

Smile, new mouthwash might replace brushing

A new mouthwash that destroys harmful bacteria in the mouth when it is activated by light has been developed by researchers at Leeds Dental Institute.

Called photodynamic therapy, the mouthwash was developed to help disabled people who may not be able to use a toothbrush. The mouthwash contains a molecule that is absorbed by bacteria in the mouth and then subsequently destroyed by light. The research director of the Institute, Professor Jennifer Kirkham, said the mouthwash could also be used to treat gum disease and is quite simple for a dental hygienist to use.

The new mouthwash could perform the same job as a toothbrush. "At the moment we are not saying it is going to take over brushing as the trials have not been done yet. We have now to look at how much it is going to cost," Kirkham said.

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Re-growing broken teeth

Crowns could be a thing of the past if research into a new "tooth-growing" technology takes shape.

Scientists at the University of Alberta in Canada recently reported the use of ultrasound to form new dental tissue. The wafer-thin ultrasound chip, which is small enough to fit inside the mouth, can be clipped onto the teeth. When switched on, ultrasonic waves massage the gums and increase blood flow to produce new tooth tissue.

The researchers believe that with 20 minutes treatment a day, a tooth could be fully repaired in just 12 weeks.

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An electronic eye camera mounted on a printed circuit board. The camera is about the size and shape of a human eye. John Rogers/UIUC

Eye-catching photographs

SCIENTISTS HAVE DEVELOPED AN EYE-SHAPED CAMERA USING A FLEXIBLE WEB OF MICRO-SENSORS. RATHER THAN USING A LIGHT SENSOR FOR THE CAMERA, THE TEAM DEVELOPED A SENSOR FROM A FLEXIBLE MESH OF WIRE-CONNECTED PIXELS. UNLIKE A NORMAL SENSOR MADE FROM A FLAT MICROCHIP, THE NOVEL MATERIAL IS ABLE TO CONFORM TO DIFFERENT SHAPES, SUCH AS CONVOLUTED, IRREGULAR SURFACES.

The research was led by John Rogers of the University of Illinois at Urbana-Champaign and Yonggang Huang of Northwestern University in Evanston, Illinois and published in Nature.

The researchers have already organized the mesh into a hemispherical shape and incorporated it into a working eye-like camera. The new system eliminates some of the aberrations caused by current camera designs and was reported to improve the quality of the captured images.

Over the last 20 years, many researchers have tried to manufacture such electronic eye systems, but until now, none were able to create a working camera.

"This strategy opens up exciting, new engineering design possibilities by eliminating the two dimensional, planar constraints of conventional, semiconductor wafer-based optoelectronics," said Rogers.

"We believe that some of the most compelling areas of future application involve the intimate, conformal integration of electronics with the human body, in ways that are inconceivable using established technologies."

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