



CHAPTER 9: MANUFACTURED SUBSTANCES IN INDUSTRY



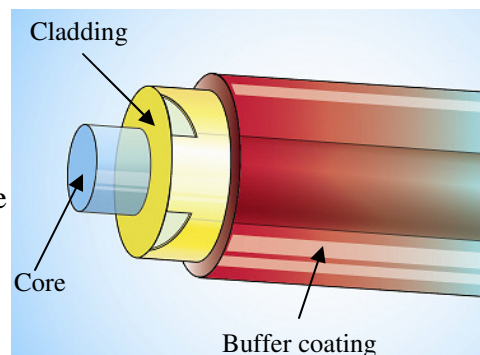
Extra Info

Optical fibres

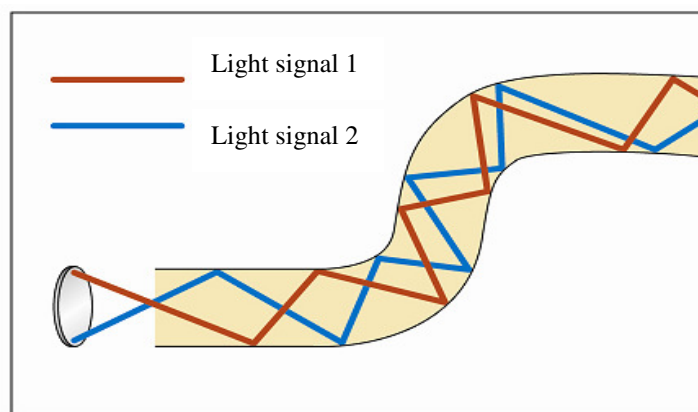
Optical fibres (used in fibre optic) are transparent glass or plastic fibres that are long and thin of about the diameter of a human hair. They are arranged in bundles called **optical cables** and used in fibre-optic communication, for **transmitting light signals** over longer distances and at higher data rates than other forms of communications.

There are three parts in a single optical fibre:

- **the core** - Thin glass or plastic centre of the fibre where light travels
- **the cladding** - the material surrounding the core that reflects light back into the core
- **the buffer coating** - the plastic coating that protects the fibre from damage and moisture



Light travels through the core of an optical fibre by constantly bouncing from the cladding due to **total internal reflection** as shown in the diagram below.



There are advantages of using optical fibres instead of conventional metal wires (copper wires). Optical fibres are less expensive, thinner, non-flammable, light and flexible, and have a higher capacity for carrying.