Practical-3

LCD(Liquid Crystal Display)

U.V Patel College of Engineering

Ganpat University
॥ विद्यया समाजोत्कर्षः ॥

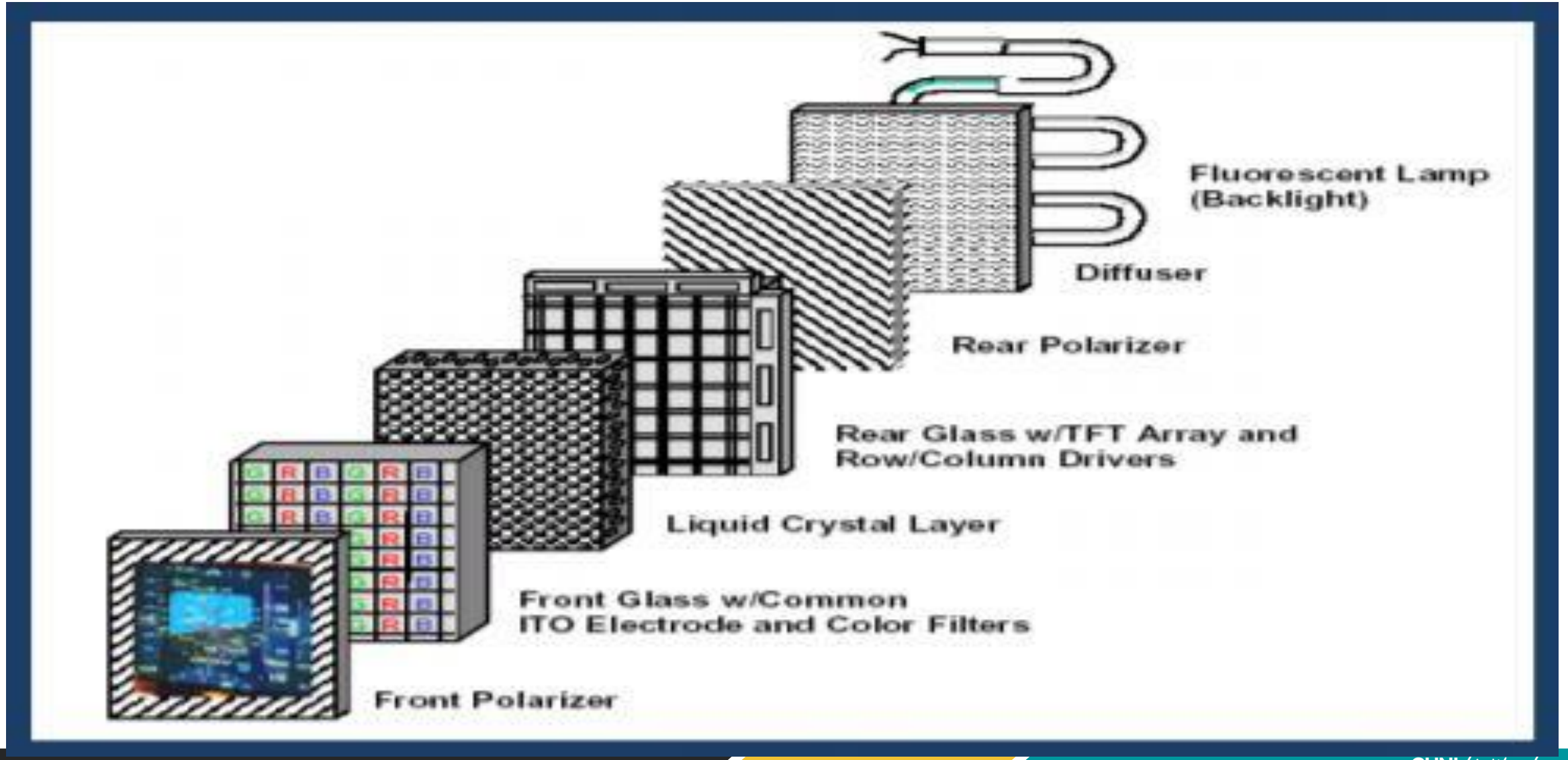
Liquid Crystal Display

- A Liquid Crystal Display (LCD) is a thin , flat panel used for electronically displaying information such as text ,images and moving picture.

