



AUTOMATIC RF TECHNIQUES GROUP NEWSLETTER

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Fall 2017 ARFTG Microwave Measurement Symposium

OVERVIEW



St. Julien Hotel and Spa, Boulder Colorado, location of the Fall 2017 ARFTG Symposium

The Fall 2017 ARFTG Microwave Measurement Symposium took place at the lovely St Julien Hotel and Spa in Boulder Colorado. The symposium was held from Tuesday Nov 28th through Friday December 1st, 2017

The main event was the 90th ARFTG Microwave Measurement Conference, which took place on Thursday and Friday, which included a vendor exhibition. In addition, there was the NIST/ARFTG Microwave Measurement Short course and a workshop on Scanning RF Probe Microscopy. The 4-day event provided lots of opportunities to network and to discuss technical activities in a relaxing environment. It was definitely a packed agenda with exciting activities for RF, microwave, and millimeter-wave engineers and technologists.

TECHNICAL SESSIONS

The 90th ARFTG Microwave Measurement Conference began on Tuesday, November 28th with the ARFTG/NIST Short Course on Microwave Measurements followed on Wednesday by the Workshop on RF Scanning Probe Microscopy. The main conference consisted of 6 oral sessions, an interactive forum, and vendor exhibition. During the technical sessions there were two keynote speeches. The keynote speech was given by Prof Ke Wu from the Polytechnique Montreal on ‘Wireless Technology – Game Changing Solutions of Integration’. The afternoon sessions started with an invited talk from Josh Gordon and his colleagues at NIST on “Rydberg Atom Electric-Field Metrology”

In addition to these meetings the IEEE P287, P1765 and P1770 standards meetings were held and Users Forums for NVNA and On-wafer measurements were also held.

The annual business meeting was on Nov. 30th, where Ron Ginley presented the ARFTG finances and an election for new Executive Committee members was held.

SHORT COURSE

From Nov 28th-29th the ARFTG NIST Short Course on Microwave Measurements was held. This workshop was an excellent way for new metrologists and engineers to gain a comprehensive and in-depth overview into microwave measurements combining expertise from NIST, academia and industry; and for more experienced engineers to refresh their knowledge. During the work shop we had presentations from:

- Ron Ginley – Microwave power measurements and uncertainties

- Ken Wong – VNA Measurements, Calibrations and uncertainties
- Paul Hale, Time-domain measure measurements for microwave applications: What the manual doesn't tell you
- Gary Simpson, RF & Microwave Noise Measurement
- Jon Martens, Connectorized Millimeter-Wave S-Parameter Measurements
- Dylan Williams, Waveform and Modulated-Signal Traceability for Millimeter-Wave Applications
- Mitch Wallis, Microwave metrology of nano-electronic devices and nanomaterials
- Eric Sanders, New Methods for Data Analysis and Management
- Dominique Schreurs, Vectorial large-signal measurements
- Zoya Popovic, Microwave Radiometry for Internal Body Temperature Measurements
- Patrick Roblin, Application of Vector Nonlinear Microwave Measurements to Modeling and PA Design
- Paul J. Tasker, Application of RF I-V Waveform Measurements and Engineering

- “Near Field Scanning Microwave Microscopy in Biology for Cellular and Subcellular Characterization” Marc Farina, Davide Mencarelli, A. Morini, and A. Di Donato, U. delle Marche
- “Recent Progress in Microwave Scanning Probe Microscopy at NIST Gaithersburg,” Joe Kopanski and Lin You, NIST
- “Integrated Atomic Force Microscope/Scanning Microwave Microscope on a Single CMOS-MEMS Chip” Rafaat Mansour, University of Waterloo
- “Radio Frequency Nano-Probing Under Scanning Electron Microscopy” Kamel Haddadi, O. C. Haenssler, K. Daffe, S. Eliet, C. Boyaval, S. Arscott, D. Theron, and G. Dambrine, University Lille
- “Scanning microwave microscopy of cristae remodeling of the interior of mitochondria” Peter Burke, University of California, Irvine

