ. of Innsbruck, Austria</i>	<b>17:10</b> Effect of Thickness Inhomogeneity in Fat Tissue on In-Body Microwave Propagation <i>N. B. B. Asan<sup>1</sup>, J. C. Velandar<sup>1</sup>, S. R. M. Shah<sup>1</sup>, M. D. Perez<sup>1</sup>, E. Hassan<sup>2</sup>, T. J. Blokhuis<sup>3</sup>, T. Voigt<sup>1</sup>, R. Augustine<sup>1</sup>, <sup>1</sup>Uppsala Univ., Sweden, <sup>2</sup>Umeå University, Sweden, <sup>3</sup>Maastricht University Medica I Center, Netherlands</i>
17:30-18:30	<b>Reception</b> <b>Room: 204AB</b>		





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## Interactive Forum, Room 204AB

Chair: Hung Cao

Accuracy Enhancement of Doppler Radar-Based Heartbeat Rate Detection Using Chest-Wall Acceleration

*Mehrdad Nosrati, Negar Tavassolian, Stevens Institute of Technology*

A Novel Millimeter Wave Radar Sensor for Medical Signal Detection

*Salam Benchikh, Homa Arab, Serioja O. Tatu, Institut National de la Recherche Scientifique, Montreal, Quebec, Canada*

Robust Radar-Based Human Motion Recognition with L1-Norm Linear Discriminant Analysis

*Panos P. Markopoulos<sup>1</sup>, Fauzia Ahmad<sup>2</sup>, <sup>1</sup>Rochester Institute of Technology, Rochester, NY, USA, <sup>2</sup>Temple Univ., Philadelphia, PA, USA*

A Novel Miniature Tissue Resection Device with Moveable Jaws that Combines 400KHz and 5.8GHz Energy for Cutting and Coagulation

*Louis A. Turner<sup>1</sup>, Patrick B. Burn<sup>1</sup>, James E. Coad<sup>2</sup>, Christopher P. Hancock<sup>1</sup>, <sup>1</sup>Bangor University, United Kingdom, <sup>2</sup>WVU Pathology Laboratory for Translational Medicine, WV, USA*

Feasibility Study of Applying Ferromagnetic Contrast Agents in Thermoacoustic Imaging

*Dajun Zhang, Xiong Wang, ShanghaiTech Univ., Shanghai, China*

Total Variation Constrained Sparse Reconstruction of Behind-wall Multiple Stationary Human Targets

*Qiang An<sup>1</sup>, Jianqi Wang<sup>2</sup>, Ahmad Hoorfar<sup>1</sup>, <sup>1</sup>Villanova Univ., Villanova, USA, <sup>2</sup>Fourth Military Medical University, China*

Acoustic Transmission of Biomedical Data via the Intercommunication System of an MRI

*Viktoria Kalpen Fabian Eichin, Thomas Ussmueller, Univ. of Innsbruck, Innsbruck, Austria*

Real-Time Evaluation of Heart Rate and Heart Rate Variability Using Microwave Reflectometry

*Atsushi Mase<sup>1,2</sup>, Yuichiro Kogi<sup>2</sup>, Toru Maruyama<sup>1</sup>, <sup>1</sup>Kyushu Univ., Fukuoka, Japan, <sup>2</sup>Fukuoka Institute of Technology, Fukuoka, Japan*

Miniaturized Wireless Power Transfer Module Design for Brain Optoelectronic Implant

*Dipon Kumar Biswas, Nishat Tarannum Tasneem, Joshua Hyde, Melissa Sinclair, Ifana Mahub, Univ. of North Texas, Denton, USA*

Improving the Efficiency of Magnetic Induction-Based Wireless Body Area Network (WBAN)

*Negar Golestani, Mahta Moghaddam, Univ. of Southern California, Los Angeles, CA, USA*

Numerical Evaluation of Sensitivity of Microwave Metamaterial and Microstrip TL Sensors to Blood Glucose Concentration

*Jan Vrba, David Vrba, Luis Díaz, Ondrej Fiser. Czech Technical Univ. in Prague, Prague 6, Czech Republic*

Inductive Ear-to-Ear Communication Systems: Coupling Enhancement by means of Constructional Coil Features

*Jan-Christoph Edelmann, Simon Bergmueller, Dominik Mair, Gilbert Prokop, Thomas Ussmueller, Univ. of Innsbruck, Innsbruck, Austria*

X-Band Microwave Radiation Induced Biological Effects in Rats Skin: Plausible Role of Heat Shock Proteins.

