

What Is the New Trend of Electrical Engineering?

Text A

- 1 The worldwide electrical and electronics industry is the most flourishing and extremely diversified sector consisting of numerous electronics company, electronics engineers, electrical engineers, electricians, scientists and researchers. This sector has been growing at a rapid pace with human-friendly innovations, inventions and technology trends. Moreover, an ever-increasing customer inclination towards electronics products and services is driving electronic companies to come up with better innovations and inventions.
- 2 The main emphasis of these technology trends is to derive unmatched efficiency with greatly reduced size of the existing apparatus. The following list is an attempt to enlist all such future trends and innovations.

A Signal Processing Technology
- 3 However, it is only a part of a long list of modern innovations and future trends which will make our world so hi-tech that is beyond our imagination. As a matter of note, this list of future trends will keep on being updated along the course of time.

Dielectric susceptibility of a material

- 4 The finding of the dielectric susceptibility has provided enough chances to the engineers to make some ultra-equipped and highly sensitive technological and electronic devices. This discovery is a result of the effect of electric field on a nanostructure of lead zirconate. This specific feature of any material is supposed to be a boon for nanostructures. The importance of this innovation has been widely hailed as it has opened up many doors of making tiny but effective electronic devices.

Detection systems based on quantum-entanglement effect

- 5 Entanglement, a unique feature of quantum physics, is well set to be used in future detection and imaging systems. It is said to be more efficient and accurate than

those of many detection systems available these days. This mechanism could spread entangled beams of light on any object. This could make a very detailed, fair and accurate image of the object being detected. This mechanism is supposed to work on the same principle which is applied to detect planes at airforce stations and airports.

Cell-sized batteries

- 6 The microbatteries could be only half the size of a human cell. Interestingly, these would be made of viruses. This rare innovation is set to provide us a relief from heavy 9-volts batteries and other models. This technology involves the use of microcontact printing. This printing fabricates and positions microbattery electrodes. Further, it is probably the first use of virus in this field. These batteries could be used in a series of fields such as computers, cell phones and medical equipments which are implantable.

Precise pattern micro-chip

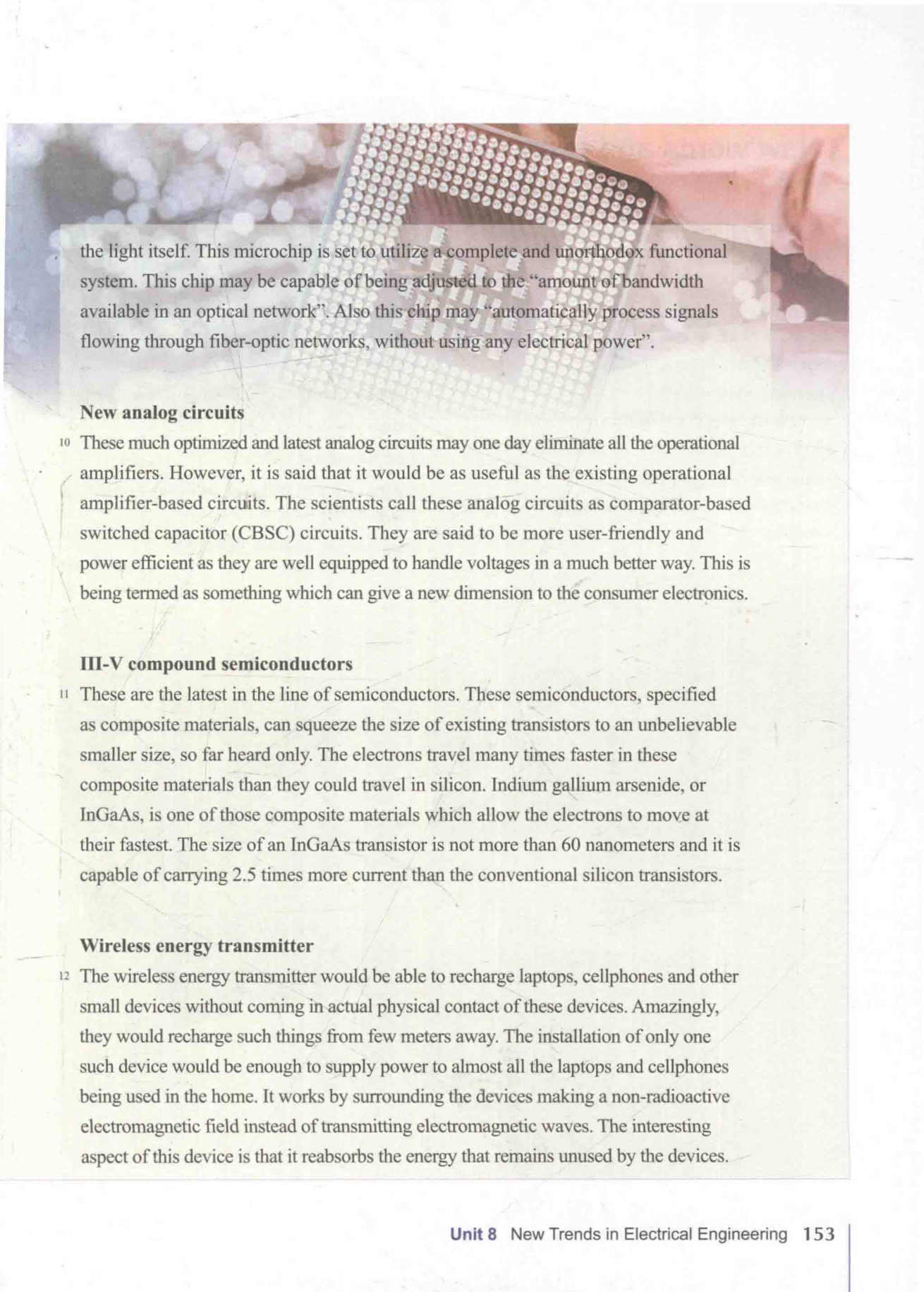
- 7 This innovation is supposed to bring microchip technology at its peak. This system works when some molecules are made to assemble themselves into precise patterns. A self-assembling molecular system which is called block copolymers was known for many years. This system was not very effective as it could produce a molecular-orders or patterns in a very limited way via self-assembling. Thus to make it more equipped and advanced, this "limited self-assembly" was made to combine with conventional lithographic chip-making technology. These lithographic patterns cause a tight-hold over self-assembling molecules. Thus they become more structured.

