X-ray Vision: Built-In Repair Centers

Nanotube-Filled Capsules Can Heal Broken Circuits

Jump to first occurrence of: [MOORE]

Those of us with fumble fingers when it comes to handling consumer electronics and laptop computers may eventually have a built-in insurance policy against inadvertent drops.

Researchers at the University of Illinois at Urbana-Champaign have shown the ability to make automatic repairs of cracks in circuits using nanotubes. Although the actual inclusion of such technologies in circuit boards won't happen any time soon, the lead author on the research paper says the researchers have been able to show the technology can work.

"We wanted to see if it was possible," says Mary Caruso, a Ph.D. candidate in UI's Dept. of Chemistry and member of The Moore Group. "It was more of a proof of concept . . . . The next step is making an actual device."

In their initial experiments, the UI researchers showed that when they broke the capsules apart between two electrical probes, the nanotubes were able to come together and bridge the gap between the probes, allowing the electricity to flow. The gap between the probes was about 100-150 microns (0.004-0.006 inches). The results of the research were published in the Journal of Materials Chemistry in September 2009.

Mind The Gap

Once the technology is actually in use, it would involve placing capsules filled with conductive nanotubes onto high-stress areas of circuit boards. Statistics about broken circuits would tell the researchers the most logical locations where the circuit boards would break in a drop, allowing them to place the capsules in those areas.

UI researchers have already performed rese....

To view the full text of any article published in Smart Computing, PC Today, or Computer Power User magazine, you must be a paid subscriber to one of these publications. Subscribers to any one of these publications also have access to all articles published in First Glimpse magazine (First Glimpse subscribers have access only to First Glimpse content).