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Biosensor tested on shuttle

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PORTLAND, Ore. — A recent Shuttle experiment could yield biosensors that harness living cells to detect harmful chemicals or biotoxins.

Microbes encapsulated in biosensors by a nanoscale self-assembly method were genetically engineered to glow fluorescent green when sensing specific toxins. After exposure to radiation and the cold vacuum of space, the biosensor prototype will return to Earth from the International Space Station on the next Shuttle flight for additional testing. If the biosensor continues to function, Sandia National Laboratories said it will develop rugged sensor technology that could be used for battlefield reconnaissance.

"We believe that using living cells could yield biosensors that are smaller and yet much more sensitive than what is available today," said Helen Baca, a consultant at Sandia National Laboratories who performed the work for her Ph.D. in chemical engineering.

Sandia earlier reported that it could [direct the self-assembly of nanocrystals](#) into thin films. By controlling nanocrystal structure so they self-organize to encapsulate the living cells, the researchers were able to seal them in a controlled environment that for use as biosensors.

If the cells survive aboard the space station and continue functioning as biosensors when returned to Earth, then the researchers expect to develop biosensor applications. For instance, the Defense Department is looking for a tiny biosensor carried by insects onto the battlefield. Unmanned aircraft could remotely detect any fluorescent green generated by biological weapons or other biohazards.