

Nanotechnology at work

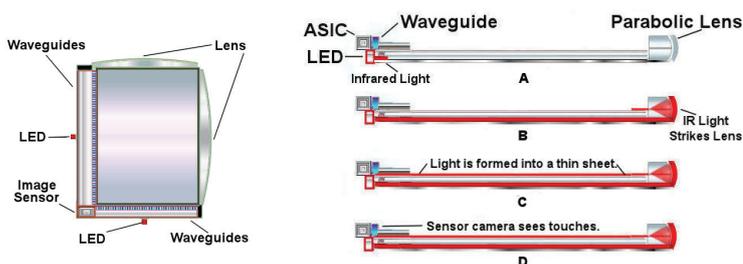
Nanotechnology is an emerging scientific field creating materials, devices, and systems at the molecular level. By being able to work at this ultra-small scale, nanotechnology is being used to deliver innovations in industries including clean energy, environment, health and personal care, electronics, transport, construction, telecommunications, manufacturing and mining.

Touching nanotechnology

To many technology users, there has been a seamless and hardly noticed transition from using a computer mouse to touch-screen in electronic devices. With increasing demand for touch screen technology in electronics, Australian firm RPO Pty Ltd is developing a revolutionary and highly differentiated touch technology based on polymer optical waveguides, physical structures which guide the direction of light on the nanoscale. Since 2003, RPO has been applying its waveguide technology to consumer electronics products, while also developing a high-volume manufacturing process.

Nanophotonics, the branch of nanotechnology that deals with the study and behaviour of light and optics at the nanometre scale, is a key element which ensures the success and uniqueness of RPO's Digital Waveguide Touch™ (DWT™) technology. DWT is an optical touch system and polymer waveguide process, which can be applied to any product that benefits from having a touch-screen interface.

Product examples include notebook PCs, slate PCs, eReaders, mobile phones, GPS systems, automotive control displays, multimedia players, and a number of professional applications, such as Point of Sale and ATMs.



Digital Waveguide Touch™ technology works by taking a low power LED light source and a parabolic lens to provide a thin sheet of collimated light above the display. This light is captured by the waveguides using a series of channels to direct the light to an image sensor. A touch event blocks light to certain waveguide channels and in turn certain pixels on the sensor go dark. A simple algorithm is used to determine the touch position from the channels that go dark. Being able to manipulate light on the nanoscale enables RPO's sophisticated waveguide technology to discern between a finger and a pen, or even between a thumb and a finger, and can detect multiple touch events unlike many of today's touchscreen technologies.

To increase the functionality of handheld devices in the future, high resolution touch input on larger screens, intuitive interfaces, and multiple touch points are needed for gaming, photo-viewing, map-reading and other applications. With the use of nanotechnology as part of the development, RPO's touch-screen technology devices provide an immediate option for these applications.



ABOUT RPO

RPO is a technology focused company, applying its waveguide technology to solutions for consumer electronics markets and has facilities for customised, high-volume manufacturing of waveguides.

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