Session 2010

BREVET DE TECHNICIEN SUPÉRIEUR

OPTICIEN – LUNETIER

GÉNIE OPTIQUE

Groupe 10

ÉPREUVE DE LANGUE VIVANTE ÉTRANGÈRE : U 2

ANGLAIS

Durée : 2 heures

Coefficient O-L : 1

Coefficient G-O : 2

L'utilisation du dictionnaire bilingue est autorisée.

L'usage de la calculatrice est interdit.

Dès que le sujet vous est remis, assurez-vous qu'il soit complet.

Le sujet comporte 3 pages, numérotées de 1/3 à 3/3.

Smart glasses switch focus in an instant

Glasses that change from "long distance" to "reading" mode at the flick of a switch could prove a revelation for many wearers.

Researchers have developed a prototype that uses liquid crystals to change focus in an instant, thus preventing the eye strain induced by wearing conventional bifocal glasses. Focusing through specific portions of a bifocal lens causes many users to become dizzy or disoriented, while others report increased eye fatigue.

"Bifocals effectively work the same way they have since they were invented by Benjamin Franklin," says Nasser Peyghambarian, a professor of optical sciences at Arizona State University, US, who helped develop the "dynamic" glasses. "But as any of more than 40 million people in America who need bifocals know, they're a pain."

Fresnel lens

The dynamic glasses change focus using a 5-micron-thick layer of nematic liquid crystal, sandwiched between two pieces of glass. Molecules of the liquid crystal reorient themselves when exposed to an electric field and the researchers used this to create a type of dynamic Fresnel lens.

In a normal Fresnel lens, concentric rings are carved into a piece of glass causing light to become focused in a similar way to a conventional lens. Dynamic glasses mimic the Fresnel effect using concentric circles of clear electrodes on the pieces of glass containing the crystal. Activating these electrodes causes the liquid crystal to align into rings and focus light passing through the lens.

A company called PixelOptics, based in Virginia, US, plans to sell glasses containing dynamic lenses commercially within two years. "The prototype is pretty bulky, but when these hit the streets they'll be virtually indistinguishable from other, very stylish glasses," says Ronald Blum, CEO of PixelOptics.

Infrared laser [...]

The first commercial dynamic glasses will only be able to switch between a person's normal vision and their "reading" prescription. However, by applying different voltages and by changing the number of current-carrying rings within each lens it should be possible to produce different magnifications using the same lens, researchers say.

Peyghambarian is now working on glasses that can dynamically refocus on whatever the wearer is looking at. These will most probably use an infrared laser built into the bridge of the glasses to determine how far away an object is.
"The idea is to put the focusing power found in the lens of a camera on your face all the time", Peyghambarian told **New Scientist**.

NewScientist, 3 April 2006 (398 words)

QUESTIONS

I. COMPRÉHENSION DU TEXTE (10 points)

1. Faire un résumé du texte **en français** (150 mots + ou – 10 %).
   Indiquer le nombre de mots utilisés. **(6 points)**

2. Traduire l'avant-dernier paragraphe "The first commercial dynamic glasses..." jusqu'à "researchers say." **(4 points)**

II. EXPRESSION ÉCRITE EN ANGLAIS (10 points)

Le candidat traitera au choix l'une des deux questions proposées (150 – 180 mots).
Indiquer le nombre de mots utilisés.

a) Give your opinion on this new technology and imagine any other applications to other fields.

Or

b) Give your opinion on this new technology and describe other existing devices that can help presbyopic people.
Point out their advantages and drawbacks.