



- HOME
- NEWS
- BUSINESS
- SPORTS
- ENTERTAINMENT
- LIFE & STYLE
- JOBS
- AUTOS
- REAL ESTATE
- AD ZONE
- YOUR JOURNAL

#1 ST. LOUIS WEB SITE

SITE SEARCH >> Go!

STORY FINDER



News > Science & Medicine > Story

U of I team makes electronics that bend

By Eric Hand
ST. LOUIS POST-DISPATCH
12/20/2005

University of Illinois Urbana-Champaign engineers have made stretchy electronic components that could follow the folds of knees, elbows and knuckles.

The achievement paves the way for electronics worn on the skin - or even in it. And you thought iPods were the pinnacle of wearable electronics.

One idea is "smart" surgical gloves that could measure oxygen levels in tissues being operated on. Another possibility is prosthetic skin with embedded sensors for robots or artificial limbs. Potential applications - from airplane wings to artificial retinas - exist wherever electronics need to conform to a difficult shape, said John Rogers, the U of I materials scientist leading the research.

Rogers published the results last week in ScienceXpress, an online publication of the journal Science. They intrigued Stephanie Lacour, an electrical engineer at a rival research group at Princeton University.

"This is pushing the limits," Lacour said. "Most of the industry today is not even thinking stretchable - they're looking at rolling and bending."

Most electronics, whether a computer processor or a flat-screen display, rely on silicon components that are rigid and brittle. Companies can achieve some flexibility by using thin silicon components on rubber or plastic.

For example, PolymerVision, a subsidiary of Philips, is marketing flexible electronic displays that can be coiled like a scroll for storage and then unrolled flat when in use.

But Rogers' group went further than mere flexibility, which is restricted to cylindrical or conical shapes. Rogers' group stuck a thin layer of pre-strained rubber to ribbons of silicon. When the rubber relaxed, the ribbons crimped into a wavy, accordion shape that could handle stretching up to 20 percent of its length.

Lacour's rival group has achieved stretchiness by creating islands of bendable silicon components connected by stretchy gold filaments.

Rogers says his group has made basic silicon parts - transistors and diodes - and is aiming next for a stretchy circuit board. Rogers has founded a U of I spin-off company, pSi-tech Inc., along with U of I chemist Ralph Nuzzo and Harvard University chemist George Whitesides.

So far, bigger companies haven't pursued stretchy electronics because of temperature constraints, Lacour said. The silicon etching process established in industry

RELATED GRAPHIC

- Stretchy electronics



- NEWS SUBSECTIONS
- ST. LOUIS CITY / COUNTY
 - METRO EAST
 - ST. CHARLES
 - JEFFERSON COUNTY
 - LAW & ORDER
 - MISSOURI STATE NEWS
 - ILLINOIS STATE NEWS
 - NATION
 - WORLD
 - NEWSWATCH
 - EDUCATION
 - RELIGION
 - SCIENCE & MEDICINE
 - DEATHS & OBITUARIES
 - COMMUTING & TRAFFIC
 - COLUMNISTS
 - EDITORIAL / COMMENTARY
 - SPECIAL REPORTS
 - PHOTO GALLERIES
 - CORRECTIONS
 - NEWS OF THE WEIRD
 - P-D ARCHIVES



- JOURNAL HIGHLIGHTS
- YOUR JOURNAL
- ST. LOUIS' BEST BRIDAL

- INTERACT
- BLOGS
- CONTESTS
- EVENT CALENDAR
- FORUMS
- GET RSS FEEDS
- MAPS & YELLOW PAGES
- PERSONALS
- SIGN UP FOR E-MAIL ALERTS

operates at high temperatures hundreds of degrees above boiling. The plastics and rubbers used in bendy and stretchy electronics need a whole new manufacturing setup that would work at much lower temperatures.

The Defense Advanced Research Projects Agency, the research arm of the Department of Defense, funded both groups. Rogers said the agency wants to embed sensors into clothes that measure the health of soldiers.

Lacour doesn't doubt that stretchy electronics will wind up in clothes - not just for measuring personal health but also for promoting personal style.

"You could be a walking billboard," she said.

Top of page


 [E-mail this story to a friend](#)

 [Printer friendly](#)

 [Find more stories like this.](#)

 [3 O'Clock Stir e-mail alerts. Details here.](#)

 [Get RSS Feeds of STLtoday.com headlines.](#)

 [Get the news delivered to your home for just 50 cents a day. Click here to subscribe to the St. Louis Post-Dispatch.](#)

Environmental Professionals

St. Louis, MO
Delta Environmental

Driver DEDICATED

St. Louis, MO
National Freight

Med R.N.-A.D.O.N

St. Louis, MO
Parkside Towers

A&P Mechanics

Saint Louis, MO
American Eagle

Administrative Assistant

St. Louis, MO
Company Confidential

Laborers Decorative

Ballwin, MO
Decorative Concrete Resurfacing

Dri. Dedicated O/Ops

St. Louis, MO
Rush Trucking

Med Billing/Coding

St. Louis, MO
Northwest Anesthesia

Administration CORPORATE

St. Louis, MO
Alberici Construction

Med Nursing Skilled

St. Louis, MO
Mount Carmel Senior Living

[More jobs](#)

