

New report on the next generation of electronics

EurekaAlert!

NEW ORLEANS, April 10, 2013 — Smartphones that fold and unfold like a paper map. Artificial skin with tactile sensations for use on prosthetic limbs. Wall-sized video displays that roll up and down like a window shade. Flexible solar cells that fit into the curves of a car's fender and hood. Those and other futuristic applications of organic or "plastic" electronic technology may well become reality, according to a report on the topic released here today.

Five major scientific societies issued their joint report during the 245th National Meeting & Exposition of the American Chemical Society, the world's largest scientific society. The meeting continues through Thursday with more than 14,000 scientists and others expected to gather in the Ernest N. Morial Convention Center and downtown hotels for almost 12,000 talks and posters.

The report discusses the status of organic electronics today, including applications like the Samsung Galaxy line of OLED-based smartphones. It lays out a vision for the field and the scientific and engineering challenges that must be met in order to realize that vision. The full-text report, *Organic Electronics for a Better Tomorrow: Innovation, Accessibility, Sustainability*, is available to journalists at newsroom@acs.org [1].

"Organic materials are being studied and developed for their potential to build devices with a flexibility, stretchability and softness ("soft electronics") not afforded by silicon or any other inorganic materials," the report states. "Imagine electronic devices that bend, twist, and conform to any surface. Devices made with organic materials also have the potential to interface with biological systems in ways not possible with inorganic materials."

Those devices, the report adds, mean a future filled with new materials that make electronics more functional, accessible and sustainable, with applications not only in consumer electronics, but medicine, environmental monitoring, national security and multiple other fields.

Organic Electronics for a Better Tomorrow: Innovation, Accessibility, Sustainability results from the Chemical Sciences and Society Summit (CS3), September 17-20, 2012, in San Francisco. The CS3 series, a collaboration between the Chinese Chemical Society, the German Chemical Society, the Chemical Society of Japan, the Royal Society of Chemistry and the American Chemical Society, gathers 30 international experts each year to seek solutions to some of the world's most daunting challenges.

The white paper points out that while organic (carbon-based) electronics won't completely replace silicon-based devices, they present a more sustainable approach, limiting the need to mine more materials from the earth. "Rather, the

New report on the next generation of electronics

Published on Electronic Component News (<http://www.ecnmag.com>)

vision for the future is one of an expanded electronic landscape — one filled with new materials that make electronics more functional, accessible and sustainable," the report states.

Research may be in its infancy, but next-generation electronics are slowly making their way onto the market. Already, smartphones and televisions made with organic-based light displays are on the market and in consumers' hands. Carbon-based materials also show up in ATMs. Some solar cells and transistors also incorporate organic electronics.

The report offers three visions for the future of organic electronics:

- Organic electronic devices will do things that silicon-based electronics cannot do, expanding the functionality and accessibility of electronics.
- Organic electronic devices will be more energy-efficient and otherwise "eco-friendly" than today's electronics, contributing to a more sustainable electronic world.
- Organic electronic devices will be manufactured using more resource-friendly and energy-efficient processes than today's methods, further contributing to a more sustainable electronic world.

Several challenges remain, however. The participants noted four major scientific and technological challenges that must be addressed:

- Chemists must gain a better understanding of how organic electronic materials can be assembled to ensure reproducibility.
- Better analytical tools are needed to analyze 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.

Original release:

http://www.eurekalert.org/pub_releases/2013-04/acs-nro032713.php [2]

Source URL (retrieved on 04/26/2015 - 4:29pm):

<http://www.ecnmag.com/news/2013/04/new-report-next-generation-electronics>

Links:

[1] <mailto:newsroom@acs.org>

[2] http://www.eurekalert.org/pub_releases/2013-04/acs-nro032713.php