

**BREVET DE TECHNICIEN SUPERIEUR**

*Session 2001*

**Epreuve de langue vivante étrangère**

**Groupe 10**

<b>SPECIALITES</b>
Opticien-lunetier Génie optique

BTS OPTICIEN LUNETIER	SESSION 2001
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## **EYES RIGHT**

### **An artificial eye that moves will give patients more confidence after radical facial surgery**

A false eye that swivels in synchrony with its natural partner is being developed by engineers in Canada. They aim to make the false eye follow the real eye's motion so faithfully that it will look completely natural.

The implant is intended mainly for people who have had a malignant facial tumour. This condition can cause catastrophic damage that requires large portions of the face, sometimes including an entire eye socket, to be surgically removed.

After the operation, patients wear specially made plastic mouldings, in which a false eye may be set, held in place by surgically implanted magnets or attached to spectacles. Though these make the face look complete, people can immediately see that something is wrong because the false eye doesn't move, says Gary Faulkner, a mechanical engineer on the team at the University of Alberta in Edmonton.

In the Canadian team's system, an array of infrared detectors built into a pair of spectacles tracks the movement of the real eye by looking for changes in the wavelength of reflected light hundreds of times a second. This data is translated into a signal that controls motors in the fake eye.

The team has managed to follow the lateral movement of the good eye with an accuracy better than half a degree. This is what counts, says Faulkner, because if the tracking is further out than this people notice. The next goal is to follow the eye's vertical movement as well.

Eventually the team hopes to replace the motors with actuators made of shape memory alloys, which use small temperature changes to induce motion. This should make the eye almost silent. 'Having motors whirring around in your head is something people would not like', Faulkner says.

By making the actuators very thin, Faulkner believes he'll be able to make them cycle on and off rapidly without generating sufficient heat to damage surrounding components and tissue. 'Any animation you can put into a prosthetic will be a big help,' says Geoff Wilcsek of Manchester Royal Eye Infirmary.

**Duncan GRAHAM-ROWE**

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**SUJET et BAREME**

- 1** Faites un résumé du texte en français (150 mots,  $\pm 10\%$ ). **(6 points)**
  - 2** In your opinion, what kind of help do disabled people expect from body-oriented technology ? Is it only functional help ? Analyse a few examples different from the experiment which is mentioned in the text. **(8 points)**
  - 3** Translate from : « The implant ...  
to : ...in Edmonton. » **(6 points)**
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