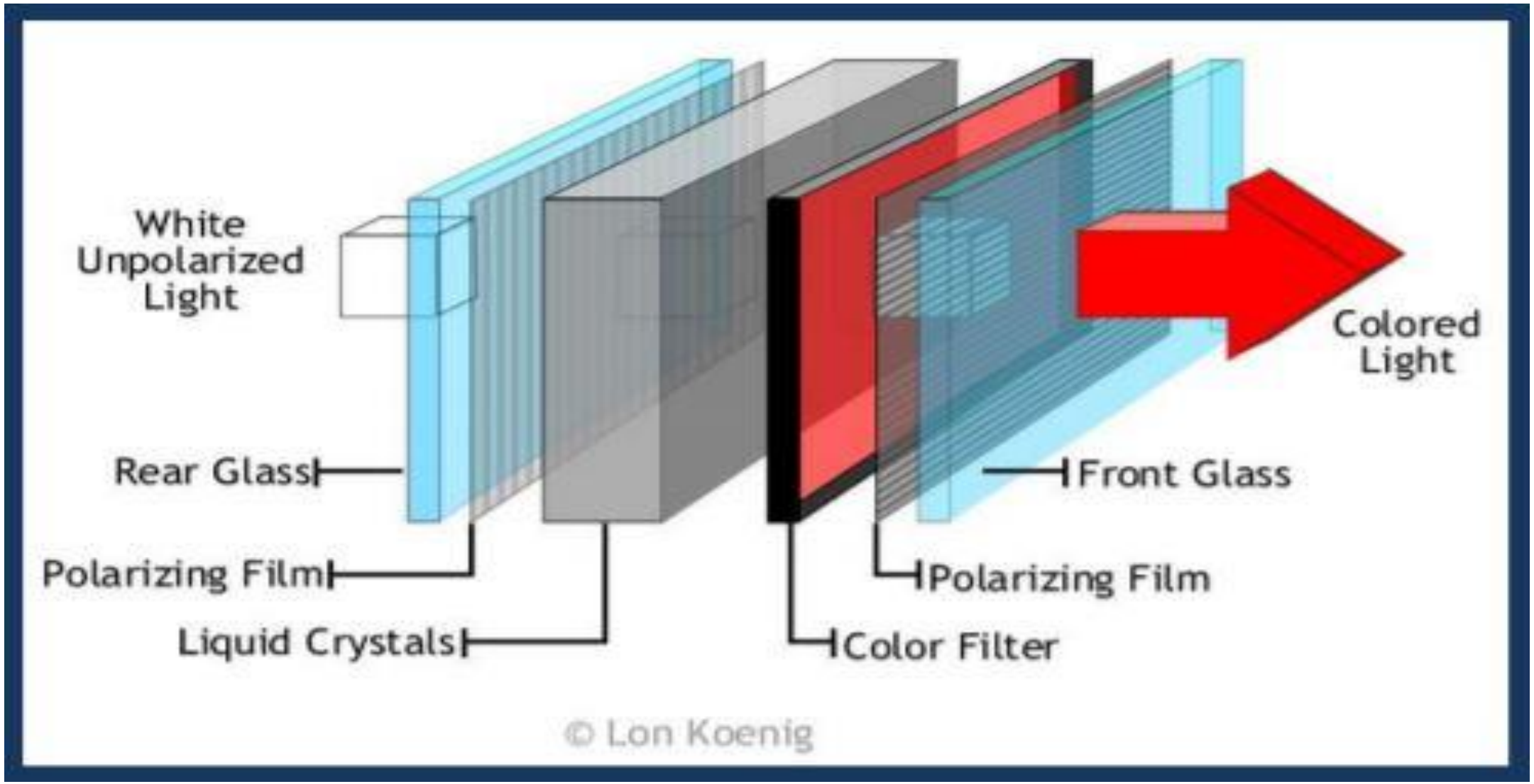
- Its uses include monitor for Computers, Televisions , Instrument panels Gaming devices etc.

- Using polarization of lights to display objects.

