WELCOME

The GOMACTech-11 Program Committee warmly welcomes you to this year's conference in Orlando, Florida. GOMACTech is the pre-eminent conference for the review of developments in microcircuit applications for government systems. GOMACTech Established in 1968, GOMACTech is an unclassified, Export-Controlled event that requires all participants to be U.S. Citizens or legal U.S. Permanent Residents.

This year, our conference theme, "Securing the Future through Rapid Technology Insertion" focuses on the technologies available in CONUS fabs where a portion of the production flow can be secured. While electronics have given the U.S. primary advantage entering the 21st century, an unintended consequence of a fully-globalized commercial sector has arisen, where economic and military adversaries can access comparable technologies. Our intent is to highlight emerging circuit and device technologies that can provide leap-ahead capability for government interests but with compatibility to pertinent commercial IP.

The conference follows an established format, with specific "tracks" resulting from substantial discussion from this year's Technical Program Committee. The technical sessions comprise contributed and solicited papers, including oral presentations and a Thursday (3/24) morning poster session. We will highlight the work of student contributors in a special competition section of the student poster session.

The tracks for GOMACTech-11 include:

- RF integrated circuits, where commercial markets are driving many aspects of the area but where substantial gains for government applications can be made as many of the critical figures-of-merit translate to clear increases in capability.
- Graphene, as a representative of novel materials, with the subsequent question of how best to integrate heterogeneous materials to glean the maximum advantage for each respective material, whether within the confines of an individual device or in the context of a 3D integrated circuit.
- Power, consideration of system layout with the inclusion of power design at the inception of projects has become an engineering imperative with the drive for fielded lifetime manifesting itself as a requirement for 21st century embedded systems
- Trust, in the IC supply chain will continue as a major area of discourse

The topical sessions will focus on developments and accomplishments ranging from components to systems within selected ongoing government-sponsored programs. Specific sessions comprise:

Graphene (Electronics & RF Electronics)
3DIC I & II (Session II comprises a multi-paper session covering the Lincoln Labs wafer suite)
Emerging Semiconductor Tech I & II
Adaptive RF / BiST and Calibration
Advanced RF/Mixed Signal Circuits
RF Circuits for Wireless Sensors
Trusted Electronics Research
Trust in ICs
Trusted Electronics Applications I & II
Antenna Applications
Phased Array Beamforming Technology
Advanced Power Amplifiers (RF to mm-wave)
GaN Reliability

Power Electronics (I & II)
Power Management for RF Electronics
Radiation Hardened Microelectronic Design
Non- Silicon Radiation Hardened Microelectronic Technologies
Fault Tolerant Computing for Space Systems
Space Computing
Extreme environment systems
Nanowire & CNT based electronics
N/MEMs Relays for Micromechanical
Sub-mm Wave Vacuum Electronics
Optical Interconnects for Military Platforms

The first tutorial is the second national Trusted Suppliers meeting. Our objective is to gather members of industry and government agencies representing the interests of integrated circuit and electronics producers who are focused on serving Defense and Aerospace applications which are trusted. This summit is organized by Harry Kelzi of Teledyne. Some of the key issues include accreditation activity and criteria, emerging defense policy and demand for trusted supplies, trust solutions and opportunities for industry to work together and with government for further progress in this area. The program begins with status and updates on DoD policy, the accreditation process and programmatic initiatives. Later, industry representatives will discuss their capabilities. In the afternoon session, a moderated discussion, with panelists representing both industry and government, will take on topics that are frequently being asked by industry participants.

The second tutorial, *SOI-Enabled Technologies for 3D Circuit Integration and Ultra Low Power Applications*, will discuss how the unique attributes of silicon-on-insulator (SOI) technology are being exploited to enable complex 3-dimentional (3D) circuit integration. The first half will include discussion of the factors driving 3DIC development, approaches to implementation and realized examples. The second portion will discuss how ultra-low-power electronics can expand the technological capability of handheld and wireless devices by dramatically improving battery life and portability for applications such as space-based sensors, unattended ground-based sensors, and embedded medical devices. We will discuss ultra-low-power process optimization, show device and simple circuit results, and talk about future scaling issues along with proposed solutions to sub-40 nm gate lengths.

The third tutorial, *Securing the Full End-to End Flow of Electronics: Technical Policy & Acquisition Implications*, will convene a moderated panel discussion of the primary issues in design, fab, packaging & test, and reliability, as they pertain to leading edge electronics and the constraints on domestic availability for critical USG applications. Within the context of a fully - globalized market for production and research, the aim of this session is to document recommendations that will counter the exodus overseas of technical leadership within microelectronics.

The conference formally opens on Tuesday (3/22) morning with an outstanding Plenary Session including a Keynote presentation by The Honorable Zachary Lemnios, Director, Defense Research & Engineering Department of Defense. Following the Keynote, there will be three Kilby Lecture speakers:
Dr. Eli Yablonovitch, Nortel Distinguished Professor and Director of the Center for Energy Efficient Electronics Science, University of California, Berkley; Dr. Robert Trew, Division Director, Electrical, Communications, and Cyber Systems, National Science Foundation; and Mr. Keith Uebele, Principal Strategist, Intel Labs, Strategy & Planning.

The Plenary, Technical, and Topical Sessions are the major venues for information exchange at the conference. Other opportunities for technical interaction are provided through the Exhibit Program that includes major IC manufacturers and commercial vendors of devices, equipment, systems and services for nearly all facets of the electronics business. The exhibition opens on Tuesday at noon and runs through Wednesday (3/23) at 4:00 p.m. On Tuesday evening, attendees can mix in a relaxing atmosphere at the Exhibitors' Reception. The Wednesday Luncheon Keynote speaker will be Mr. Dave Davis, Chief, Systems Engineering Division, Air Force Space and Missile Center, Los Angeles Air Force Station, CA. Wednesday evening features the conference banquet, which will be held at the *House of Blues* followed by a performance by *Cirque du Soleil*. On Thursday (3/24) morning, there will be a poster session that includes our inaugural student poster competition. The Thursday Luncheon Keynote speaker will be Mr. Don Parman, Chief, Strategic Planning, Defense Threat Reduction Agency, Ft. Belvoir, VA.

This year's strong technical program reflects the hard work and enthusiasm of the GOMACTech-11 Technical Program Committee. The committee members aggressively sought out and selected particular topics and areas for presentations, and the quality of the conference certainly reflects this effort. It is our hope and belief that GOMACTech-11 will be a rewarding experience for all participants. We appreciate your support.

John Franco
Conference Chair

Romeo del Rosario
Technical Program Chair