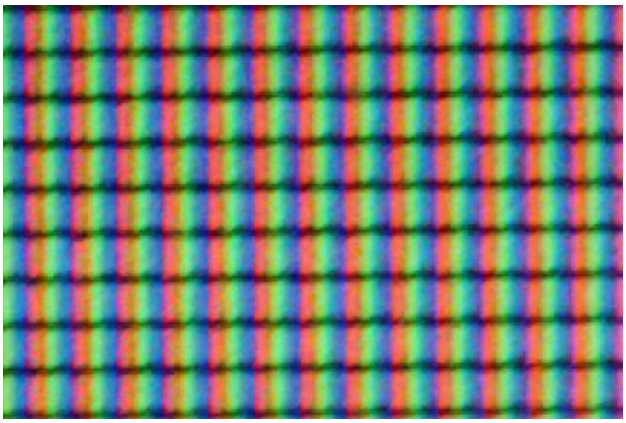
How RGB color is displayed on screen

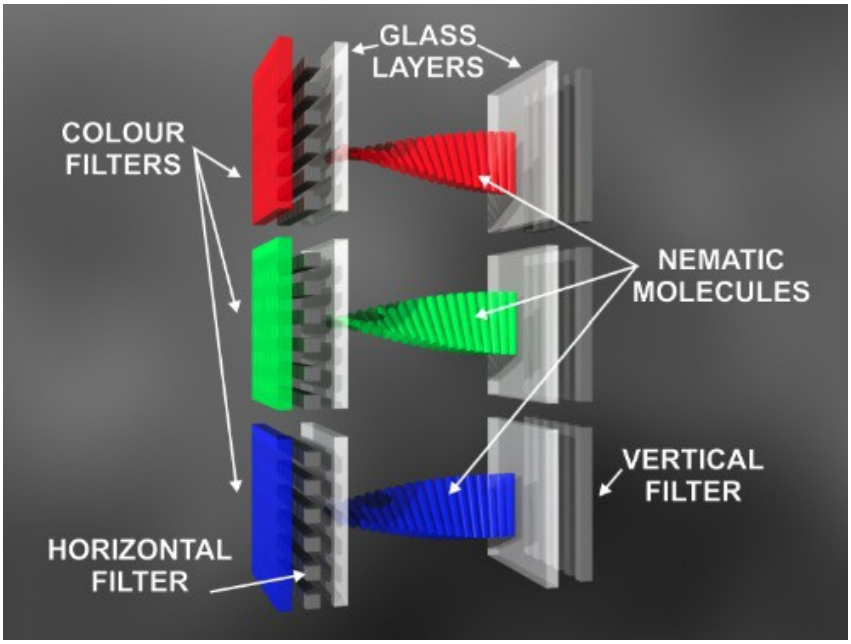
Each pixel on a display screen is composed of three sub-pixels: three dots or stripes for red, green and blue. They are small enough that your eye just sees the result of combining the three colors (link: RGB color model, additive color). Pixels of color images on paper are the result of three dyes, cyan, magenta, yellow and black (link: CMYK color model, subtractive color).

We can store this information in a computer program in arrays. The rows and columns of the arrays correspond to the row and column location of a pixel. Values stored in the array elements are the R, G, and B intensities to be displayed at that pixel.

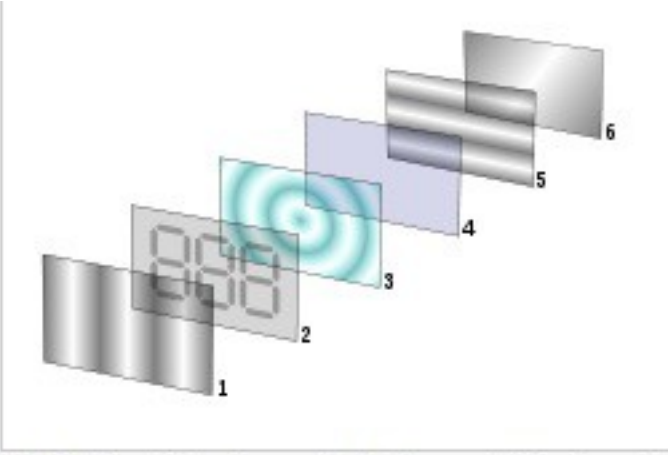
This image is a magnification of an LCD screen in which you can see the sub-pixels (liquid crystal display, link to source).



This image is a cartoon of a single LCD pixel (link to source). Your eye would be on one side of this structure and the light source would be on the other side. Transparent electrodes on each side would vary the electric field and twist the nematic "liquid crystal" molecules and let the desired amount of light through each color filter.



This image shows more accurately the layers on an LCD screen (link to source).



Reflective twisted nematic liquid crystal display.

1. Polarizing filter film with a vertical axis to polarize light as it enters.
2. Glass substrate with ITO electrodes. The shapes of these electrodes will determine the shapes that will appear when the LCD is turned ON. Vertical ridges etched on the surface are smooth.
3. Twisted nematic liquid crystal.
4. Glass substrate with common electrode film (ITO) with horizontal ridges to line up with the horizontal filter.
5. Polarizing filter film with a horizontal axis to block/pass light.
6. Reflective surface to send light back to viewer. (In a backlit LCD, this layer is replaced with a light source.)