

Cristiano Palego, PhD

Senior Lecturer, Bangor University, Bangor, UK

School of Computer Science and Electronic Engineering, Dean Street, Bangor, LL57 1UT

APPOINTMENTS

- **2013-** Senior Lecturer, Bangor University, Bangor, UK
- **2010-2017** Research Scientist, Lehigh University, Bethlehem PA, USA
- **2007-2010** Research Associate, Lehigh University, Bethlehem PA, USA
- **2003-2007** Research Assistant, XLIM Research Institute, Limoges, France
- **2002-2003** Visiting Student, IRCOM Research Institute, Limoges, France

QUALIFICATIONS

- **2017** Master-level **Certificate in Higher Education, Bangor University, Bangor, UK: Fellow**
- **2015** Master-level **Certificate in Higher Education, Bangor University, Bangor, UK: Associate Fellow**
- **2007** **PhD with honors in Microwave and Optical Communications, University of Limoges, France**
- **2003** Italian **Professional Electronics Engineer qualification.**
- **2003** **MSEE in Electronics Engineering, University of Perugia, Italy**

FELLOWSHIPS

- **Member (2013-)** **IEEE Technical Committee MTT-28** for the *“Biological Effects and Medical Applications of RF and Microwave”*
- **Member (2010-)** **European Microwave Association topical group on RF MEMS**
- **Member (2008-)** **European Microwave Association**
- **Senior Member (2002-)** **IEEE Microwave Theory and Techniques Society (MTT)**

SELECTED GRANTS

- **2020-2023: (PI)**
£69,339 **Welsh European Funding Office (WEFO):** “Characterization and eradication of pancreatic cancer cells by means of UHF signals”.
- **2020-2022 (Co-PI)**
£159,157 **Solar Photovoltaic Research Consortium (SPARCII):** “Wireless sensor network for autonomous biomass monitoring”.
- **20219-21: (PI)**
£69,339 **Welsh European Funding Office (WEFO):** “Behavioral insect telemetry basing on automatic tracking technology and machine learning”.
- **2019: (PI)**
£6,500 **Drapers’ Fund:** Measurement mission to Frank Reidy Research Center for Bioelectrics at Old Dominion University (Norfolk, VA) for “Development of nerve stimulator” and “Cell electostimulation through bipolar pulses”.

- **2017-2020:** (Co-PI) €3,978,517
EC Horizon 2020 Future Emerging Technologies (FET) Open: “Semiconductor-based ultra-wideband micromanipulation of Cancer Stem Cells”.
- **2017-2018:** (PI) £47,885
SMART Partnership (Pilot) Programme: “Milk monitor”.
- **2017-2018:** (PI) €4,500
Boiling Water Reactor Hub: “Microfluidic setup for safe and low-cost modelling of boiling water reactor coolant purity”.
- **2016-2019:** (PI) £69,339
Welsh European Funding Office (WEFO): “Long-range bumble-bee and Asian Hornet telemetry through metal nanoparticle coating and harmonic radar detection”.
- **2016-2019:** (PI) £70,526
Welsh European Funding Office (WEFO): “Development of a miniature vibration energy harvester for battery-less tracking of honey bees”.
- **2016-2017:** (PI) £18,913
Welsh European Funding Office (WEFO): “Micro-scale electrical characterization of adipose tissue for a microwave-based liposuction device”.
- **2015-2017:** (PI) £194,912
National Research Network in Advanced Engineering and Materials: “Integrated microfluidics-microwave technology for dielectric spectroscopy and manipulation”.
- **2012-2013:** (Co-PI) \$499,842
Defense Threat Reduction Agency (DTRA), USA: “Compact, fast intracellular biodetection by integrated nanopulse generator and planar microchamber”.
- **2011-1013** \$749,949
Air Force Research Lab (AFRL), “Metamaterial-based MEMS compact phase shifters”.
- **2010-2012:** (Co-PI) \$1,249,785
Missile Defense Agency (MDA), USA: “High power X-band MEMS phase shifters”.
- **2009-2010:** (Co-PI) \$55,000
Lehigh University Energy Research Initiative (ERI), USA: “Microelectrostatic generator for harvesting energy from environmental vibrations”.
- **2008-2009:** (Co-PI) \$40,000
Jet Propulsion Lab, (JPL NASA), USA: “Compact Ka-band phase shifter based on slow-wave structure”

TEACHING EXPERIENCE

- **2020-** **Bangor University, UK:** leader and creator of the **ICE-2123 module on Analogue Circuit Design a Communications**
- **2016-2020** **Bangor University, UK:** leader and the **IED-2012 module on Analogue Circuit Design a Communications**
- **2014-** **Bangor University, UK:** Leader and the **IED-2003 (formerly named IED-2053) module on Team Engineering Group project**
- **2013** **Lehigh University, USA:** demonstrator for the freshmen Introductory Physics Lab module.
- **2012** **Lehigh University, USA:** co-leader and creator of the postgraduate course on RF-MEMS

COMITTEE EXPERIENCE

- **2019-** **International Microwave Symposium** Technical Program Committee
- **2013-** **European Microwave Conference** Technical Program Committee
- **2013** *IEEE International Microwave Workshop Series on RF and Wireless Technologies for Biomedical and Healthcare applications* (2013).
- **2011-2013** Ph.D. thesis dissertations and general exams at Lehigh University.