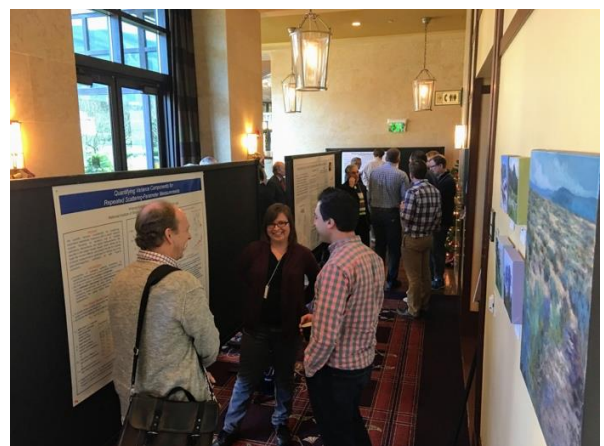
WORKSHOP

As part of the conference a workshop on “Scanning RF Probe Microscopy” was held on Wednesday Nov 29, 2017 and included the following talks:

- “Microwave Impedance Microscopy as a Probe of Quantum Phenomena in Prospect Topological Phases of Matter” Z. X. Shen, Stanford University
- “Advances in imaging and quantification of electrical properties at the nanoscale using Scanning Microwave Impedance Microscopy (sMIM)” Stuart Friedman, Oskar Amster, and Fred Stanke, PrimeNano
- “Probing Domain Wall Vibration and Electroacoustic Transduction by Microwave Microscopy” Keji Lai, University of Texas, Austin
- “Calibrated permittivity and conductivity measurements of nanoscale surface and subsurface structures by scanning microwave microscopy” Ferry Kienberger and Georg Gramse, Keysight Technologies
- “Microwave Near-Field Imaging of Nanoscale Electronic Properties” Sam Berweger, T. Mitch Wallis, and Pavel Kabos, NIST.
- “Near-Field Nonlinear Microwave Microscopy of Superconductors” Bakhrom Oripov, Tamin Tai, Seokjin Bae, and Steve Anlage, University of Maryland



Photo from the panel session discussing future RF instrumentation moderated by Dylan Williams (NIST).



ARFTG interactive forums sessions allow for lively discussion and debate with authors.



NIST hosted facilities tours for all interested ARFTG symposium attendees. Pictured above is a new robotic antenna system for very precise mm-wave measurements.



ARFTG Reception and Dinner: a great opportunity to for social interactions.

CONFERENCE SPONSORS

ARFTG thanks the sponsors of the 90th ARFTG Conference:

Gold: Qorvo

Silver: MPI Corporation, Maury Microwave, Keysight Technologies, and Copper Mountain Technologies

Media: Microwave Journal

For future sponsorship opportunities, contact the Sponsorship Chair at sponsorship@arftg.org.

CONFERENCE EXHIBITS

The exhibition provides an excellent opportunity to see the latest range of products available from some of the leading suppliers in microwave measurement industry.

To exhibit at a future conference, please contact the Exhibits Chair at exhibits@arftg.org.

FUTURE EVENTS

Spring 2018 ARFTG activities

Microwave Measurement Conference

The 91st ARFTG Microwave Measurement Conference will be held in Philadelphia, PA on June 15th, 2018. The conference will be part of microwave week and will feature jointly organized workshops and sessions with the International Microwave Symposium. The theme for the conference is “Wideband Modulated Test Signals for Network Analysis of Wireless Infrastructure Building Blocks”.

For more information, please contact the General Conference Chair, Dominique Schreurs or the Technical Program Co-Chairs, Andrej Rumiantsev or Jean-Pierre Teyssier. Full contact details and the latest call for papers is available at: www.arftg.org.

NVNA Users’ Forum

ARFTG is continuing to organize NVNA Users’ Forums. This is an excellent opportunity for an informal exchange of ideas related to nonlinear vector measurements. Please contact the organizers for more information: P. Roblin, A. Reynoso Hernandez, D. Schreurs, and J.-P. Teyssier.

ARFTG STUDENT PROGRAMS

ARFTG can award one or more graduate fellowships annually to students working in RF/microwave measurement related topics. The application instructions and criteria for the next award cycle are published at www.arftg.org. ARFTG can also provide sponsorships to support student attendance. For information on sponsorships at future conferences, see www.arftg.org or contact the sponsorships chair at sponsorship@arftg.org.

ADDENDUM

Every effort has been made to publish correct information in this newsletter. Significant errors should be reported to the ARFTG Executive Committee Secretary Peter Aaen (paaen@ieee.org), so that corrections can be reported in the next issue.