



Biomimicry: Perfecting the art of imitation

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Biomimicry is a design and leadership discipline that seeks sustainable solutions by emulating nature's time-tested ideas. The vision is to create products, processes, organizations, and policies—new ways of living—that are well-adapted to life on earth over the long haul.

TED Talks presenter Janine Benyus has a message for inventors: "When solving a design problem, look to nature first." You'll find inspiration for designing things in harmony with nature and with spectacular results.

Mirasol, a biomimetic iridescent display technology from Qualcomm, is based on the structural color phenomenon found in butterfly wings resulting from nano-scaled surfaces that break up white light and bounce it back up in its component colors. On the bounce back up, however, certain wavelengths of light interfere with each other, canceling out some perceived colors and allowing others to show.

Qualcomm devised a way to mimic the interferometric process by using a micro-electro-mechanical system (MEMS) to engineer a reflective device that opens or closes tiny gaps between a mirror and a glass plate in a tiny pixel. When current is run through the pixel's "mirror" (a reflective and conductive membrane), electrostatic attraction causes it to stick against the bottom of the glass plate, closing the gap and turning the color off. A lower current returns the pixel to its open, "color on" position.

This device uses structure to save energy: it is reflective and doesn't need to be backlit resulting in devices that will be easier to read, faster to be displayed, and will be reduced in size and weight.

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