CHAIRING AND ORGANIZING EXPERIENCE

- **2018:** Co-organizer **SUMCASTEC's end-users workshop:** workshop on "EM field interaction with biological tissues for cancer and regenerative medicine". Bangor, UK.
- **2017:** Co-organizer **International Microwave Symposium:** workshop on "thermal vs non-thermal effects of electromagnetic waves for biomedical applications". Honolulu, HI, USA.
- **2014:** Co-organizer **European Microwave Conference:** workshop on "MEMS technology and application: from RF to THz, convergence with microfluidics and biosensing". Nurnberg, Germany.
- **2011:** Co-organizer **European Microwave Conference:** workshop on "Novel devices and advanced modeling techniques in RF Nanoelectronics". Rome, Italy.
- **2011:** Co-chair **International Microwave Symposium:** "Advancements in RF MEMS switches" technical session. Baltimore, MD, USA.

REVIEWING EXPERIENCE

- **2018-** **Bioelectrochemistry**
- **2018-** **Journal of Electromagnetics, RF and Microwaves in Medicine and Biology**
- **2016-** **MDPI Sensors and Radio Science**
- **2015** **Applied Physics Letters**
- **2011-** **IEEE Transactions on Microwave technology and techniques.**
- **2010-** **Sensors and Actuators A: Physical" Journal.**
- **2009** **Wireless Components Letters.**

COSULTING EXPERIENCE

- **2016-2017** Adviser for WiSpry Inc., a Californian company developing tunable RF silicon integrated circuits basing on MEMS technology.

SKILLS AND EXTRA QUALIFICATIONS

- **RF Measurements** **DC-110 GHz, CW and pulsed, linear S-parameters and intermodulation.**
- **Software** OS: **Windows, UNIX.** Programming: **C, MATLAB, Python.** CAD: **Keysight ADS, Ansys HFSS, CST Microwave Studio, COMSOL Multiphysics.**
- **Languages** **Fluent English, French, Italian (native). Basic Spanish.**
- **2012** **ComSOC course:** "Introduction to professional wireless communications"

PATENT APPLICATIONS

- **2020 (UK)** UK (Appl. # 2007822.6): “Insect telemetry based on battery-less tags and artificial intelligence-driven unmanned aerial vehicles”.
- **2009 (US)** “Micro-electromechanical generator for harvesting energy from environment vibrations”.
- **2009 (US)** “Compact low-loss broadband phase shifter”.

INTERESTS

- **Music** Blues and rock guitar. Jazz piano.
- **Sports** Basketball, tennis, skiing, swimming.
- **Other** Literature, arts and humanities, cinema, economics.

JOURNAL PUBLICATIONS

R. Dhama, X. Bing, C. Palego, Z. Wang “A Comparison of super-resolution imaging performance by Titanium Dioxide (TiO₂) and Barium Titanate Glasses (BTG) microspheres”, accepted in the *Photonics Special Issue on the Photonic Jet Science and Application*, in May 2021.

S. Williams, N. Aldabashi, C. Palego, J. Woodgate, J. Makinson, P. Cross “Early prediction of bumblebee flight task using machine learning”, accepted in the *Computers and Electronics in Agriculture Journal*, February 2021, <https://doi.org/10.1016/j.compag.2021.106065>.

J. Shearwood, N. Aldabashi, A. Eltokhy, E. Bates, N. Raine, C. Zhang, E. Palmer, P. Cross and C. Palego, “C-Band telemetry of insect pollinators using a miniature transmitter and a self-piloted drone”, accepted in the *IEEE Transactions on Microwave Theory and Techniques*, , October 2020, <https://doi.org/10.1109/TMTT.2020.3034323>.

R. Orlacchio, L. Carr, C. Palego, D. Arnaud-Cormos, and P. Leveque, “High-voltage 10 ns delayed paired or bipolar pulses for in vitro bioelectric experiments” *Bioelectrochemistry* vol. 137, August 2020, <https://doi.org/10.1016/j.bioelechem.2020.107648>.

C. Palego, I. Pierce, “Inspiring a decentralized learning culture while fostering the next Silicon Valley... in North Wales”, submitted to the *Education Sciences -Open Access Journal*, , March 2020, <https://doi.org/10.3390/educsci10030064>.

I. Davies, C. Merla, A. Casciari, M. Tanori, A. Zambotti, M. Mancuso, J. Bishop, C. Palego, and C. P. Hancock, “Push-pull configuration of high-power MOSFETs for generation of nanosecond pulses for electroporation of cells”, *Special Issue of International Journal of Microwave and Wireless Technologies*, vol. 11(7), pp. 645-657, September 2019, <https://doi.org/10.1017/S1759078719000576>.

R. Manczak, S. Saada, T. Provent, C. Dalmay, B. Bessette, S. Battu, P. Blondy, M.O. Jaubertau, C. Baristiran Kaynak, M. Kaynak, C. Palego, F. Lalloue, A. Pothier “UHF- Dielectrophoresis crossover frequency as a new marker for discrimination of glioblastoma undifferentiated cells”, *IEEE Journal of Electromagnetics, RF and Microwaves in Medicine and Biology*, Vol. 3(3), pp. 191-198, September 2019, <https://doi.org/10.1109/JERM.2019.2895539>.

