

New nanotech sensor developed with medical, chemistry applications

October 13 2009

Researchers at Oregon State University and other institutions have developed a new "plasmonic nanorod metamaterial" using extraordinarily tiny rods of gold that will have important applications in medical, biological and chemical sensors.

The new device is at least 10 times more sensitive than existing technology, researchers say, can be tuned to sense different types of materials and is easy to make in differing sizes for individual needs. It's one of the first real applications of "metamaterials" - artificial materials that have unusual properties based on their structure, which are not readily available in nature.

The findings were announced today in [Nature Materials](#), a professional journal. Collaborators on the project included OSU, the Universite de Mediterranee in France, Ecole Polytechnique de Montreal in Canada, and the Queen's University of Belfast in the United Kingdom. The research was supported by the National Science Foundation and other agencies.

"This is very exciting," said Viktor Podolskiy, an associate professor of physics at OSU. "It's an important new application of [nanotechnology](#) and the field of metamaterials, and should find some significant uses in medicine, chemistry and physics."

The new material is made primarily from [gold](#), but given the minuscule size of the device, the high cost of gold is actually of little importance -

and the use of gold aids its performance, because this [rare metal](#) is very inert and doesn't interact with biological or many other molecules. The device is a little like the bristles that stick up on a hairbrush, but in this case the bristles are only about 20 nanometers wide - it would take 5,000 such bristles to be the width of a human hair.

Using this device and various optical techniques, sensors can determine very precisely the identity and amount of various substances, including extremely small compounds such as drugs, vitamins or hormones. The concept should find near-term applications in medicine and other fields, scientists say.

Source: Oregon State University ([news](#) : [web](#))

Citation: New nanotech sensor developed with medical, chemistry applications (2009, October 13) retrieved 20 April 2024 from <https://phys.org/news/2009-10-nanotech-sensor-medical-chemistry-applications.html>

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