

Star Trek Tricorder revisited: Toward a genre of medical scanners

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A hand-held scanner, reminiscent of the fictional Star Trek medical Tricorder, images blood vessels through the skin and projects a map onto the skin showing nurses exactly where to insert a needle. A pocket-sized device checks blood sugar levels through the skin of people with diabetes — no pinprick or blood sample needed. Those innovations are among a new genre of medical imaging technology that's giving doctors and scientists noninvasive views into the body to diagnose and study diseases. A report on the topic appears in the current edition of *Chemical & Engineering News (C&EN)*, the weekly newsmagazine of the American Chemical Society, the world's largest scientific society.

In the article, *C&EN* Contributing Editor Aaron Alexander Rowe focuses on new optical techniques that use laser beams or so-called near-infrared light to peer painlessly below the skin and through muscle and bone to see body structures. Near-infrared light, just beyond the range visible to the human eye, penetrates several inches into the human body. Two devices described in the article project a near-infrared beam into the skull. The light passes through brain tissue and blood vessels, and then scatters back out, where detectors analyze it in ways that promise to reveal whether patients are bleeding from a stroke or have other disorders.

The article explains that some of the new light-based medical diagnostic tools — the blood vessel mapper, for instance — already are in use in hospitals and clinics. Others are in various stages of pre-clinical development, including devices intended to spot skin cancer, monitor

how breast cancer is responding to treatments and produce 3-D images of blockages in [blood vessels](#).

More information: Lights and Lasers Invade the Clinic,
[cen.acs.org/articles/90/i1/Lig ... s-Invade-Clinic.html](http://cen.acs.org/articles/90/i1/Lig...s-Invade-Clinic.html)

Provided by American Chemical Society

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