

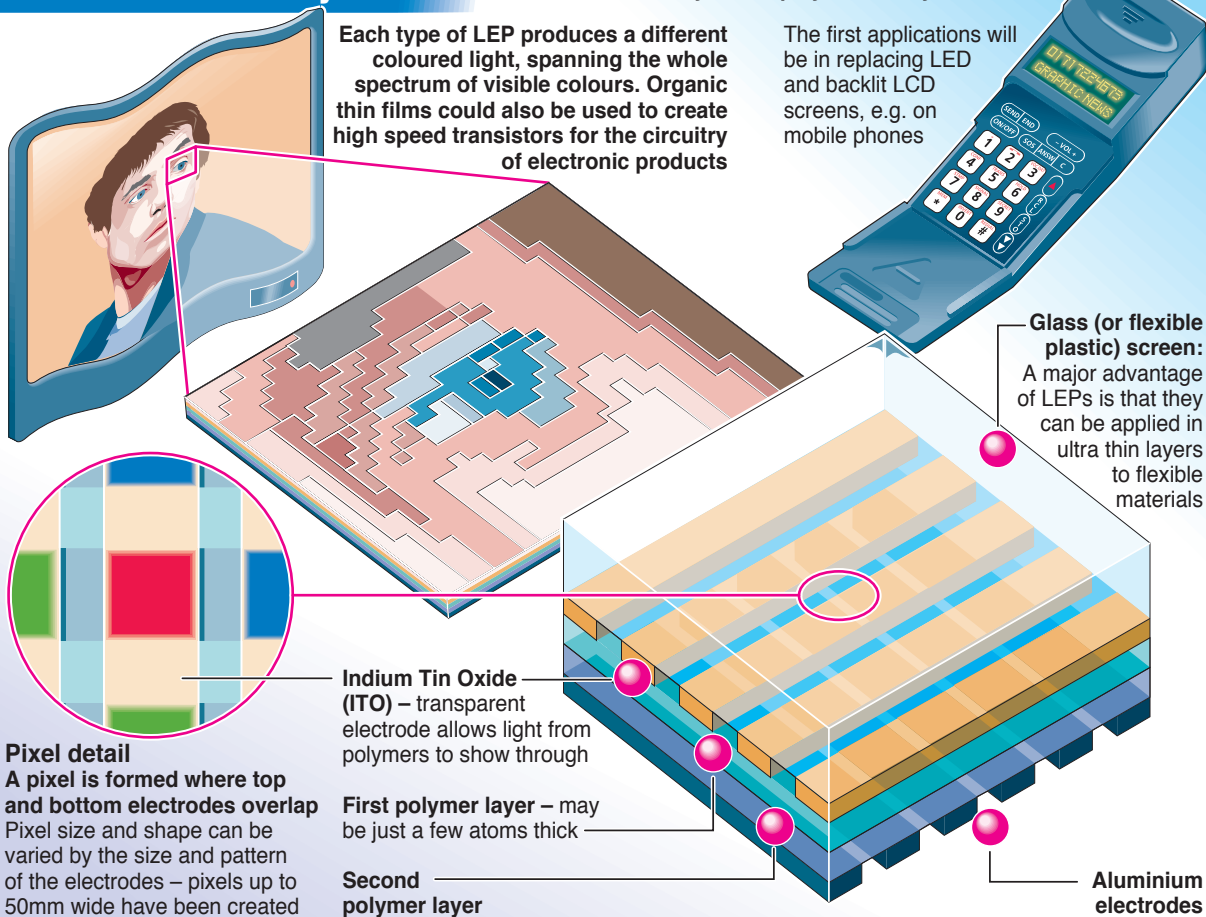
Thin films make flat screen TV a reality

Advances in light-emitting polymers (LEPs) – organic molecules which give off light when a voltage is applied – could make large flexible TV and computer screens a much cheaper alternative to the crystal displays currently in use

Each type of LEP produces a different coloured light, spanning the whole spectrum of visible colours. Organic thin films could also be used to create high speed transistors for the circuitry of electronic products

The first applications will be in replacing LED and backlit LCD screens, e.g. on mobile phones

Glass (or flexible plastic) screen:
A major advantage of LEPs is that they can be applied in ultra thin layers to flexible materials



Pixel detail

A pixel is formed where top and bottom electrodes overlap
Pixel size and shape can be varied by the size and pattern of the electrodes – pixels up to 50mm wide have been created

Indium Tin Oxide (ITO) – transparent electrode allows light from polymers to show through

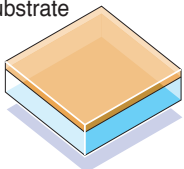
First polymer layer – may be just a few atoms thick

Second polymer layer

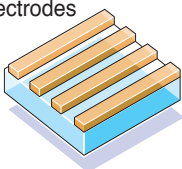
Aluminium electrodes

Producing a thin film LEP

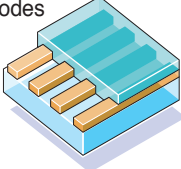
1 ITO is laid out to a glass or plastic substrate



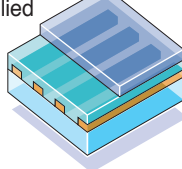
2 ITO is etched to form pattern of electrodes



3 Liquid polymer layer is spun or sprayed over electrodes



4 Second liquid polymer layer applied



5 Aluminium electrode laid on top of polymer

