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## US scientists develop eye-shaped camera

Could help make bionic eyes in time

by Verity Burns published on 12 August 2008

Scientists in the US have built an eye-shaped camera using standard sensor materials, and say it could improve the performance of digital cameras as well as enhance imaging of the human body.

They've even gone as far to say the new device might even lead to the development of prosthetic devices, such as a bionic eye.

The findings were reported in the journal Nature

"This is the first time we've demonstrated a camera on a curved surface to really make it look like a human eye," said Yonggang Huang of Northwestern University in Evanston, Illinois.

Until now, there had been a long running problem of transferring microelectronic components onto a curved surface without breaking them.

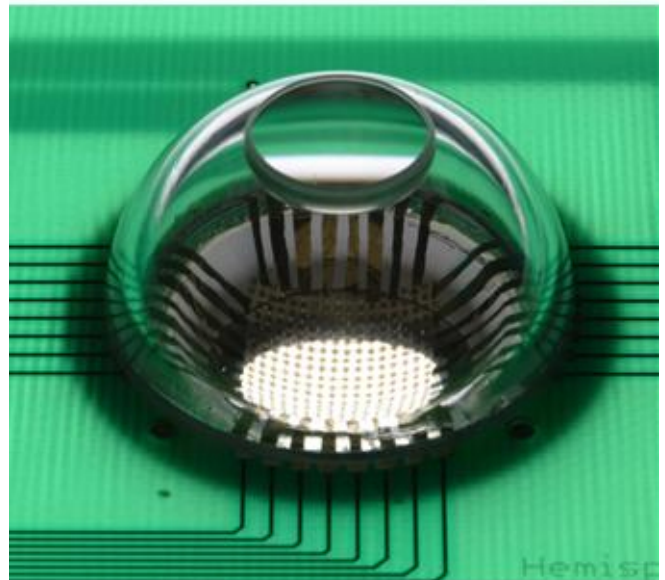
However Huang, who worked on the project with John Rogers of the University of Illinois at Urbana-Champaign, developed a relatively simple solution.

"If you simply bend it, those materials are brittle like a ceramic bowl. They break," Huang said.

To overcome this, Huang and Rogers developed a mesh-like material made up of tiny squares that hold the photodetectors and electronic components. The squares are connected by wires that give each component the ability to mold to a curved surface.

"This approach allows us to put electronics in places where we couldn't before," Rogers said.

Once they discovered this, Huang and Rogers went about building a digital camera that is the



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size, shape and layout of the human eye. This project was funded by the National Science Foundation and the U.S. Department of Energy.

"Currently when you take photos, the middle part of the picture is very clear but when you go to the edge, it is not so clear," Huang said. "The curved technology will make the entire picture clear."

However, the duo have higher hopes for the camera than just holiday photos.

"It really extends to all of the electronics that we use on humans. You want to have a curved surface to fit the human body. That is really the place it can be used," added Huang.

He also said that the camera and its technology could be used to make better imaging equipment, such as curved sensors to monitor brain activity.

As for the possibility of a bionic eye from this technology, Huang said: "If you want to develop an eye to replace a human eye, certainly you want the shape to look like a human eye."

"Right now we've already got a camera working. It works very well with computers. It's just how to connect the camera to the brain. That is the issue to be solved," he added.