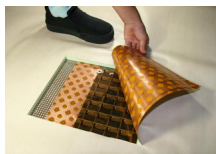


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By: Lucian Dorneanu, Science Editor



The wireless power transmission sheet, shown embedded into a floor.

Takao Someya

## **New Flexible, Flat Wireless Power Source**

### *It can go anywhere*

A new type of wireless power-transmission device has been created by a team of Japanese scientists. It's flat, thin, flexible and can be placed anywhere, like on walls and desks. It's able to deliver electricity to electronics devices standing near it without using conductive cables. Takao Someya, a scientist at the University of Tokyo, has invented this new power source by placing electrical components onto a thin plastic sheet via state-of-the-art inkjet printing technology using "electronic ink." The new product is extremely thin, measuring only one millimeter and comes in squares with 21-centimeter sides. By assembling a large number of these sheets together, one can obtain power sheets large enough to cover entire walls or floors. For now, the power source can deliver around 40 watts, enough to power light bulbs and small electronics like cell phones and clocks and sends this power wireless, if the appliances are equipped with a wireless port. The power converting efficiency is amazing, measuring 81 percent, which means the appliances actually receive 81 percent of the emitted power. "Our power-transmission sheet addresses two of the issues facing the electronics field: creating ecologically friendly power systems and developing power-transmission technologies that further the imminent trend of 'ambient electronics' - electronic networks, such as sensors, built into our homes and offices to increase our day-to-day security and convenience," said Someya. The working process of this new power source relies on organic electronics. It consists of several layers, which include a layer printed with an array of thin, flat copper coils, which sense the position of nearby electronic devices and a layer of sender coils that deliver the wireless power. Responsible for the actual transmission of energy is the electromagnetic induction, a physical process allowing the production of voltage across a conductor situated in a changing magnetic field or a conductor moving through a stationary magnetic field. The fact that the possibility of electric shocks appearing on the surface has been removed by coating the power sheet's sender coils and other electrical components with an insulating material paves the way for a whole new class of water-safe applications in electronics.