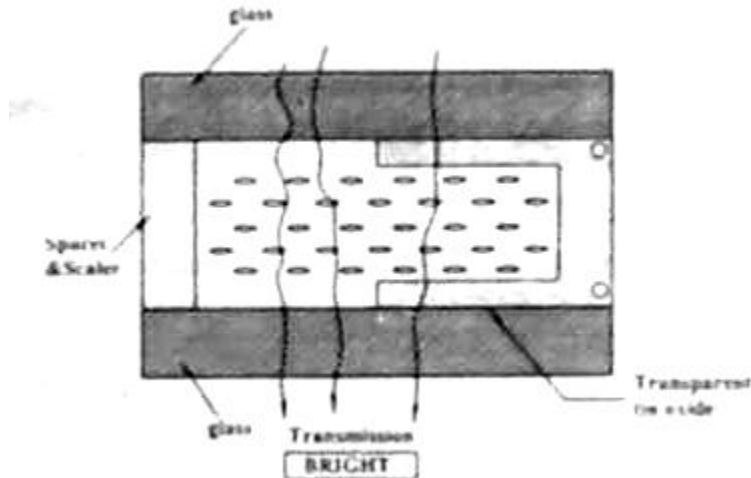


## DYNAMIC SCATTERING DISPLAY



### Construction:

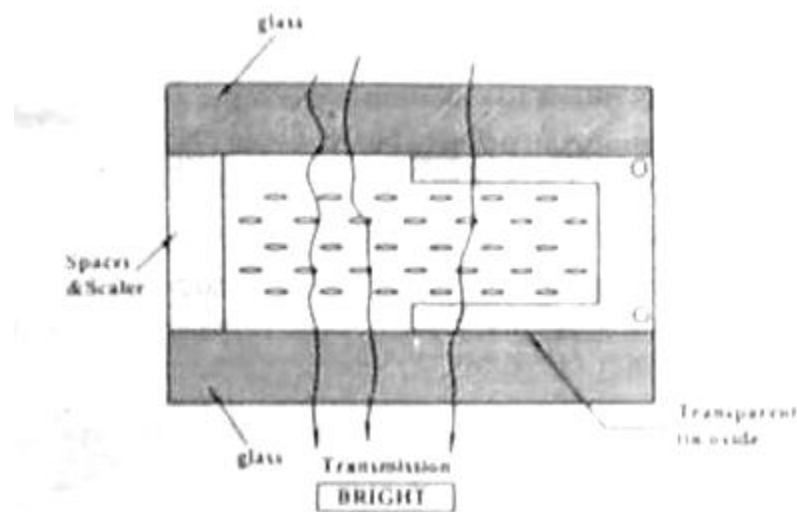
In the case of dynamic scattering display in absence of an applied voltage, the device is transparent. But, when the voltage is applied, the crystal becomes an efficient scatterer of white light. It consists of a pure nematic liquid crystal in which impurities are added to increase its conductivity, due to ions in them. The liquid crystal filled in between two glass plates are coated with transparent in oxide and can act as electrodes. The spacer and scalar help in filling of liquid and to change the liquid level.

### Working:

In the normal state, without application of electric field, all the molecules in the nematic liquid crystal are parallel to the glass plate. The material is

transparent. When the electric field is applied, the dipoles of molecules are rotated into alignment in the direction, exactly perpendicular to field direction. Now, the ions are pulled by the electrodes and hence the positive ions will go towards negative potential and vice versa.

Therefore these ions disrupt, the molecules which are orderly arranged and create a small turbulence. Due to turbulence the negative charges are gathered as crests and positive charges are gathered as troughs, with respect to the field direction.



When the applied voltage is at critical value, the turbulence becomes more, which results in variation of refractive index of the medium of the crystal. So, the light falling on them is scattered and hence liquid appears dark in the white background. When the field is switched off, the molecules are locally rearranged and material becomes transparent and the display is erased.

### **Advantages:**

- ↪ It has operating voltage(15 volts)
- ↪ It consists large power(20 mv)
- ↪ Life time is very small.

Source : <http://mediatoget.blogspot.in/2011/08/dynamic-scattering-display.html>