tion of a cryogenic wafer probe station, the issues involved in acquiring an accurate cryogenic calibration and a number of specific examples of cryogenic device measurements. The speakers will discuss their experiences, with a particular emphasis on the problems and solutions that they encountered in the use of their cryogenic wafer probe stations.

WSHI: High Resolution Multi-GSPS Analog to Digital Converters for Photonic Systems

Date & Time: Sunday, June 13; 8:00 AM–12:00 PM

Location: Anaheim Marriott, Grand Ballroom, Salon B

Presenters: **Ruai Yu**, Rockwell Science Center
Thomas Clark, Naval Research Laboratory
Jin Kang, Naval Research Laboratory
Bahram Jalali, UCLA
Donald Miller, Northrop-Grumman
Peter Delfyett, UCF/CREOL
K.V. Reddy, Pritel
William Burns, Naval Research Laboratory
Steve Kaplan, Hypres
Mark Rodwell, UCSB
Charles Cox, MIT Lincoln Labs
Eric Funk, University of Maryland
Chi Lee, University of Maryland

Organizers: Ron Esman, Naval Research Laboratory
Anand Gopinath, Univ. of Minnesota
Martin Nisenoff, Naval Research Laboratory

Sponsors: MTT-3, Lightwave Technology
MTT-18, Microwave Superconductivity

There are ever-increasing needs for directly digitizing RF analog signals at multi-giga-sample-per-second rates with high precision for many military and civilian applications. The aims of this workshop are to disseminate, update and discuss ongoing high speed and high precision analog-to-digital converter efforts and to stimulate new developments at several levels. The intent is to cover the following topics: overview/history of ADCs, ADC theoretical modeling and testing, wideband ADC efforts (principally photonic and cryogenic), low timing jitter sources and other related ADC components. The objectives of this workshop are to discuss and understand the advantages and disadvantages of each ADC technique, to help determine the focused areas in order to solve limitations of each technique. In addition, through this workshop, we hope to promote collaborative efforts through combining advantages of different ADC techniques.

The session will consist of tutorial presentations with broad background material and current status along with presentations by invited speakers and workshop participants on more focused topics. Attendees are encouraged to bring questions or a few viewgraphs to describe their problem or approach.

WSHJ: High Speed Mixed Mode ICs for Optical Networks

Date & Time: Sunday, June 13; 1:00–5:00 PM

Location: Anaheim Marriott, Grand Ballroom, Salon B

Presenters: **ChristophSchulien**, Lucent
Katsuyoshi Washio, Hitachi
John Sitch, Nortel
Augusto Gutierrez, TRW
Koichi Murata, NTT
Charles Chang, Rockwell

Organizers: K.C. Wang, Rockwell Semiconductor Systems
Christopher Chang, Raytheon TI Systems

Sponsor: MTT-9, Digital Signal Processing

Optical networks offer ultra-high capacity transmission and switching of voice, data and video signals. They constitute the backbone of telecom and datacom systems to meet the ever increasing bandwidth demand of global Internet and multimedia traffic. High-speed electronic circuits are key components in optical networks. Tremendous efforts and resources have been invested in the development of various fast transistor technologies and integrated circuits for optical networks. 60 Gb/s transmission ICs and 160 Gb/s switch ICs have been demonstrated in research labs. Commercial lightwave products using high-speed circuits of 10 Gb/s and beyond are readily available. This workshop will discuss the latest developments in these high-speed circuits and technologies. Invited speakers will discuss system requirements on circuits and present circuits design, fabrication, measured results, applications and product developments. These circuits were implemented with several state-of-the-art IC technologies, including Si/SiGe BJT/HBT, GaAs FET/HBT and InP FET/HBT. These presentations will be followed by an open discussion session on status and future trends of high speed ICs for optical networks.

WSHK: State-of-the-Art in Microwave Photonic Components

Date & Time: Sunday, June 13; 1:00–5:00 PM

Location: Anaheim Marriott,
Orange County Ballroom, Salon 4

Presenters: **Mehrdad Ziari**, SDL
Richard Schatz, KTH
Vincent Hietala, Sandia National Laboratories
Mauro Varasi, Alenia
Nadir Dagli, UCSB
Koji Yamada, OKI
Paul Yu, UCSD
David Wake, BT
Cees Steenbergen, Lucent
David Welch, SDL

Organizers: Francois Deborgies, Thomson-CSF
Edward Akerman, MIT Lincoln Laboratory

Sponsor: MTT-3, Lightwave Technology

Photonic components are of major interest in many present-day and future microwave and millimeter-wave systems. Optical links are already compulsory in most CATV distribution networks, and are commonly used in GSM and other networks as well as in test equipment for radars. Optical components are central to numerous original architectures for advanced military systems, and cannot be ignored in future networks at millimeter-wave frequencies (LMDS, MVDS) or in broadband networks in the 60 GHz range. The aim of this workshop is to review the essential building blocks (e.g. lasers, modulators, photodetectors) that are used in enhanced and/or innovative system architectures based upon microwave photonics, and to answer the many questions that potential users (i.e. microwave engineers) may ask:

- What is the status of these components in terms of availability?
- What can be realized now?
- What short-/long-term trends are noticeable?
- How similar are these photonic components to other telecom products?
- Can these components be derived from the telecom industry or do some need to be developed?

WSHL: Filters for the Masses

Date & Time: Sunday, June 13, 1:00–5:00 PM

Location: Anaheim Convention Center, Room A1

Topics and Presenters:

- *Fast EM Based CAD of Low-cost Waveguide Filters and Diplexers*, **Fritz Arndt**, University of Bremen