IEEE KITCHENER-WATERLOO

SECTION PRESENTATION
MTT-Chapter

Waguih Ishak

Director
Communications and Optics Research Laboratory
Agilent Laboratories

An Overview of Agilent Technologies and Agilent Laboratories

A N D

Applications of Photonics to Communications, Interconnects & Sensors

We are approaching an era in which people will need 1-Gbit/s communications ports in their offices, their homes, and even on the road. These high-speed communications ports will enable telecommuting, telemedicine, tele-education, and a variety of multimedia applications for entertainment and computing. These demands for high-speed communications will require new telecommunications and data communications infrastructure with terabit/s data rates.

We are also approaching an era where we will see networked sensors everywhere to monitor, manage and control the environment and improve the way we live.

Photonics technology has played, is and will be playing a CRITICAL role in the way we communicate, measure and, eventually, manage our environment.

At Agilent Labs, we have major research programs to develop technologies needed for high speed communications, interconnects, and sensing. Specifically, optoelectronics, fiber optics, micro optics, integrated optics and high-speed electronics are base core technologies and are considered key to the development of high-speed communications and sensing networks. Taking these technologies form the research labs to products will be key.

DATE: **Wednesday November 5, 2003**

TIME: **10:00 am**

LOCATION: DC 1302, University of Waterloo Davis Centre

Invited by
Professor Sujeet Chaudhuri

Biography

Dr. Waguih S. Ishak

Director, Communications & Optics Research Laboratory

Agilent Laboratories, Palo Alto, Ca

Waguih Ishak was born in Cairo, Egypt on December 4, 1949. He received a BSc degree (with Honor) in electrical engineering from Cairo University in 1971 and a BSc degree in mathematics (with Honor) from Ain Shams University, Egypt, in 1973. His MSc and Ph.D. degrees in electrical engineering (Magnetic Bubble Memories) were awarded by McMaster University in 1975 and 1978, respectively. He joined Hewlett-Packard Laboratories in 1978 where he designed magnetic bubble propagation and detection circuits and surface acoustic wave (SAW) low-loss filters. In 1981, he became a project leader and in 1983 he was the project manager of the Sources and Signal Processing Group and was responsible for transferring SAW and nonlinear gallium arsenide technologies to HP's Spectrum Analyzer and Oscilloscope divisions resulting in many HP products such HP 8562 Microwave Spectrum Analyzer, HP 54121, HP54123 & HP54124 High-Speed Digitizing Scopes

In 1987, Waguih became the manager of the Photonics Technology Department, of the Instruments & Photonics Laboratory which is responsible for R&D programs in fiber optics, integrated optics, optoelectronics, micro optics, and optical interconnects for applications in measurements, communications (datacom and telecom), and computer interconnects. The department was responsible for generating a new business for HP in lightwave Test & Measurements such as lightwave component and spectrum analyzers, tunable laser sources, frequency and time-domain reflectometers, and polarization analyzers. The department was also responsible for starting new R&D programs in the areas of vertical cavity surface emitting lasers, high-speed parallel optical interconnects (POLO), optical measurements for process monitoring and control, and electronic digital films for photography and memory applications.

In 1995, Waguih was promoted to Director of the Communications & Optics Research Laboratory. The lab is work on R&D programs in the areas of Photonics (Fiber optics, integrated optics, optoelectronics, and micro optics) and Integrated Electronics. The emphasis is on fiber-optic communications, wireless communications and the use of optics and electronics in novel applications in communications, computations and measurements.

Waguih is currently the Director of the Communications & Optics Research Lab at Agilent Labs (Agilent was spun off HP in 1999).

Waguih has written about 50 journal and conference papers, four chapters in the "Handbook of Electronic Instruments." He is named an inventor in seven patents. Waguih is married and has two sons.