




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. Denzi¹, C. Merla², F. M. André³, T. Garcia-Sanchez³, L. M. Mir³, F. Apollonio¹, M. Liberti¹, ¹Sapienza University of Rome, Italy, ²ENEA, Division of Health Protection Technologies, Italy, ³CNRS 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>
	<p>8:50 Homodyne and Heterodyne Terahertz Dielectric Sensors: Prototyping and Comparison in BiCMOS Technology for Lab-on-Chip Applications</p> <p><i>D. Wang¹, K. Schmalz¹, M. H. Eissa¹, J. Borngraeber¹, M. Kucharski¹, M. Elkhoully², M. Ko¹, Y. Wang¹, H. J. Ng¹, J. Yun¹, B. Tillack¹, D. Kissinger¹, ¹IHP Microelectronics, Germany, ²Robert 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>
	<p>9:10 Towards high-transconductance graphene high-speed biosensors</p> <p><i>W. Wei¹, S. Mhedhbi¹, P. Tilmant¹, H. Happy², E. Pallecchi¹, ¹IEMN, Lille, France, ²Univ. Lille & 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

10:00-10:40	Plenary session: Is There a Fundamental Law of Health and Disease? Speaker: Dr. Chung-Kang Peng, Beth Israel Deaconess Medical Center/Harvard Medical School (BIDMC/HMS) Room: 201A			
	Session FR2A Microwave imaging and MRI Chairs: Abbas Omar, Xudong Chen Room: 201A	Session FR2B Microwave and antenna for wireless power & wearables Chairs: Aydin Farajidavar, Simon Hemour Room: 201B	Session FR2C Biosensors Chairs: Arnaud Pothier, Pingshan Wang Room: 201C	
	10:50 Recent advances in RF Aspects of Magnetic Resonance Imaging (Invited) <i>R. Caverly, Villanova University, USA</i> 	10:50 RF in Medicine: Current Status and Future Directions of Antennas and Wireless Power (Invited) <i>Y. Guo, National Univ. of Singapore, Singapore</i> 	10:50 Biosensors for Measuring the Dielectric Response of Single Cells to Applied Stress (Invited) <i>G. Bridges, University of Manitoba, Canada</i> 	
10:50-12:20	11:20 Real-time Microwave Imaging of Breast Phantoms with Constrained Deconvolution of Planar Data <i>D. Tajik, F. Foroutan¹, D. S. Shumakov², A. D. Pitcher¹, E. A. Eveleigh¹, N. K. Nikolova¹, ¹McMaster University, Canada, ²Health Canada, Canada</i>	11:20 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>	11:20 A Four-Layer Phantom for Testing In-Vitro Microwave-Based Sensing Approach in Intra-Cranial Pressure Monitoring <i>J. C. Velander, S. R. Mohd Shah, M.D. Perez, N. B. B. Asan, D. Nowinski, A. Lewen, P. Enblad, R. Augustine, Uppsala University, Sweden</i>	
	11:40 A fast algorithm for microwave biomedical imaging with inhomogeneous background <i>K. Xu¹, Y. Zhong², X. Chen³, ¹Hangzhou Dianzi University, China, ²Institute of High Performance Computing, Singapore, ³National Univ. of Singapore, Singapore</i>	11:40 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>	11:40 Microwave Noninvasive Blood Glucose Monitoring Sensor: Penetration Depth and Sensitivity Analysis <i>³H. Choi, ²S. Luzio, ¹J. Beutler, ³A. Porch, ¹University of Luxembourg, Luxembourg, ²Swansea University, United Kingdom, ³Cardif University, United Kingdom</i>	
	12:00 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>	12:00 High-Q Implantable Resonator for Wireless Power delivery <i>L. D. Trocchio¹, J-L. Lachaud¹, C. Dejous¹, A. Kuhn², S. Hemour³, ¹Univ. of Bordeaux, Talence, France, ²Univ. of Bordeaux, Bordeaux, France, ³Univ. of Bordeaux, Pessac, France</i>	12:00 Microwave Sensing Based on Peelable Microfluidic Thin Film Resonator <i>R. Wang, L. Jiang, Univ. of Hong Kong, Hong Kong</i>	
12:20-13:20	Boxed Lunch			





