

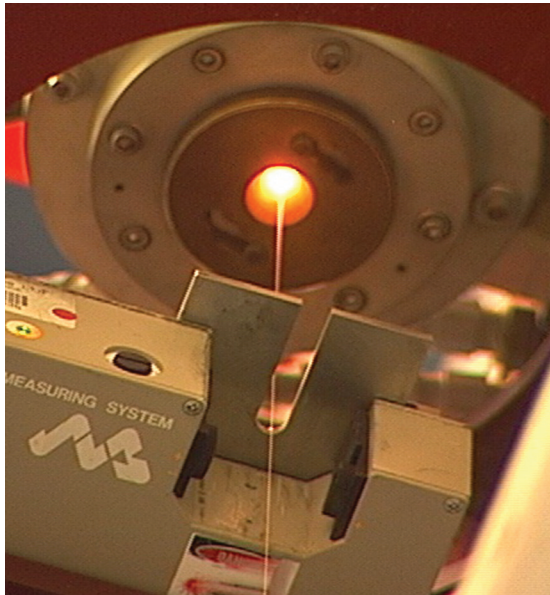
The  
**LIGHT BRIGADE®**

Your Fiber Optic Resource.

# Fundamentals of Fiber Optics

## A Primer on Optical Fibers

W-6D-112 (Second revision) • ISBN 978-0-9754542-0-6 • 80 minutes • Released in March 2005



### Our award-winning first release...

*Fundamentals of Fiber Optics* reviews the fascinating history and evolution of optical fibers and their applications. The DVD examines basic optical theory, terminology, and applications. It incorporates video clips, animations, and graphics detailing how optical fibers are manufactured, tested, and installed. The DVD is unbiased and provides an international perspective, including film footage and standards. Peer review occurred during both the scripting and production phases.

Whether your need is singlemode, multimode, plastic or application-specific optical fibers, this DVD is a basic primer on the major types of fibers, their structure, history, and applications.

For those planning to use the DVD as a staff development tool, it is formatted for easy presentation either by chapters or in continuous play mode. Included is a quiz to test knowledge content.

Winner of *Lightwave* magazine's Attendees' Choice Award in the Education and Training category at the 2005 Optical Fiber Conference.

## Chapter Selections

### A Brief History – 5:55

This chapter starts with the importance of communications and provides a brief history of how pioneers such as John Tyndall and Charles Kao provided the breakthroughs necessary for the development of optical fiber.

### Advantages of Fiber Optics – 3:22

This chapter details the advantages and benefits that optical fiber provides to bandwidth, signal attenuation, noise immunity, size, and weight, making it the optimum physical medium for communications.

### Light Basics – 3:08

To use optical fibers, one must understand basic optical theory. In this chapter, graphical animations describe wavelength, refraction, reflection, and total internal reflection and how they each apply to optical fibers.

### Fiber Structures – 3:36

This chapter explains numerical aperture, the roles and variations of the core, cladding and coatings for glass and plastic optical fibers and how they apply to multimode and singlemode fibers.

### Attenuation – 8:40

This chapter explains wavelength, the decibel, and intrinsic and extrinsic causes of attenuation. Learn the effects of absorption and scattering at various wavelengths and the difference between macro- and microbending.

### Fiber Manufacturing – 5:03

Over the years, manufacturers have developed different processes for manufacturing optical fibers. Watch footage from Corning, OFS/Lucent, Nortel, and others, and observe various methods and techniques.

### Multimode Dispersion – 11:24

This chapter focuses on modal dispersion, which causes differential mode delay, the effect of light sources with overfilled launch conditions, mode conditioning patch cords and new methods of measuring bandwidth including effective modal bandwidth.

### Singlemode Dispersion – 8:30

This chapter describes chromatic, waveguide, material and polarization mode dispersion, as well as how each type applies to singlemode fibers.

### DWDM – 7:05

Optical multiplexing has evolved from basic WDM to Dense WDM to Coarse WDM. Explore WDM and how it works. Learn about four wave mixing and how dispersion compensation fiber is applied.

### Plastic Optical Fiber – 4:09

Plastic optical fiber is used in many unique applications. Learn about standard step index plastic optical fiber structures with high and low numerical apertures, and explore POF manufacturing and applications.

### Specialty Fibers – 2:52

As optical communications has grown, so has the need for "application specific optical fibers." An introduction to dispersion compensating, erbium, select cut-off wavelength, cladding mode suppression, and more.

### Fiber Optic Applications – 9:08

Local, storage, metropolitan, and wide area networks use fiber to communicate. Understand the fiber types used in these networks. CATV, hybrid fiber coax architecture, FTTx, FITL and security applications are covered.

**Bonus Materials** – Quiz in Word format, with both student and instructor versions.