H. Li, C. Multari, C. Palego, X. Ma, X. Du, Y. Ning, J. Buceta, J. Hwang and X. Cheng, “Differentiation of live and heat-killed *E. coli* by microwave impedance spectroscopy”, *Sensors and Actuator B: Chemical journal*, Vol. 255, Part 2, pp. 1614-1622, February 2018, <https://doi.org/10.1016/j.snb.2017.08.179>.

A Denzi, C. Merla, C. Palego, A. Paffi, Y. Ning, C. Multari, X. Cheng, F. Apollonio, J. Hwang and M. Liberti, “Assessment of cytoplasm conductivity by nanosecond pulsed electric fields”, *IEEE Transactions on Biomedical Engineering*, PP(99), pp. 1-10, February 2015, <https://doi.org/10.1109/tbme.2015.2399250>.

Y. Ning, C. Multari, X. Luo, C. Palego, X. Cheng, J. Hwang, A. Denzi, C. Merla, F. Apollonio, and M. Liberti, “Broadband electrical detection of individual biological cells”, *IEEE Transactions on Microwave Theory and Techniques*, Vol. 62 No.9, pp. 1905-1911, September 2014, <https://doi.org/10.1109/MWSYM.2015.7166722>.

D. Molinero, X. Luo, C. Shen, C. Palego, J. C. M. Hwang and C. Goldsmith, “Long-term RF burn-in effect MEMS capacitive switches”, *IEEE Transactions on Device and Materials Reliability*, Vol. 13 No. 1, pp. 310-315, February 2013, <https://doi.org/10.1109/TDMR.2013.2246567>.

G. Ding, D. Molinero, W. Wang, C. Palego, S. Halder, J. Hwang, and C. Goldsmith, “Intelligent Bipolar Control of RF MEMS Capacitive Switches”, special issue of the *IEEE Transactions on Microwave Theory and Techniques*, Vol. 61 No. 1, pp. 464-471, January 2013, <https://ieeexplore.ieee.org/xpl/RecentIssue.jsp?punumber=22>.

F. Solazzi, C. Palego, S. Halder, J. Hwang, P. Farinelli, R. Sorrentino, A. Faez, V. Mulloni and B. Margesin, “Effect of the substrate on RF power-handling capability of micro-electromechanical capacitive switches”, *Solid State Electronics Special Issue*, Vol.65-66, pp. 219-225, November-December 2011, <https://doi.org/10.1016/j.sse.2011.06.020>.

C. Palego, J. Deng, Z. Peng, S. Halder, J. Hwang, D. Forehand, D. Scarbrough, C. Goldsmith, I. Johnston, S. Sampath, and A. Datta “Robustness of RF MEMS capacitive switches with molybdenum membranes”, *IEEE Transactions on Microwave Theory and Techniques*, Vol. 57 No. 12, pp. 3262-3269, December 2009, <https://doi.org/10.1109/TMTT.2009.2033885>.

X. Yan, W.L. Brown, J. Papapolymerou, C. Palego, and R. P. Vinci, “Anelastic Stress Relaxation in Gold Films and its Impact on Restoring Forces in MEMS Devices”, *IEEE Journal of Microelectromechanical Systems*, Vol. 18 No.3, pp.570-576, June 2009, <https://doi.org/10.1109/JMEMS.2009.2016280>.

S. Hadler, C. Palego, Z. Peng, J. Hwang, D. Forehand, and C. Goldsmith, “Compact RF model for transient characteristics of RF MEMS capacitive switches”, *IEEE Transactions on Microwave Theory and Techniques*, Vol. 57 No.1, pp.237-242, January 2009, <https://doi.org/10.1109/TMTT.2008.2009039>.

Z. Peng, C. Palego, J. Hwang, D. Forehand, C. Goldsmith, C. Moody, A. Malczewski, B. Pillans, R. Diagler and J. Papapolymerou, “Impact of humidity on dielectric charging in RF MEMS capacitive switches”, *IEEE Microwave and Wireless Comp. Letters.*, Vol. 19 No.5, pp. 299-301, May 2009, <https://doi.org/10.1109/LMWC.2009.2017595>.

Z. Peng, C. Palego, S. Hadler, J. Hwang, C. V. Jahnes, K. Etzold, J. Cotte, and J. Megerlein, “Dielectric charging in electrostatically actuated MEMS ohmic switches”, *IEEE Transactions on Devices Material Reliability*, Vol. * No. 4, pp.642-646, December 2008, <https://doi.org/10.1109/TDMR.2008.2002539>.

C. Palego, A. Pothier, A. Crunteanu and P. Blondy, “A 2-pole lumped programmable filter with digital MEMS digital capacitor banks”, *IEEE Transactions on Microwave Theory and Techniques*, Vol.56 No.3, pp. 729-735, March 2008, <https://doi.org/10.1109/TMTT.2008.916873>.

C. Palego, A. Pothier, A. Crunteanu and P. Blondy, “High power reliability aspects on RF MEMS varactor design”, *Microelectronics and Reliability*, Vol.46 No.9-10, pp. 1705-17010, September-November 2006, <https://doi.org/10.1016/j.microrel.2006.07.047>.