LCD WORKING PRINCIPLE



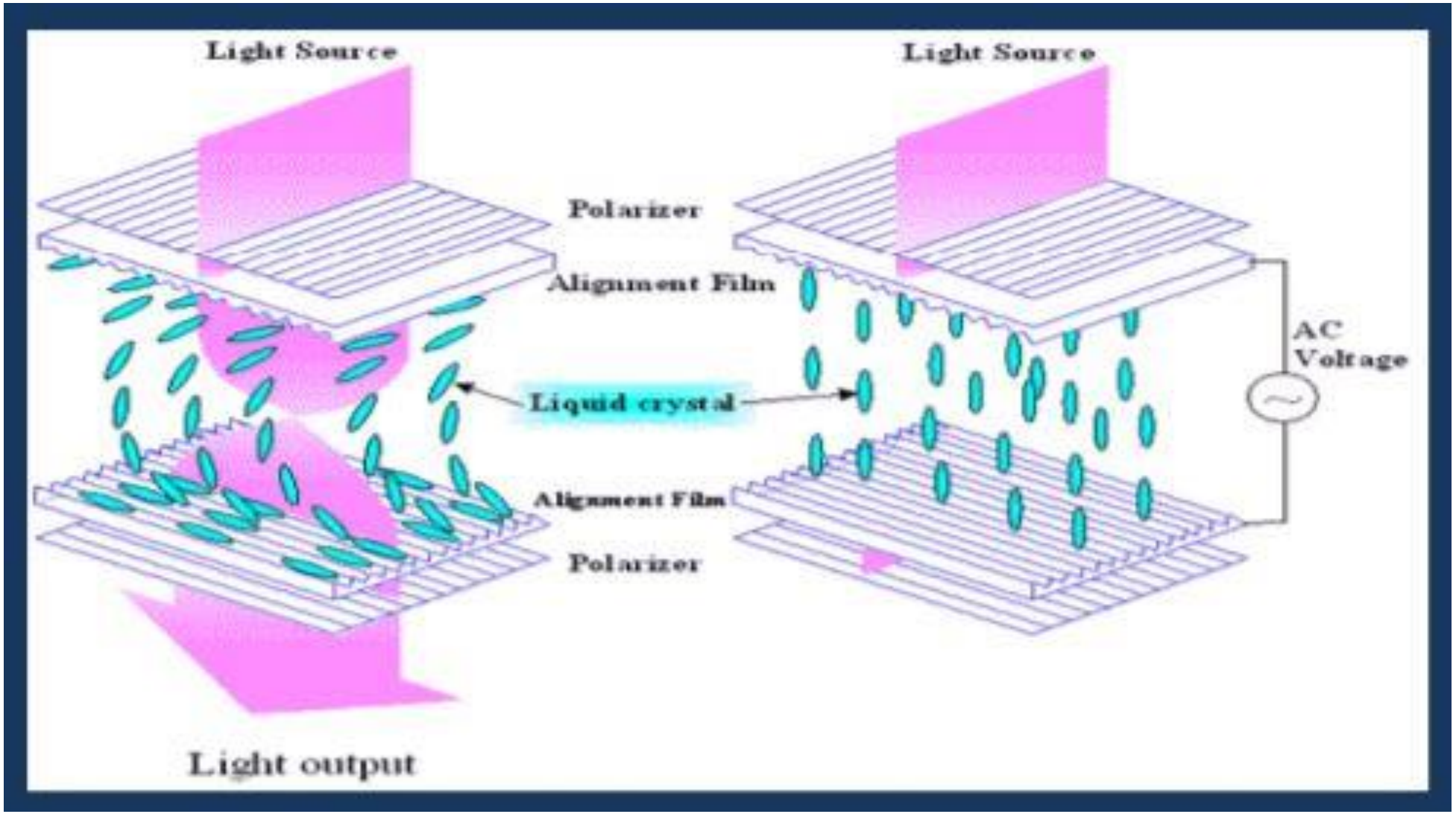
LCD WORKING


White
Unpolarized
Light
Colored
Light
Rear Glass
Front Glass
Polarizing Film
Polarizing Film
Liquid Crystals
Color Filter
© Lon Koenig

LCD WORKING

- TFT Glass has as many TFTs as the number of pixels displayed.
- A Color Filter Glass has color filter which generates color.
- Diffuser distributing the light evenly across the viewing area
- Liquid crystals move according to the difference in voltage between the Color Filter Glass and the TFT Glass.
- The amount of light supplied by Back Light is determined by the amount of movement of the liquid crystals in such a way as to generate color.

LCD WORKING


Light Source
Light Source
Polarizer
Alignment Film
Liquid crystal
AC
Voltage
Alignment Film
Polarizer
Light output

Advantages of an LCD’s:

- LCD’s consumes less amount of power compared to CRT and LED
- LCD’s are consist of some microwatts for display in comparison to some mill watts for LED’s
- LCDs are of low cost
- Provides excellent contrast
- LCD’s are thinner and lighter when compared to cathode-ray tube and LED

Disadvantages of an LCD's:

- Require additional light sources
- Range of temperature is limited for operation
- Low reliability
- Speed is very low
- LCD's need an AC drive

Applications of Liquid Crystal Display

Liquid crystal technology has major applications in the field of science and engineering as well on electronic devices.

- Liquid crystal thermometer
- Optical imaging
- The liquid crystal display technology is also applicable in the visualization of the radio frequency waves in the waveguide
- Used in the medical applications