

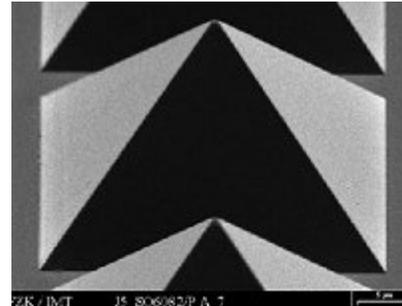


Pyramids save energy in laptops

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Physicists have developed a new way of increasing battery life in devices such as laptop computers, personal TVs and camcorders.

The *Journal of Micromechanics and Microengineering* reports on the development of a film which, when placed over screens, increases their display brightness by 100 percent or more.



micropyramid

The new film consists of 'micropyramid' structures which prevent energy losses by allowing the majority of light rays from a restricted range of directions to pass through, thereby concentrating the output.

Brightness enhancement films have been used in consumer electronics devices since the early 1980s to improve the brightness of liquid crystal displays. They consist of microstructures (structures the size of a fraction of a millimetre) built on top of transparent plastic films and conserve energy by redirecting and redistributing light so that its direction is concentrated?

Liwei Lin of the University of Michigan and colleagues at the National Taiwan University have used a new technology, similar to that used by Intel Inc. in the fabrication of the Pentium III chip, to significantly improve the way such films are made.

Conventional mechanical methods of making the films make it difficult to achieve microstructures with very smooth surfaces. As a result light rays can be reflected and refracted unpredictably, resulting in energy losses.

The new technique produces the micropyramids by combining micro-machining and plastic molding technologies, making it easy and inexpensive to mass-produce the new films. The advantage of micro-machining is its ability to build fine mold inserts, making micropyramids with very smooth surfaces.

Because of the increased smoothness of the surfaces of the pyramids the brightness is enhanced without additional power, and energy loss is minimal. In this way an increase in brightness of 100 percent or more can be achieved without any extra input energy being required.

Anna Salleh - ABC Science Online

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