CONFERENCE PUBLICATIONS

C. Palego, “Machine learning in bioelectromagnetism: from doppler signature decoding to nano-electroporation endpoint control”, *Nano Science & Technology: invited talk at the 10th Annual Congress of Nanoscience and Technology*, Osaka, Japan, May 2022.

N. Aldabashi, S. Williams, A. Eltokhy, E. Palmer, P. Cross and C. Palego, “Integration of 5.8GHz doppler radar and machine learning for automated honeybee hive surveillance and logging”, *IEEE International Microwave Symposium*, Atlanta, USA, June 2021.

J. Shearwood, S. Williams, N. Aldabashi, B. Freitas, C. Zhang, P. Cross and C. Palego, “Localization and tracking of bees using a miniaturized energy harvester powered transmitter and unmanned aerial vehicle”, *IEEE International Microwave Symposium*, Los Angeles, USA, June 2020.

L. Carr, S. Saada, B. Bessette, C. Palego, A. Pothier, D. Arnaud-Cormos, P. Leveque, F. Lalloue “The effect of nsPEF on glioblastoma cancer-like stem cell transcription and protein expression.”, accepted in the *BioEM Conf.*, Oxford, UK, June 2020.

A. Pothier, R. Manczak, S. Saada, T. Provent, M. Tanori, A. Casciati, E. Porcù, E. Rampazzo, C. Dalmay, B. Bessette, G. Begaud, S. Battu, C. Merla, B. Tanno, L. Persano, P. Blondy, M.O. Jauberteau, C. Baristiran Kaynak, M. Kaynak, C. Palego, G. Viola, M. Mancuso and F. Lalloue “Progress in dielectric spectroscopy for biological cell characterization and cell sorting at MHz frequencies”, *IEEE European Microwave Week workshop on Wearable and Smart Electronics: Design, Materials and Applications*, Paris, Oct. 2019.

L. Carr, C. Palego, A. Arnaud-Cormos, P. Leveque, “Influence of pulse duration on intracellular calcium concentration for sub-10 ns pulses”, *3rd World Congress on Electroporation and Pulsed Electric Fields*, Toulouse, France, Sep. 2019.

L. Carr, C. Palego, Y. Percherancier, A. Arnaud-Cormos, P. Leveque, “24-hour monitoring of nsPEF-induced morphological changes, in U-87 MG cells, using digital holographic microscopy”, *BioEM 2019 Conference*, Montpellier, France, Jun. 2019.