High-power solar concentrators

- 8 As the initial research has proved to be fruitful, there are chances that in coming years we will see a sort of solar concentrator, which would be more efficient than the contemporary solar concentrators. The most striking part of this innovation is that it brings huge amount of solar light to the solar cells without tracking the sun. Though it showed only 92% of stability during the research, it is supposed to guarantee 100% stability till it is put in the market.

Smart optical microchips

- 9 Days are not far away when we could see a microchip not running by electricity but by



the light itself. This microchip is set to utilize a complete and unorthodox functional system. This chip may be capable of being adjusted to the “amount of bandwidth available in an optical network”. Also this chip may “automatically process signals flowing through fiber-optic networks, without using any electrical power”.

New analog circuits

- ¹⁰ These much optimized and latest analog circuits may one day eliminate all the operational amplifiers. However, it is said that it would be as useful as the existing operational amplifier-based circuits. The scientists call these analog circuits as comparator-based switched capacitor (CBSC) circuits. They are said to be more user-friendly and power efficient as they are well equipped to handle voltages in a much better way. This is being termed as something which can give a new dimension to the consumer electronics.

III-V compound semiconductors

- ¹¹ These are the latest in the line of semiconductors. These semiconductors, specified as composite materials, can squeeze the size of existing transistors to an unbelievable smaller size, so far heard only. The electrons travel many times faster in these composite materials than they could travel in silicon. Indium gallium arsenide, or InGaAs, is one of those composite materials which allow the electrons to move at their fastest. The size of an InGaAs transistor is not more than 60 nanometers and it is capable of carrying 2.5 times more current than the conventional silicon transistors.

Wireless energy transmitter

- ¹² The wireless energy transmitter would be able to recharge laptops, cellphones and other small devices without coming in actual physical contact of these devices. Amazingly, they would recharge such things from few meters away. The installation of only one such device would be enough to supply power to almost all the laptops and cellphones being used in the home. It works by surrounding the devices making a non-radioactive electromagnetic field instead of transmitting electromagnetic waves. The interesting aspect of this device is that it reabsorbs the energy that remains unused by the devices.

New words and expressions

zirconate /'zɜ:kəneɪt/ *n.*

an oxyanion that contains zirconium [化] 锆酸盐;
锆酸根

entanglement /ɪn'tæŋɡlmənt/ *n.*

the action or fact of entangling or being entangled
纠缠; 缠绕物

electrode /ɪ'lektroʊd/ *n.*

a conductor through which electricity enters or
leaves an object, substance, or region 电极; 电焊条

copolymer /kəʊ'pɒlɪmə(r)/ *n.*

a polymer consisting of two or more different
monomers 共聚物

lithographic /,lɪθə'græfɪk/ *adj.*

produced by or involved in lithography 平版的; 平
版印刷的

unorthodox /,ʌn'ɔ:θədɒks/ *adj.*

contrary to what is usual, traditional or accepted,
not orthodox 非正统的; 异端的

dielectric susceptibility 介质磁化率; 电介质极化

quantum physics 量子物理学; 量子力学

solar concentrator 太阳能集中器

comparator-based switched capacitor 比较器式
开关电容器

indium gallium arsenide 铟镓砷化物

