

Material: Heal Thyself

Research team develops substance that can repair itself more than once

In a display of nature's restorative powers, human skin has the ability to heal itself when cut. Now, researchers at the University of Illinois have invented materials that do the same thing.

Modeled after the human body's circulatory system, the substances can repair cracks not once but time after time.

"In the same manner that a cut in the skin triggers blood flow to promote healing, a crack in these new materials will trigger the flow of healing agent to repair the damage," said Nancy Sottos, a Willett

Professor of materials science and engineering.

Building on past attempts to solve the same problem, the research team moved to a circulation-based approach using embedded, three-dimensional microvascular networks. The resultant material, with its continuous supply of healing agent, means "minor damage to the same location can be healed repeatedly," said Sottos, who also is a researcher at the University's Beckman Institute.

At present, the team has managed to get the material to heal minor cracks seven times.

"Currently, the material can heal cracks ... analogous to small cuts in skin," Sottos said. "The next step is to extend the design to where the network can heal 'lacerations' that extend into the material's substrate."

—James E. Kloeppe
UI News Bureau



UI News Bureau/L. Brian Stauffer Photo

UI researchers have developed the next generation of self-healing materials. Clockwise from front, the team includes postdoctoral student Katie Toohey, PHD '07 ENG; Nancy Sottos and Jennifer Lewis '86 ENG, both professors of materials science and engineering; Scott White, professor of aerospace engineering; and Jeffrey Moore '84 LAS, PHD '89 ENG, professor of chemistry.

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[QuadAngles]

■ What holds people together? For Mexican immigrants in Chicago, **cultural celebrations create ties that help them find their way through the brave new world that is post-millennial America.** According to a study conducted by the University of Illinois and The Field Museum in Chicago, Mexican immigrants build relationships with one another and connections to the larger world through the art, music, food and festivities associated with their heritage, such as Day of the Dead observances. Promoted by schools, churches and community and social organizations, the color and life of such celebrations positively affect the outlook of immigrants on the future and their assimilation into society. An interactive description of the project is on the museum's Web site at www.fieldmuseum.org/creativenetworks.

■ Blocked out in orange and blue and embellished with a photo of Alma Mater, **the i-card has a new look and a new life.** Long an essential for entering residence halls, checking out library books or picking up aspirin from McKinley Health Center, UI ID cards are now also debit-friendly when linked to an account with TCF Bank.

Parents of students opting for a money-enabled i-card will be thrilled to learn that the bank has 10 Chicagoland branches where help to needy kids' accounts may be conveniently transacted.

■ Go where you want to go, do what you want to do – but you'll be getting tracked the whole time. Such is one scenario emerging from UI research funded by software giant Microsoft on **mobile sensors and mapping technology.** These sensors provide firsthand information by attaching to people, cars, birds and other entities – indeed, northern cardinals near the Urbana campus are already wired up for study. And soon (perhaps) jackets virtually tapped into computer avatars could allow interested parties – parents, say – to follow the wanderings of a subject – a student, say – online.