- R. Manczak, S. Saada, T. Provent, C. Dalmay, B. Bessette, C. Merla, B. Tanno, M. Mancuso, C. Baristiran Kaynak, M. Kaynak, C. Palego, F. Lalloue, and A. Pothier** “Progress in dielectric spectroscopy for biological cell characterization and cell sorting at MHz frequencies”, *IEEE International Microwave Symposium workshop on Electromanipulate biological cells with high frequency signals: a new way to characterize cell aggressiveness in the frame of cancer treatment*, Boston, Jun. 2019.
- S. Saada, R. Manczak, B. Bessette, L. Persano, E. Porcu, G. Begaud, C. Dalmay, S. Battu, P. Blondy, M. Inac, C. Baristiran Kaynak, M. Kaynak, C. Palego, G. Viola, M.O. Jauberteau, A. Pothier, F. Lalloué** “Brain Tumor Meeting, Berlin, Germany”, May 2019.
- J. Shearwood, D. Hung, P. Cross and C. Palego**, “Development of minimally invasive honey-bee telemetry systems”, *IEEE European Microwave Week workshop on Wearable and Smart Electronics: Design, Materials and Applications*, Madrid, Sept. 2018.
- W. Gamal, C. Palego, L. Persano, G. Viola, R. Pinto, M. Tanori, A. Casciati, M. Mancuso, C. Merla, B. Bessette, F. Lalloue, A. S. Saada, A. Pothier** “Dielectric characterisation of brain cancer stem cells”, *EMF-Med World Conference on Biomedical Applications of Electromagnetic Fields*, Split, Sept. 2018.
- I. Davies, C. Merla, A. Casciati, A. Zambotti, A. Casciati, M. Tanori J. Bishop, C. Palego, M. Mancuso, C. P. Hancock** “Novel and versatile instrumentation for electro-manipulation of cancer stem cells”, *BioEM2018 Annual Meeting*, Piran, Portoroz June 2018.
- I. Davies, C. Merla, A. Casciati, A. Zambotti, J. Bishop, C. Palego, C. P. Hancock** “Electropermeabilization of isolated cancer stem cells with a novel and versatile nanosecond pulse generator”, *IEEE International Microwave Biomedical Conference*, Philadelphia, June 2018.
- R. Manczak, S. Saada, C. Dalmay, B. Bessette, G. Begaud, S. Battu, P. Blondy, M.O. Jauberteau, F. Lalloue, M. Inac, C. Baristiran Kaynak, M. Kaynak, C. Palego, A. Pothier** “Discrimination of glioblastoma cancer stem cells by measuring their UHF-dielectrophoresis crossover frequency”, *IEEE International Microwave Biomedical Conference*, Philadelphia, June 2018.
- R. Manczak, S. Saada, C. Dalmay, B. Bessette, G. Begaud, S. Battu, P. Blondy, M.O. Jauberteau, F. Lalloue, M. Inac, C. Baristiran Kaynak, M. Kaynak, C. Palego, A. Pothier** “Tracking cancer cells with microfluidic High Frequency DEP cytometer implemented on BiCMOS lab-on-chip platform”, *IEEE International Microwave Symposium*, Philadelphia, June 2018.
- J. Shearwood, D. Hung, P. Cross and C. Palego**, “Development of a wearable energy harvesting powered device for monitoring honey bee movement”, *IEEE International Microwave Symposium workshop on Wireless Technologies for Implantable and Wearable Systems*, Philadelphia, June 2018.
- J. Shearwood, D. Hung, P. Cross and C. Palego**, “Honey-bee localization using an energy harvesting device and power based angle of arrival wstimation”, *IEEE International Microwave Symposium*, Philadelphia, June 2018.
- M. Inac, M. Wietstruck, A. Göritz, B. Cetindogan, C. Baristiran-Kaynak, S. Marschmeyer, M. Fraschke, T. Voß, A. Mai, C. Palego, A. Pothier, M. Kaynak**, “BiCMOS Embedded Microfluidic Technology Based on Wafer Bonding Techniques for Biosensor Applications”, *MikroSystemTechnik Kongress*, Munich, Germany, October 2017.
- J. Shearwood, D. Hung, P. Cross and C. Palego**, “Energy harvesting powered tracking devices for honey bee health monitoring”, *IEEE Int. Microwave Workhop Series on Advanced Materials and Processes*, Pavia, Italy September 2017.
- F. Hjeij, C. Dalmay, A. Bessaudou, P. Blondy, A. Pothier, C. Baristiran Kaynak, M. Kaynak, B. Bessette, G. Begaud, M.O. Jauberteau, F. Lalloué, C. Palego**, “Biological cell discrimination based on their high frequency dielectrophoretic signature at UHF frequencies”, *IEEE Int. Microwave Symposium*, Honolulu HI, June 2017.
- F. Hjeij, C. Dalmay, A. Bessaudou, P. Blondy, A. Pothier, C. Baristiran Kaynak, M. Kaynak, B. Bessette, G. Begaud, M.O. Jauberteau, F. Lalloué, C. Palego**, “UHF dielectrophoretic handling of individual biological cells using BiCMOS microfluidic RF sensors”, *IEEE European Microwave Conference*, London UK, October 2016.
- X. Du, X. Ma, H. Li, V. Gholizadeh, X. Luo, C. Palego, X. Cheng, and J. C. M. Hwang**, “Preliminary results for broadband electrical detection of bacteria”, *IEEE 2016 Lester Eastman Biennial Conference*, Bethlehem PA, August 2016.
- V. Gholizadeh, M. J. Asadi, Y. Ning, C. Palego, J. C. M. Hwang, D. Scarbrough, and C. L. Goldsmith**, “Low-dispersion 180° phase shifter using two synchronized MEMS switches”, *IEEE 2016 Lester Eastman Biennial Conference*, Bethlehem PA, August 2016.
- C. Multari, C. Palego, X. Ma, X. Du, Y. Ning, J. C. M. Hwang, X. Cheng**, “Investigation of dielectric and structural properties of live and heat-killed bacteria by broadband impedance spectroscopy in a microfluidic chip”, *Microfluidic Congress Conference*, Philadelphia PA, July 2016.

C. Palego, G. Perry, C. Hancock, F. Hjeij, C. Dalmay, A. Bessaudou, P. Blondy, A. Pothier, F. Lalloue, B. Bessette, G. Begaud, M-O. Jauberteau, C.B. Kaynak, M. Wietstruck, M. Kaynak, M. Casbon, J. Benedikt, D. Barrow, A. Porch, “BiCMOS microfluidic sensor for single cell label-free monitoring through microwave intermodulation”, *IEEE Int. Microwave Symp.*, San Francisco CA, June 2016.

X. Ma, X. Du, C. Multari, Y. Ning, X. Luo, V. Gholizadeh, C. Palego, X. Cheng, and J. Hwang, “Reproducible broadband measurement for cytoplasm capacitance of a biological cell”, *IEEE Int. Microwave Symp.*, San Francisco CA June 2016.

C. Kaynak, A. Goeritz, M. Frashke, M. Wietstruck, M. Kaynak, B. Tillack, F. Hjeij, C. Dalmay, P. Blondy, G. Perry and C. Palego “Microfluidic embedded BiCMOS process for dielectrophoresis trapping of microparticles”, *IEEE, Int. Conf. on Nano/Micro Engineered and Molecular Systems NEMS 2016*, Matsushima, Japan, April 2016.

V. Gholizadeh, M. Asadi, Y. Ning, C. Palego, J. Hwang, D. Scarbrough, and C. L. Goldsmith, “Low-dispersion metamaterial-based phase shifters with reduced size and number of MEMS switches”, *IEEE Int. Wireless Symp.*, Shanghai, China, Mar. 2016 .

X. Ma, X. Du, C. Multari, Y. Ning, C. Palego, X. Luo, V. Gholizadeh, X. Cheng, and J. Hwang, “Broadband single-cell detection with a coplanar series gap”, accepted for publication in the *IEEE 86th Microwave Measurement Conference, ARFTG86*, Atlanta GA, December 2015.

