

Superdisc material discovered

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A research team led by a University of Tokyo professor has found a material that could be used to make a low-price superdisc with data storage capacity thousands of times greater than a DVD, the lead scientist said Monday.

The material transforms from a black-color metal state that conducts electricity into a brown semiconductor when hit by light, according to Shinichi Okoshi, a professor of chemistry at the University of Tokyo.

The material, a crystal form of titanium oxide, can switch back and forth between the metal and semiconductor states at room temperature

when exposed to light, creating an effective on-off function for data storage.

It is "promising as a material for a next-generation optical storage device," Okoshi said.

His team succeeded in creating the material in particles measuring 4 to 20 nanometers (four-millionth to twenty-millionth of a millimeter) in diameter.

If the smallest particle is used, the new disc could hold more than 1,000 times as much information as a Blu-ray disc, provided that matching data-writing and reading equipment are developed.

A single-layer Blu-ray disc can hold five times as much data as a conventional DVD.

Titanium oxide's market

price is about one-hundredth of the rare element — germanium-antimony-tellurium — that is currently used in rewritable Blu-ray discs and DVDs, Okoshi said.

"You don't have to worry about procuring rare metals. Titanium oxide is cheap and safe, already being used in many products ranging from face powder to white paint," Okoshi said.

He said it isn't known when a disc with the material can be manufactured and put to practical use, but he will start talks with private-sector companies for commercialization.

The study was published in the advance online edition of the British magazine Nature Chemistry.