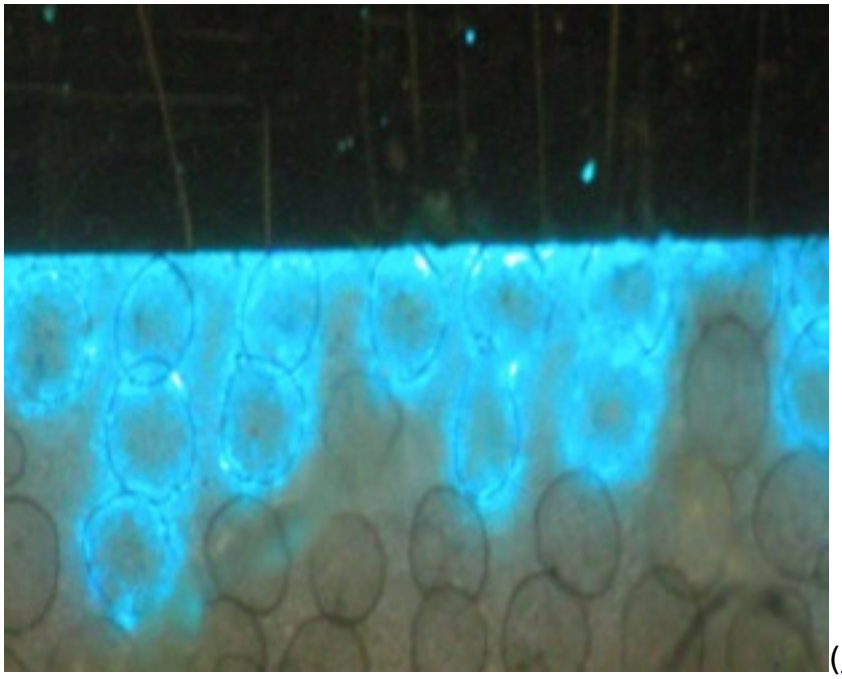
Next-Gen Touch Screen Inspired by Coffee Rings

Eric Bland



(Discovery News [1]) - It's a touch screen, a solar panel, a computer circuit, and soon, it could be used at home.

Taking advantage of ink's natural tendency to create "coffee rings," a group of Israeli scientists has developed a type of ink jet dye that could one day create a range of devices.

"Usually these 'coffee stains' are a major problem in ink jet printing," said Shlomo Magdassi, a professor at the Hebrew University of Jerusalem in Israel and co-author of a new paper in the journal ACS Nano. "I got the idea that we could turn this big problem into a big advantage."

"Coffee ring" stains appear as a drop of water or solvent dries. The edge of the drop evaporates more quickly than the center, creating tiny currents inside the drop. These currents continuously move dye particles from the drop's interior to its outer edge, where it's then permanently deposited.

The end result is a thin ring around a large, relatively colorless area, reminiscent of the stain a coffee cup can leave on a surface.

Magdassi wanted to create such a touch screen using silver nanoparticles. But there was a hitch. Spreading the silver nanoparticles evenly over the plastic ensures transparency, but spread the particles too far apart and they can't conduct electricity.

Adding enough particles to make the screen electrically conductive makes the screen opaque.Encouraging coffee rings solves both problems.

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