Y. Ning, X. Ma, C. Multari, X. Luo, V. Gholizadeh, C. Palego, X. Cheng, and J. Hwang, “Improved broadband electrical detection of individual biological cells”, *IEEE Int. Microwave Symp.*, Phoenix AZ, May 2015.

V. Gholizadeh, Y. Ning, X. Luo, C. Palego, J. Hwang, and C. Goldsmith “Improved compact, wideband, low-dispersion, metamaterial-based MEMS phase shifters”, *IEEE Int. Wireless Symp.*, Shenzhen, China, March 2015.

C. Palego, “Microsystem technology for adaptive biosensing and manipulation”, *IEEE AISEM Annual Conference XVIII*, pp.1-4, Trento, Italy, February 2015.

C. Palego, D. Molinero, S. Cunningham, A Morris, M. Seth, “RF MEMS control of planar microchamber for adaptive biosensing applications”, *IEEE European Microwave Conference*, Rome, Italy, October 2014.

M. Kaynak, C. Palego, “CMOS Integrated Microsystem Technology for High Frequency Biosensing and Control.” invited talk at the “MEMS Technology and Application: From RF to THz, convergence with Microfluidics and Biosensing” Workshop at the *IEEE European Microwave Conference*, Rome, Italy October 2014.

A. Denzi, F. Apollonio, M. Liberti, C. Merla, Y. Ning, C. Multari, C. Palego, X. Cheng, and J. Hwang, “Cell detection and discrimination by a microfluidic-integrated broadband microchamber”, *IEEE European Microwave Conference*, Rome, Italy, October 2014.

C. Palego, D. Molinero, S. Cunningham, A Morris, M. Seth, “Continuous calibration and stable operation of microwave biosensors by RF MEMS adaptive control”, *MEMSwave Conference*, LaRochelle, France, July 2014.

A. Denzi, C. Merla, C. Palego, A. Paffi, Y. Ning, C. Multari, X. Cheng, F. Apollonio, J. Hwang and M. Liberti, “Assesment of cytoplasm conductivity of a single cell using nsPEF”, *Gordon Research Conference on Bioelectrochemistry*, Biddeford MA, July 2014.

A. Denzi, C. Merla, C. Palego, Y Ning, C. Multari, X. Cheng, F. Apollonio, J. Hwang, and M. Liberti “An improvement method of estimation for cell cytoplasm conductivity using nanosecond pulsed electric fields: coupling of a microdosimetric model with experiments for a single cell”, *Bioelectromagnetics Society and the European BioElectromagnetics Association BioEM Conference*, Cape Town, South Africa, June 2014.

C. Palego, Y. Ning, V. Gholizadeh, J. Hwang, and C. Goldsmith, “Compact, wideband, low-dispersion, metamaterial-based MEMS phase shifters”, *IEEE Int. Microwave Symp.*, Tampa Bay FL, June 2014.

C. Multari, Y. Ning, X. Luo, C. Palego, A. Denzi, C. Merla, F. Apollonio, M. Liberti, James C. M. Hwang and Xuanhong Cheng, “Cell Detection by a Microfluidic Broadband Electrical Sensor”, *TechConnect World Innovation Conference*, Washington DC, June 2014.

Y Ning, C. Multari, X. Luo, C. Merla, C. Palego, X. Cheng, J. Hwang, “Fast, compact and label-free electrical detection of live and dead single cells.” invited talk at the *2013 IEEE Int. Microwave Workshop Series on RF and Wireless Technologies for Biomedical and Healthcare applications*, Singapore, December 2013.

Y. Ning, C. Palego, C. Merla, D. Molinero, C. Multari, X. Cheng, X. Luo and J. Hwang, “Coplanar stripline microchamber for single-cell electrical detection”, proceedings of the *IEEE 2013 European Microwave Conference*, pp.475-478, Nuremberg, Germany, October 2013.

C. Palego, C. Merla, Y. Ning, C. Multari, X. Cheng, and J. Hwang, “Microchamber for broadband electrical detection of biological cells”, *IEEE Life Science Newsletter*, July 2013.

X. Luo, D. Molinero, Y. Ning, C. Palego, J. Hwang, and C. Goldsmith “Intermodulation distortion of actuated RF MEMS capacitive switches”, *IEEE ARFTG_spring Conference*, Seattle WA, June 2013.

A. Denzi, C. Merla, C. Palego, Y. Ning, C. Multari, X. Cheng, D. Molinero, G. Ding, X. Luo, and J. Hwang, “Microdosimetric model of a single cell for nanosecond pulsed electric fields: an experimental method of validation”, *Bioelectrom. Society and the European BioElectrom. Association BioEM Conference*, Thessaloniki, Greece, June 2013.

C. Palego, X. Cheng, and J. Hwang, “Design and characterization of optimally matched planar micro-chambers for nanosecond electroporation of biological cells.” invited talk at the *2012 IEEE Int. Microwave Symp.* Workshop on “Electro-nanoporation: an emerging biomedical electromagnetic application”, June 2013.

C. Palego, C. Merla, Y. Ning, C. Multari, X. Cheng, D. Molinero, G. Ding, X. Luo, and J. Hwang, “Broadband microchamber for electrical detection of live and dead biological cells”, *IEEE Int. Microwave Symp.*, Seattle WA, June 2013.

