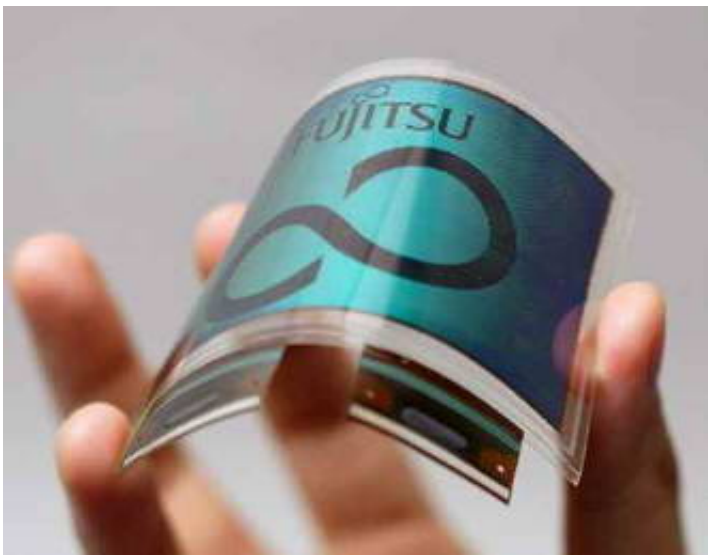
World's First Film Substrate-based Bendable Color Electronic Paper featuring Image Memory Function

July 13 2005



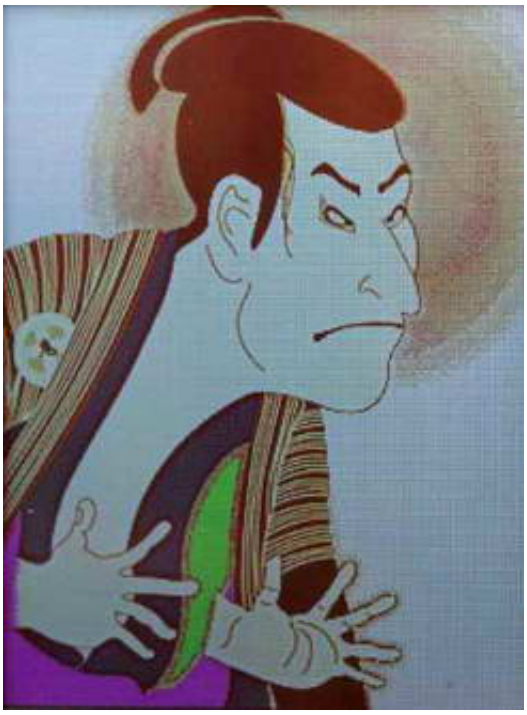
Fujitsu Laboratories Ltd., Fujitsu Frontech Limited, and Fujitsu Limited today announced their joint development of the world's first film substrate-based bendable color electronic paper with an image memory function. The new electronic paper features vivid color images that are unaffected even when the screen is bent, and features an image memory function that enables continuous display of the same image without the need for electricity.

Image: World's first film substrate-based bendable color electronic paper with image memory function (shown being bent)

The thin and flexible electronic paper uses very low power to change screen images, thereby making it ideal for displaying information or advertisements in public areas as a type of new electronic media that can be handled as easily as paper.

The jointly developed electronic paper will be showcased at Fujitsu Forum 2005, to be held July 14 and 15 at Tokyo International Forum.

Electronic paper offers all of the same characteristics of paper such as being thin, flexible, and lightweight. It also boasts low power consumption in that it does not require electricity except during screen image changes, making electronic paper especially suited for advertisements or information bulletins in public places for which paper is currently used. Electronic paper is especially convenient for use on curved surfaces, such as columns. In addition, electronic paper can be conveniently used in conjunction with mobile devices as an easy-to-read and portable display device.



World&acutes first film substrate-based bendable color electronic paper with image memory function (color example)

Numerous R&D efforts are in progress in the field of electronic paper. However, thus far there had been no color electronic paper available that uses flexible film substrate capable of being bent without affecting the screen image and which features a memory function.

Newly Developed Technology

Key features of Fujitsu's new electronic paper and its technology are as follows:

1. No electricity required for continuous display, minimal power consumption when changing screen image

-- Features an image memory function that enables continuous display of the same image even when electricity is turned off therefore no electricity is required for continuous display.
-- Screen image can be changed using minimal electricity consumption equivalent to the weak radiowaves used in contactless IC cards.
-- Fujitsu's new technology significantly conserves energy by consuming only one one-hundredth to one ten-thousandth the energy of conventional display technologies.

2. High-level display performance

-- The new electronic paper is constructed of three displaying layers - red, blue, and green. Since no color filters or polarizing layers are required, it features color that is significantly more vivid than conventional reflective-type LCDs.
-- Proprietary Fujitsu technology ensures that screen color is unaffected even when the screen is bent or pressed with fingers.
-- Because the screen image does not require repetitive updates to be maintained, the screen does not flicker.

3. Flexible film substrate

The film substrate employed in Fujitsu's new electronic paper can be flexibly bent and thus significantly widens the range of potential applications.

Anticipated Applications

By leveraging the features of this technology, a wide variety of applications can be envisioned for Fujitsu's new electronic paper as a digital medium that can be handled like paper. Following are some examples:

-- Transit advertising on trains, information displays on curved surfaces, and other public display applications that could take advantage of its light weight and flexibility. -- Information displayed can be updated based on the time of day, enabling more effective advertising and informational signage.
-- Electronic shelf display tags, point-of-purchase displays, restaurant menus, and other in-store uses. Can also be used for pricing displays or product information displays that stand out in full color and can be readily updated.
-- Operating manuals, work orders, and other short-term information displays, facilitating the trend toward paperless offices or factories.
-- Text or images from mobile phones or other mobile devices can be transferred wirelessly to larger displays for easy viewing.
-- Use in the home can offer more convenient digital-media devices that can be carried from room to room.

Future Developments

Fujitsu will conduct test marketing and practical-use testing, targeting commercialization within fiscal 2006 (April 2006 to March 2007) to promote field innovation using its new electronic paper.

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