

Current Trends in Electronic Paper

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Abstract

It is said that Internet traffic doubles about every nine months. We have access to much more information than before through electronic media. These electronic media sometimes do away with the need for paper, but at other times they create more demand for it. Paper supports some kinds of human activities better than the electronic alternatives do. For example, paper presents a much more comfortable and barrier-free interface to its users than liquid crystal displays. In fact, people prefer to print documents out on paper when they want to read them.

Recently, there has been increasing interest in electronic paper that combines the advantages of electronic media with the human-friendly characteristics of paper. This talk focuses on the properties, candidates and prospects for e-paper and the contents can be outlined using the six what-why-who-where-when-how questions (5W1H) as described below:

- 1 Properties of e-paper
 - 1.1 What is e-paper?
 - 1.2 Why is e-paper required?
- 2 Candidates for e-paper
 - 2.1 Who is investigating e-paper?
 - 2.2 How will they create e-paper?
- 3 Prospects for e-paper
 - 3.1 Where will e-paper be used?
 - 3.2 When will e-paper be successful in the market?

1.1 What is E-Paper?

The definition of e-paper depends on individuals at present. Some people think that e-paper is a re-writable paper, while others believe that it is a flexible display. However, it is sure that there is a technology field called e-paper and the goal of e-paper research is to combine the re-writable nature of electronic media with the characteristics of paper.

1.2 Why is E-Paper Required?

From a technical point of view, it seems to be more important to consider why e-paper is required than what e-paper is. The advantages of e-paper relative to a conventional display will be described, with respect to its readability, bi-stability and flexibility.

2.1 Who is Investigating E-Paper?

The present candidates for e-paper along with their inventors will be introduced, including particle based systems such as electrophoretic image displays and electrical twisting ball displays, liquid crystal systems such as cholesteric liquid displays, and other new technologies such as electrowetting displays.

2.2 How Will They Create E-Paper?

The success of e-paper clearly depends on solving the technical problems associated with it such as its relatively slow response time and the difficulty of achieving color images. The attempts to solve these problems are focused on here.

3.1 Where Will E-Paper be Used?

E-paper will give us a significant opportunity for new product development. The application of e-paper will be discussed, with particular emphasis on electronic books and electronic newspapers.

3.2 When Will E-Paper be Successful in the Market?

Although the readability of e-paper is recognized to be better than that of a conventional display, there is still a gap in readability compared to traditional paper. Will e-paper be a threat to traditional paper when it achieves paper-like readability? The discussion will focus on the future of both paper and e-paper.

Biography

Shuichi Maeda is a senior research scientist at Oji Paper. He received his MSc. in polymer chemistry from Keio University and joined the research laboratory at Oji in 1989. He worked on polymer colloids at the University of Sussex beginning in 1992. After receiving his PhD from the University in 1994, he returned to Oji's research laboratories. His current interests are polymer colloids, media for printing and electronic paper. Dr Maeda received the "Polymer Lab Award" of the Royal Society of Chemistry in 1994 and the "Japan Tapii Award" of Japan Tapii in 2001.