D. Molinero, X. Luo, Y. Ning, C. Palego, J. Hwang, and C. Goldsmith “Intermodulation distortion degradation by RF power in RF MEMS capacitive switches”, *IEEE Int. Microwave Symp.*, Seattle WA, June 2013.

A. Denzi, C. Merla, C. Palego, A. Apollonio, A. Paffi, M. Liberti, and J. Hwang, “Single cell microdosimetric studies comparing ideal and measured nanosecond pulse electric fields”, *IEEE Int. Microwave Symp.*, Seattle WA, June 2013.

C. Palego, D. Molinero, J. Hwang, and C. Goldsmith, “Pull-in and release transients of MEMS capacitive switches under high RF power”, *IEEE 2012 European Microwave Conference*, pp.437-440, Amsterdam, Netherlands, October 2012.

F. Solazzi, C. Palego, D. Molinero, S. Colpo, P. Farinelli, B. Margesin, J. Hwang and, R. Sorrentino, “A Power-Stable High Capacitance Ratio RF MEMS Capacitive Switch”, *IEEE 2012 European Microwave Conference*, pp.32-35, Amsterdam Netherlands, October 2012.

D. Molinero, C. Palego, X. Luo, J. Hwang, and C. Goldsmith, “RF Burn-in of Dielectric-charging Characteristics of Micro-electromechanical Capacitive Switches”, *IEEE Int. Microwave Symp. Dig.*, Montreal, Canada, June 2012.

G. Ding, W. Wang, S. Halder, C. Palego, J. Hwang, and C. Goldsmith, “Intelligent CMOS Control of RF MEMS Capacitive Switches”, *IEEE Int. Microwave Symp.*, Montreal, Canada, June 2012.

C. Palego, C. Merla, M. Balucani, F. Apollonio, M. Liberti and J. Hwang, “Nanotechnology in biomedicine: perspectives of the graphene advent.”, focused session on advanced biomedical applications of graphene technology, *IEEE Topical Meeting on Silicon Monolithic Integrated Circuits in RF Systems*, Santa Clara CA, January 2012.

C. Palego, J. Hwang, C. Merla, F. Apollonio, and M. Liberti, “Nanopore Test Circuit for Single-Strand DNA Sequencing.”, *IEEE Topical Meeting on Silicon Monolithic Integrated Circuits in RF Systems*, Santa Clara CA, January 2012.

C. Palego, S. Halder, J. Hwang, C. Merla, M. Liberti, F. Apollonio and A. Paffi, “Coplanar Waveguide with Defected Ground Structure for Nanosecond Subcellular Electroporation”, *IEEE Int. Microwave Symp.*, Baltimore MD, June 2011.

D. Molinero, C. Palego, S. Halder, X. Luo, A. Hallden-Abberton, J. Hwang, and C. Goldsmith, “Acceleration of dielectric charging/discharging by RF Power in microelectromechanical capacitive switches”, *IEEE Int. Microwave Symp.*, Baltimore MD, June 2011.

C. Palego, S. Halder, R. Jin, and J. Hwang, “Compact tunable high-voltage sub-nanosecond pulse generator for intracellular investigations”, *European Bioelectromagnetics Association Conf.*, Rome, Italy February 2011.

C. Palego, F. Solazzi, S. Halder, J. Hwang, P. Farinelli, R. Sorrentino, A. Faez, V. Mulloni and B. Margesin, “Effect of substrate on temperature range and power capacity of MEMS capacitive switches”, *IEEE European Microwave Conference*, pp. 505-508, Paris, France, September 2010.

F. Solazzi, C. Palego, S. Halder, J. Hwang, P. Farinelli, R. Sorrentino, A. Faez, V. Mulloni and B. Margesin, “Electro-thermal analysis of RF MEMS capacitive switches for high power applications”, *European Solid-State Device Research Conference*, pp. 468-471, Sevilla, Spain, September 2010.

C. Palego, F. Solazzi, J. Hwang, P. Farinelli, R. Sorrentino, A. Faez, V. Mulloni and B. Margesin, “Analysis of power capacity of RF MEMS capacitive shunt switches fabricated on silicon or quartz substrate”, *MEMSWAVE 2010 Conference*, Otranto, Italy, June 2010.

C. Palego, Z. Peng, J. Hwang, D. Scarborough and C. Goldsmith, “Novel Ka-band phase shifter using MEMS capacitive switches”, (Invited paper) *IEEE Wireless and Microwave Technology Conference*, Melbourne FL, April 2010.