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

	Session FR3A Biomedical radar Chairs: Negar Tavassolian, José-María Muñoz-Ferreras Room: 201A	Session FR3B Wireless implantable monitoring Chairs: Hong Hong, Roberto Gómez-García Room: 201B	Session FR3C Bio-tissue characterization I Chairs: Natalia Nikolova, Katia Grenier Room: 201C
	13:20 Biomedical Radars Using Self-Injection-Locking Technology (Invited) <i>T.-S. J. Horng, National Sun Yat-Sen University, Taiwan</i> 	13:20 Multi-Channel Wireless and Battery-Less Brain Signal Monitoring System (Invited) <i>J. Volakis, Florida International University, USA</i> 	13:20 Low Volume and Label-free Molecules Characterization and Cell Monitoring with Microwave Dielectric Spectroscopy (Invited) <i>K. Grenier¹, A. Tamra², A. Zedek², G. Poiroux¹, F. Artis¹, T. Chen¹, W. Chen¹, M. Poupot³, J. Fournie³, D. Dubuc¹, ¹LAAS-CNRS, France, ²Laboratoire d'analyse et d'architecture des systèmes, France, ³INSERM-CRCT, France</i> 
13:20-15:10	13:50 Multi-Target Vital-Signs Monitoring Using a Dual-Beam Hybrid Doppler Radar <i>¹M. Nosrati, ²S. Shahsavari, ¹N. Tavassolian, ¹Stevens Institute of Technology, USA, ²New York University, USA</i>	13:50 Ultrasonic Energy Harvesting Scheme for Implantable Active Stent <i>S. Islam, A. Kim, Temple University, USA</i>	13:50 A Noninvasive Human Blood Glucose Measurement by Microwave Dielectric Spectroscopy: Drift Correction Technique <i>M. Nakamura¹, T. Tajima¹, M. Seyama¹, K. Waki², ¹Nippon Telegraph and Telephone Corp., Japan, ²The University of Tokyo, Japan</i>
	14:10 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>	14:10 Initial In-Vitro Trial for Intra-Cranial Pressure Monitoring Using Subdermal Proximity-Coupled Split-Ring Resonator <i>S. R. M. Shah¹, J. C. Velander¹, M. D. Perez¹, N. B. B. Asan¹, D. Nowinski¹, A. Lewen¹, P. Enblad¹, R. Augustine¹, M. Rajabi², ¹Uppsala University, Sweden, ²KTH Royal Institute of Technology, Sweden</i>	14:10 A 60 GHz Mixer-based Reflectometer in 130nm SiGe BiCMOS Technology toward Dielectric Spectroscopy in Medical Applications <i>R. K. Yadav¹, M. H. Eissa², J. Wessel², D. Kissinger^{1,3}, ¹IHP GmbH, Germany, ²IHP Microelectronics, Germany, ³Technische University Berlin, Germany</i>
	14:30 Monitoring of Healing Progression of Cranial Vault using One-dimensional Pulsed Radar Technique <i>¹D. Lee, ¹G. Shaker, ²D. Nowinski, ²R. Augustine, ¹University of Waterloo, Canada, ²Uppsala University, Sweden</i>	14:30 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>	14:30 Measurement of Broadband Temperature-Dependent Dielectric Properties of Liver Tissue <i>H. Fallahi, P. Prakash, Kansas State University, USA</i>
	14:50 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>	14:50 Towards A Distributed Multi-Channel System for Studying Gastrointestinal Tract <i>R. Bao, A. Javan-Khoshkholgh, W. Arofati, A. Farajidavar, New York Institute of Technology, USA</i>	14:50 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>
	Interactive forum, student paper competition, coffee break Room: 204AB		
15:10-15:40			





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FRIDAY, 15 JUNE 2018, 15:40 to 18:30

	Session FR4A Pulsed fields for biomedical applications Chairs: Roberto Gómez-García, Xiaoguang Liu Room: 201A	Session FR4B Biomedical signal monitoring and communication Chairs: Hung Cao, Chung-Tse (Michael) Wu Room: 201B	Session FR4C Bio-tissue characterization II Chairs: Perry Li, Abbas Omar Room: 201C
15:40-17:30	15:40 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>	15:40 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>	15:40 Material Characterization for the Detection of African Trypanosomes using RNA-Derivatized Surface Layers with mm-wave and THz Sensors (Invited) <i>M. Mueh¹, R. Knieß¹, H. U. Göringer¹, C. Damm², ¹Technische Univ. Darmstadt, Germany, ²Ulm Univ., Germany</i> 
	16:00 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>	16:00 Characterization of Passive Wireless Electrocardiogram Acquisition in Adult Zebrafish <i>S. Gruber¹, T. Le¹, M. Huerta¹, K. Wilson¹, J. Yang², X. Xu², H. Cao¹, ¹Univ. of Washington, USA, ²Mayo Clinic, USA</i>	16:10 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>
	16:20 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>	16:20 A Miniature Wireless 64-channel System for Monitoring Gastrointestinal Activity <i>A. Javan-Khoshkholgh¹, W. Alrofati¹, Z. Abukhalaf¹, A. Ibrahim², M. Kiani², A. Farajidavar¹, ¹New York Institute of Technology, USA, ²The Pennsylvania State University, USA</i>	16:30 Discrimination of Glioblastoma Cancer Stem Cells by their UHF-Dielectrophoresis Crossover Frequency <i>M. Rémi - XLIM CNRS - Université de Limoges, France</i>
	16:40 Electroporabilization of Isolated Cancer Stem Cells with a Novel and Versatile Nanosecond Pulse Generator <i>I. W. Davies¹, C. Merla², J. Bishop³, C. Palego¹, C. P. Hancock¹, ¹Bangor University, United Kingdom, ²Enea, Italy, ³Creo Medical, United Kingdom</i>	16:40 Wireless Passive Monitoring of Electrocardiogram in Firefighters <i>T. Le, M. Huerta, A. Moravec, H. Cao, Univ. of Washington, USA</i>	16:50 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>
	17:00 Flexible Ablation Device with Single Applicator Structure that Supports both Radiofrequency and Microwave Energy Delivery <i>P. B. Burn¹, P. L. Shah², C. P. Hancock², ¹Bangor Univ., United Kingdom, ²Imperial College London, United Kingdom</i>	17:00 Bone Conduction: A Feasible Concept for Ear-to-Ear Communication? <i>J.-C. Edelmann, G. Prokop, T. Ussmueller, Univ. of Innsbruck, Austria</i>	17:10 Effect of Thickness Inhomogeneity in Fat Tissue on In-Body Microwave Propagation <i>N. B. B. Asan¹, J. C. Velandar¹, S. R. M. Shah¹, M. D. Perez¹, E. Hassan², T. J. Blokhuis³, T. Voigt¹, R. Augustine¹, ¹Uppsala Univ., Sweden, ²Umeå University, Sweden, ³Maastricht University Medica I Center, Netherlands</i>
17:30-18:30	Reception Room: 204AB		