*Saurabh Verma<sup>1</sup>, Gaurav K. Keshri<sup>2</sup>, Manish Sharma<sup>2</sup>, Kumar v. Mani<sup>1</sup>, Santanu Kamarkar<sup>3</sup>, Satish Chauhan<sup>1</sup>, Asheesh Gupta<sup>1</sup>, <sup>1</sup>Defence Institute of Physiology and Allied Science, India, <sup>2</sup>Mentor Graphics, OR, USA, <sup>3</sup>Microwave Tube Research and Development Centre, India*

Characterization of Microwave Dicke Radiometer for Non-Invasive Tissue Thermometry

*Sathya Priya Sugumar, Kavitha Arunachalam, ChittiVenkata Krishnamurthy, Indian Institute of Technology Madras, Chennai, India*

A Highly Sensitive RF Biosensor Based-on Splitter/Combiner Configuration for Single-Cell Characterization

*Abdulrahman Alghamdi, Saeed Mohammadi, Purdue Univ., West Lafayette, IN, USA*

Predicting Nonthermal Electroporation of Intervertebral Disc Tissue

*Steven R. Schwartz, Gary L. Thompson, Rowan University, NJ, USA*

Simulation of Electroporation in Cell Using Bipolar AC Pulse

*Hao Qiu<sup>1</sup>, Xianping Wang<sup>2</sup>, Wenbing Zhao<sup>3</sup>, <sup>1</sup>Fort Valley State University, GA, USA, <sup>2</sup>Southeast Missouri State University, MO, USA, <sup>3</sup>Cleveland State Univ., USA*







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Correlation Between Dielectric Properties and Women Age for BreastCancer Detection at 30 GHz

*Simona Di Meo<sup>1</sup>, Giulia Matrone<sup>1</sup>, Pedro Fidel Espín-López<sup>1</sup>, Andrea Martellosio<sup>1</sup>, Marco Pasian<sup>1</sup>, Maurizio Bozzi<sup>1</sup>, Luca Perregini<sup>1</sup>, Andrea Mazzanti<sup>1</sup>, Francesco Svelto<sup>1</sup>, Paul Summers<sup>2</sup>, Giuseppe Renne<sup>2</sup>, Lorenzo Preda<sup>1</sup>, Massimo Bellomi<sup>2</sup>, <sup>1</sup>Univ. of Pavia, Pavia, Italy, <sup>2</sup>European Institute of Oncology, Italy*

Preliminary Measurements of Magnetic Nanoparticles as Potential Biomarkers for Impedance Flow Cytometry

*Paweł Barmuta<sup>1</sup>, Izabela Kamińska<sup>2</sup>, Juncheng Bao<sup>1</sup>, Tomislav Marković<sup>1</sup>, Božena Sikora<sup>2</sup>, Krzysztof Fronc<sup>2</sup>, Dominique Schreurs<sup>1</sup>, Ilja Ocket<sup>1,3</sup>, <sup>1</sup>Katholieke Univ. Leuven, Belgium, <sup>2</sup>Polish Academy of Sciences, Poland, <sup>3</sup>IMEC, Belgium*

Spurious Material Detection on Functionalized Thin-Film Sensors using Multiresonant Split-Rings

*Mario Mueh<sup>1</sup>, Christian Damm<sup>2</sup>, <sup>1</sup>Technische Univ. Darmstadt, Germany, <sup>2</sup>Ulm Univ., Germany*

Real-time microscopic observation of biological interactions with microwave fields

*Catrin F. Williams Jonathan Lees, David Lloyd, Gilles M. Geroni, Stephen Jones, Stephanie Ambala, Wilfried Baradat, Guillaume Comat, Abdoul Aboubakary, Steeven Voisin, Adrian Porch, Cardiff University, United Kingdom*

Numerical Study of Pore Density Distribution and Pore Formation Energy

*Hao Qiu<sup>1</sup>, Xianping Wang<sup>2</sup>, Ravindra Joshi<sup>3</sup>, Wenbing Zhao<sup>4</sup>, <sup>1</sup>Fort Valley State University, GA, USA, <sup>2</sup>Southeast Missouri State University, MO, USA, <sup>3</sup>Texas Tech Univ., Lubbock, TX, USA, <sup>4</sup>Cleveland State Univ., USA*

NanoNeuroRFID: A Low Loss Brain Implantable Device Based on Magnetolectric Antenna

*Mohsen Zaeimbashi, Hwaider Lin, Zhiguang Wang, Huaihao Chen, Shadi Emam, Yuan Gao, Nian X. Sun, Northeastern Univ., Boston, MA, USA*

Power Budget and Reconstruction Algorithms for Through the Wall Radar Imaging Systems

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