- S. Halder, C. Palego, J. Hwang, and C. Goldsmith**, “Compact RF Large-Signal Model for MEMS capacitive switches”, *IEEE Intern. Microwave Symp.*, Long Beach CA, May 2010.
- Z. Peng, D. Molinero, C. Palego, J. Hwang, C. Moody, A. Malczewski, and B. Pillans**, “Effect of surface conduction on dielectric charging in RF MEMS capacitive switches”, *IEEE Int. Microwave Symp.*, Long Beach, May 2010.
- C. Goldsmith, A. Sumant, O. Auciello, J. Carlisle, H. Zeng, J. Hwang, C. Palego, W. Wang, R. Carpick, V. Adiga, A. Datta, C. Gudeman, S. O’Brien, and S. Sampath**, “Charging Characteristics of Ultra-nano-crystalline Diamond in RF MEMS Capacitive Switches”, *IEEE Int. Microwave Symp., Long Beach, May 2010*.
- C. Palego, Z. Peng, J. Hwang, D. Scarborough, D. Forehand, and C. Goldsmith**, “Compact Ka-Band phase shifters using MEMS capacitive switches”, *IEEE European Microwave Conference*, pp. 1864-1867, Rome, Italy, September 2009.
- C. Palego, J. Deng, S. Halder, Z. Peng, J. Hwang, D. Forehand, and C. Goldsmith**, “Pulse RF power operation of MEMS capacitive switches”, *IEEE European Microwave Conference*, pp. 1748-1751, Rome Italy, September 2009.
- Z. Peng, C. Palego, J. Hwang, C. Moody, A. Malczewski, B. Pillans, D. Forehand and C. Goldsmith**, “Effect of packaging on dielectric charging in RF MEMS capacitive switches”, *IEEE Int. Microwave Symp.*, Boston MA, June 2009.
- C. Goldsmith, D. Forehand, D. Scarborough, I. Johnston, S. Sampath, A. Datta, Z. Peng, C. Palego, and J. Hwang**, “Performance of Molybdenum as a Mechanical Membrane for RF MEMS Switches”, *IEEE Int. Microwave Symp.*, Boston MA, June 2009.
- C. Palego, A. Pothier, and P. Blondy**, “A dual band MEMS reconfigurable filter for a multi-standard radio front-end”, *IEEE European Microwave Conference*, pp. 587-590, Amsterdam, Netherlands, October 2008.
- C. Palego, S. Hadler, B. Baloglu, Z. Peng, J. Hwang, H. Nied, D. Forehand, and C. Goldsmith**, “Microwave intermodulation technique for monitoring the residual mechanical stress in RF MEMS capacitive switches”, *IEEE Int. Microwave Symp.*, June 2008.
- C. Goldsmith, D. Forehand, D. Scarborough, Z. Peng, C. Palego, J. Hwang, J. Clevenger**, “Understanding and improving longevity in RF MEMS capacitive switches”, *Proceedings of the SPIE Reliability, Packaging, Testing, and Characterization of MEMS/MOEMS VII Conference*, Vol. 6884, 688403, pp.12, San Jose CA, January 2008.
- P. Blondy, C. Palego, M. Houssini, A. Pothier, A. Crunteanu**, “RF-MEMS reconfigurable filters on low loss substrates for flexible front ends”, *IEEE Asia-Pacific Microwave Conference*, Bangkok, Thailand, December 2007.
- P. Blondy, C. Palego, A. Pothier, and A. Crunteanu**, “MEMS reconfigurable and tunable filters on ceramics”, *IEEE Int. Microwave Symp. Workshop on Reconfigurable Filters*, Honolulu HI, June 2007.
- P. Blondy, C. Palego, A. Pothier, and A. Crunteanu**, “High Power Applications of RF-MEMS”, invited paper in the *Proceedings of the 7th topical meeting on Silicon Monolithic Integrated Circuits in RF Systems*, pp. 166-168, Long Beach CA, January 2007.
- C. Palego, A. Pothier, A. Crunteanu, P. Blondy**, “Application de la technologie MEMS RF pour la synthèse de filtres multistandard”, *Journées Nationales Microondes*, Toulouse, France, May 2007.
- C. Palego, A. Pothier, A. Crunteanu, P. Blondy**, “High power reliability aspects on RF MEMS varactor design”, *European Symposium Reliability of Electron Devices*, Wuppertal, Germany, October 2006.
- C. Palego, A. Pothier, T. Gasseling, A. Crunteanu, C. Cibert, C. Champeaux, P. Tristant, A. Catherinot and P. Blondy**, “RF-MEMS Switched Varactor for High Power Applications”, *IEEE Int. Microwave Symp.*, San Francisco CA, June 2006.
- C. Palego, A. Pothier, P. Blondy**, “Double standard MEMS tunable filter for a reconfigurable front-end”, *MEMSWAVE Conference*, Orvieto, Italy, June 2006.
- C. Palego, A. Pothier, P. Blondy**, “High-power MEMS varactors”, *MEMSWAVE Conference*, Lausanne, Switzerland, June 2005.
- A. Pothier, C. Palego, D. Mercier, T. Paillot, S. Avrillon and P. Blondy**, “Design and Technology for RF Tunable Components”, *Int. Conference on Electromagnetics in Advanced Applications*, Turin, Italy, September 2005.
- C. Palego, A. Pothier, M. Chatras, P. Blondy, T. Gasseling, C. Champeaux, P. Tristant**, “Déphaseur MEMS 2-bit en bande Ka pour les applications de moyenne puissance”, *Proceedings of the Journées Nationales Microondes*, May 2005.
- P. Blondy, C. Palego, A. Crunteanu, A. Pothier**, “Filtre reconfigurable en fréquence a l’aide de banques de capacité MEMS”, *Proceedings of the Journées Nationales Microondes*, Nantes, France, May 2005.

C. Palego, A. Pothier, M. Chatras, P. Blondy, “Conception et réalisation d’un système de packaging pour des micro-commutateurs RF-MEMS”, *Proceedings of the Journées Nationales Microondes*, Nantes, France, May 2005.