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## How to make an electronic eye, step one: the retina

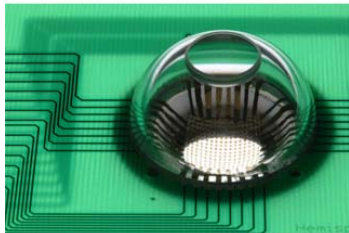
JR Minkel

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of pixels, in this case.

A new miniature camera looks an awful lot like an electronic eyeball. Maybe it's that bowl-shaped "retina" made of silicon.

In the latest feat of so-called [flexible electronics](#)—often described as the quest for a computer screen you can bend and fold without breaking—chemists at the University of Illinois at Urbana-Champaign have made a prototype low-distortion camera by molding silicon into a dome shape.

Here's how it might improve [digital camera](#) technology.

Digital cameras work by focusing light onto a silicon chip containing light-sensitive [pixels](#). But expanding the field of view leads to distortion around the edges. That's why vertebrate [eyes](#) are round—to capture more of a scene without losing clarity.

How to make a curved chip? The Illinois researchers employed a method they've honed for building an electronic circuit on a typical, rigid silicon wafer and then [slicing off a thin layer](#) from the wafer that contains only the working device—a grid

They plopped the pixels onto a two-centimeter-wide piece of flexible plastic they'd stretched taut. When they eased the tension of the plastic, the overlying circuit could bend because it was so thin. Adding to its flexibility were thin metal wires interconnecting the pixels that buckled but didn't break when compressed.

They molded the whole thing onto a glass bowl, wired it to other electronics and added a lens on top to make a camera. They report in *Nature* that the resulting images had a wider field of view than comparable flat pixels would as well as more uniform focusing across the image.

The new technology "heralds the advent of new classes of imaging devices with wide-angle fields of view, low distortion and compact size," electronics researcher Takao Someya of the University of Tokyo writes in a commentary also published in *Nature*.

Be on the lookout, Someya says, for distortion-free auto-focusing and artificial insectlike [compound eyes](#). Now if it could turn my contact lenses into cameras, we'd be on to something.

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