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Interactive Forum, Room 204AB

Friday, 15 June 2018, 9:30~10:00 and 15:10~15:40

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. Markopoulos¹, Fauzia Ahmad², ¹Rochester Institute of Technology, Rochester, NY, USA, ²Temple 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. Turner¹, Patrick B. Burn¹, James E. Coad², Christopher P. Hancock¹, ¹Bangor University, United Kingdom, ²WVU 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 An¹, Jianqi Wang², Ahmad Hoorfar¹, ¹Villanova Univ., Villanova, USA, ²Fourth 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^{1,2}, Yuichiro Kogi², Toru Maruyama¹, ¹Kyushu Univ., Fukuoka, Japan, ²Fukuoka 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 Mahbub, 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 Diaz, 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 Verma¹, Gaurav K. Keshri¹, Manish Sharma², Kumar v. Mani¹, Santanu Kamarkar³, Satish Chauhan¹, Asheesh Gupta¹, ¹Defence Institute of Physiology and Allied Science, India, ²Mentor Graphics, OR, USA, ³Microwave 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





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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 Qiu¹, Xianping Wang², Wenbing Zhao³, ¹Fort Valley State University, GA, USA, ²Southeast Missouri State University, MO, USA, ³Cleveland State Univ., USA

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

Simona Di Meo¹, Giulia Matrone¹, Pedro Fidel Espín-López¹, Andrea Martellosio¹, Marco Pasian¹, Maurizio Bozzi¹, Luca Perregrini¹, Andrea Mazzanti¹, Francesco Svelto¹, Paul Summers², Giuseppe Renne², Lorenzo Preda¹, Massimo Bellomi², ¹Univ. of Pavia, Pavia, Italy, ²European Institute of Oncology, Italy

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

Paweł Barmuta¹, Izabela Kamińska², Juncheng Bao¹, Tomislav Marković¹, Božena Sikora², Krzysztof Fronc², Dominique Schreurs¹, Ilja Ocket^{1,3}, ¹Katholieke Univ. Leuven, Belgium, ²Polish Academy of Sciences, Poland, ³IMEC, Belgium

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

Mario Mueh¹, Christian Damm², ¹Technische Univ. Darmstadt, Germany, ²Ulm 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 Qiu¹, Xianping Wang², Ravindra Joshi³, Wenbing Zhao⁴, ¹Fort Valley State University, GA, USA, ²Southeast Missouri State University, MO, USA, ³Texas Tech Univ., Lubbock, TX, USA, ⁴Cleveland 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

Stefano Pisa¹, Emanuele Piuze¹, Erika Pittella¹, Paolo D'Atanasio², Alessandro Zambotti², Giulia Sacco¹, ¹Sapienza Univ. of Rome, Italy, ²ENEA Casaccia Research Center, Italy

Women in Microwaves Panel Session and Network Event

Thursday, 14 June 2018, 19:00~21:00

Location: Philadelphia Academy of the Fine Arts

Organizers and Event Hosts: Charlotte Blair, Sherry Hess, and Katia Grenier

Guest Speaker: Dr. Caterina Merla

Guest Talk: "Working at the frontier of engineer and biology: focus on linear and non-linear optical microspectroscopy to understand electropulsation mechanisms on cells"

This IMS and IMBioC joint event will emphasize building a network of women who work in microwaves and RF, as well as building an informal mentoring network that enables women to connect with other women of all ages and across industry, academia and biotechnology.

