

Organic electronics will transform the way society interacts with new technology

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Smartphones that can be folded to fit in your pocket and video displays that roll up and down like a window blind are the future of new technology, according to a joint report by the RSC and four other major chemical societies.

Chemists, physicists and other scientists and engineers are synthesising and manipulating a wealth of new organic [materials](#) that will transform the way society interacts with electronic technologies, as well as promising sustainable methods for their manufacture.

Organic electronic devices, such as smartphones built with organic [light emitting diode](#) (OLED) displays, are already being used by today's consumers. The Samsung Galaxy line of OLED-based smartphones occupies a major share of the current global smartphone market.

But the potential for future applications of organic electronics extends far beyond today's [mobile phone technology](#). Organic materials also present the possibility of devices that can interface with biological systems, promising future healthcare applications.

Smartphones that fold like a map and [artificial skin](#) with tactile sensitivity that could be used to treat burns, or add functionality to [prosthetic limbs](#), are among the numerous potential applications for these new materials, says the joint chemical societies' report *Organic Electronics for a Better Tomorrow: Innovation, Accessibility, Sustainability*.

The report also says that organic materials promise greater sustainability that could extend across the entire lifestyle of electronics - beginning with the use of materials that are synthesised rather than mined from the earth, and ending with potentially biodegradable or recyclable devices.

Organic Electronics for a Better Tomorrow results from the fourth annual [Chemical Sciences](#) and

Society Summit (CS3), held in September 2012 in San Francisco. The CS3 series is a collaboration between the RSC, the American Chemical Society, the Chinese Chemical Society, the German Chemical Society and the Chemical Society of Japan, that gathers together 30 of the best minds in chemical research around the world each year to seek innovative solutions to global societal challenges.

The report points out that [organic electronics](#) will not completely replace silicon-based electronics, but says that they present a future electronic landscape filled with new materials that will make electronics more accessible, functional and sustainable.

However, the report also notes that several challenges remain that must be addressed before this future is fulfilled:

- chemists must gain a better understanding of how organic electronic materials can be assembled to ensure reproducibility
- better analytical tools are needed to analyse how the materials are assembling and integrating into devices
- three-dimensional fabrication processes need to be improved
- scientists need to expand their research and develop organic electronic devices with multiple functions.

At the launch of the report in New Orleans, RSC Chief Executive Dr Robert Parker said: "*Organic Electronics for a Better Tomorrow* presents a compelling view of this rapidly developing field. The promise of flexible displays, solar organic cells and even organic electronic skin presents a tantalising vision of the future.

"But more importantly, this technology holds the promise for a more sustainable tomorrow, as low-

energy production through printing press becomes possible and we reduce our reliance on precious earth-mined resources.

"The take-home message from this report is that we cannot rest on our laurels. The scientists involved have yet to set the community a number of technical challenges that need to be solved before the plastic component is quite as ubiquitous as the silicon chip. With support from governments and funding bodies, I'm certain that they can succeed."

More information: Organic Electronics for a Better Tomorrow Report

[www.rsc.org/ScienceAndTechnology ...
roadmap/CS3-2013.asp](http://www.rsc.org/ScienceAndTechnology/roadmap/CS3-2013.asp)

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