



Semiconductor Lasers for Fiber-Optic Data Communications

By Kenneth Jackson

The ever-increasing volume of data traffic between computers attached to storage and local area networks encourages the adoption of fiber-optic interconnect technology. Fiber-optic oriented communications protocols such as Fibre Channel, Gigabit Ethernet and, more recently, 10G Ethernet, are being widely deployed to address this bandwidth demand.

In November of last year, my colleague John Ewen presented an overview of these protocols and described fiber-optic transceiver modules that provide the physical layer transport for them. In this presentation, the technology involved in these transceiver modules will be explored in further detail. Specifically, the laser transmitter technology will be discussed, with emphasis on capabilities and limitations of the technology and how the laser source interacts with the fiber-optic medium. In addition, the various packaging approaches employed for these optical sources will be presented along with the engineering trade-offs between performance and cost.

Southern Minnesota IEEE Section Now Has a Control Systems Society Chapter

A third IEEE society chapter has been established within our section. A Control Systems Society chapter has been merged with our existing Communications Society and Signal Processing Society joint chapter – which now becomes the Communications Society, Signal Processing Society and Control Systems Society joint chapter.

Thanks to Scott Dahl, chair of our joint chapter, for taking care of the paperwork to implement the addition – and thanks to new IEEE member Nick Chbat for suggesting the idea.

IEEE Section Meeting

*Kenneth Jackson, Ph.D.
JDS Uniphase, Inc.*

Semiconductor Lasers for Fiber-Optic Data Communications

*Monday, March 17, 6:30 pm
Mayo Medical Sciences Building
(321 3rd Avenue SW, Rochester)*

▶ *Pizza at 6:30; Meeting at 7:00* ◀

Kenneth Jackson is a senior member of the optics development department at JDS Uniphase Datacom Products Division. He has over 22 years of fiber-optic technology experience. He earned his Ph.D. at Stanford University in 1985, having completed a bachelor's degree at UC Berkeley in 1980. His thesis work dealt with the use of fiber-optic tapped delay lines for signal processing applications.

In 1985, Dr. Jackson joined the IBM Research Division in Yorktown Heights, NY, where he was involved in developing one of the world's most integrated, GaAs MESFET 4-channel transceivers. He was also involved in developing optoelectronic packaging approaches that merged multi-level ceramic substrates with planar-processed optical waveguides and self-aligning, flip-chip, optoelectronic components.

In 1992, Dr. Jackson joined the Optical Interconnect Group at the IBM AS400 Division in Rochester. He was project lead for the design and manufacture of gigabit-per-second fiber optic transceivers for use with IBM servers and OEM applications.

Since the acquisition of the IBM group by JDS Uniphase in December 2001, he has continued to be involved in the design and manufacture of multi-gigabit/sec fiber-optic transceivers including modules for emerging 10G-Ethernet applications.



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