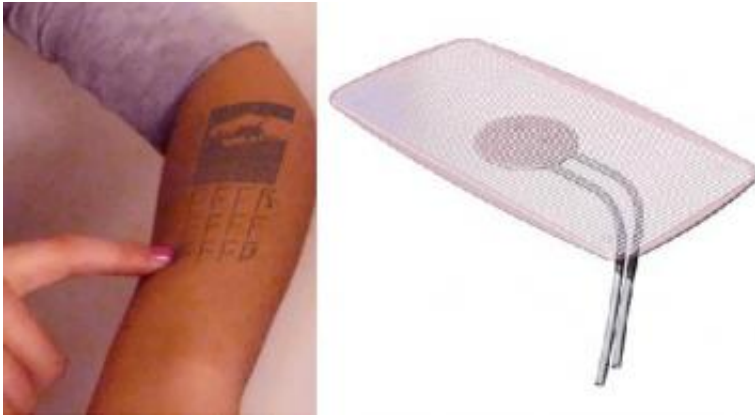


Electronic tattoo display runs on blood

February 21 2008, by Lisa Zyga



The tattoo display: "Waterproof and powered by pizza."

Jim Mielke's wireless blood-fueled display is a true merging of technology and body art. At the recent Greener Gadgets Design Competition, the engineer demonstrated a subcutaneously implanted touch-screen that operates as a cell phone display, with the potential for 3G video calls that are visible just underneath the skin.

The basis of the 2x4-inch "Digital Tattoo Interface" is a Bluetooth device made of thin, flexible silicon and silicone. It's inserted through a small incision as a tightly rolled tube, and then it unfurls beneath the skin to align between skin and muscle. Through the same incision, two small tubes on the device are attached to an artery and a vein to allow the blood to flow to a coin-sized blood fuel cell that converts glucose and oxygen to electricity. After blood flows in from the artery to the fuel

cell, it flows out again through the vein.

On both the top and bottom surfaces of the display is a matching matrix of field-producing pixels. The top surface also enables touch-screen control through the skin. Instead of ink, the display uses tiny microscopic spheres, somewhat similar to tattoo ink. A field-sensitive material in the spheres changes their color from clear to black, aligned with the matrix fields.

The tattoo display communicates wirelessly to other Bluetooth devices - both in the outside world and within the same body. Although the device is always on (as long as your blood's flowing), the display can be turned off and on by pushing a small dot on the skin. When the phone rings, for example, an individual turns the display on, and "the tattoo comes to life as a digital video of the caller," Mielke explains. When the call ends, the tattoo disappears.

Could such an invasive device have harmful biological effects? Actually, the device could offer health benefits. That's because it also continually monitors for many blood disorders, alerting the person of a health problem.

The tattoo display is still just a concept, with no word on plans for commercialization.

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