BREVET DE TECHNICIEN SUPERIEUR
ÉLECTROTECHNIQUE / ÉLECTRONIQUE

SESSION 2002

ANGLAIS

(Groupe 18)

Dictionnaire bilingue autorisé
Convertisseurs Euro et Calculatrices interdits.

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B.T.S. ÉLECTROTECHNIQUE / ÉLECTRONIQUE			
Épreuve ANGLAIS			
Durée 2 heures	**Coefficients: Électrotechnique : 1** **Électronique : 2**	**Nombre total de pages** 3	**N° de page/total** 1/3

TRAVAIL À FAIRE

I) COMPTE-RENDU EN FRANÇAIS (12 points)

Mettez en évidence les informations les plus importantes contenues dans le document (200 mots maximum).

II) TRADUCTION (8 points)

Traduire en **français** le passage entre crochets page 3 :

De : "The discovery may ... " (ligne 6) jusqu'à "is not doped." (ligne 12).

Textile generated power

Plug your palmtop into your threads and throw away those batteries

Your sweater could one day provide all the power you need to run your MP3 player, mobile phone or palmtop computer – as long as you are not standing in a darkened room. The idea comes from scientists in Germany, who have developed synthetic fibres that generate electricity when exposed to light. The researchers say the fibres could be woven into machine-washable clothes to make the ultimate in portable solar cells.

[The discovery may provide a big boost for developers of *wearable* computers, who have been plugging their devices into mini fuel cells or plain old batteries. A sail made of solar fabric might even be able to provide power for a boat's electronics.

Just like the photo-voltaic cells found in many pocket calculators, the new wires work by sandwiching three layers of non-crystalline amorphous silicon between two conducting electrodes. The top layer is doped with electron-rich impurities while the bottom layer contains electron-poor dopants. The layer sandwiched in between is not doped.] When photons hit the surface layer, they displace electrons that then flow through the middle layer to the electron-poor layer. This current can be used to power devices or charge batteries.

German scientists developed their photo-voltaic fibres while trying to deposit amorphous silicon on curved surfaces. They found that by depositing different layers around a fibre, they could build up the photo-voltaic sandwich in cylindrical form. Any substrate that looks like a cylinder – from wires to fibre-optic cables – works, provided it can withstand the ultraviolet radiation and 100°C temperatures used in the deposition process.

One of the biggest challenges facing the German team is creating contact with each strand in a fabric, says Chris Chapman, development director of ElectroTextiles in Buckinghamshire – a company which specialises in making electronic devices out of fabric. "The thing that scuppers most things with fabrics is getting power in and out of it", he says.

As far as fashion sense is concerned, colour should not be a problem. Although the fibre is transparent, it can be made to take on different colours by adjusting the thickness of a transparent protective coating.

Duncan Graham-Rowe, *New Scientist*
14 April 2001