

LABORATORY SAFETY

INTRODUCTION:

In practice, optical fibers utilize invisible light (in the infrared region of the electromagnetic spectrum). There are several reasons for the use infrared light in fiber optics communication. Those reasons will be explained in the lecture. In addition, many fibers optics systems utilize laser light instead of ordinary light. The laser diode (LD) emits a coherent beam of light which can be harmful to the eye, whether the light is visible or invisible. The light emitting diode (LED) emits ordinary light, which is not harmful to the eye.

SAFETY CONSIDERATIONS:

Students attending the fiber optics communication laboratory are advised to adhere to the following safety precautions:

- 1- Never directly look at laser light, whether visible or invisible, not even for a short time. Damage to the eye can occur before you realize it.
- 2- Never directly look at the output end of an optical fiber, if the fiber carries laser light.
- 3- Watch also for any laser light that is reflected by smooth highly reflecting surfaces and avoid looking at it directly.
- 4- Some fiber optics communication experiments utilize a device called the Optical Time Domain Reflectometer (OTDR). This device emits invisible laser light from its output terminal. Never look directly at the output terminal of an OTDR when the device is turned on.
- 5- In this experiment, a HeNe laser source will be used in some experiments. There are special protective goggles designed to block this laser light in order to protect the eye against accidental exposure. The students are encouraged to use those goggles. However, it must be kept in mind that these goggles are only useful at the HeNe wavelength.

You can view infrared light using an infrared viewer. If an infrared viewer is not available in the laboratory, you can use a mobile phone that has a camera to view infrared light.