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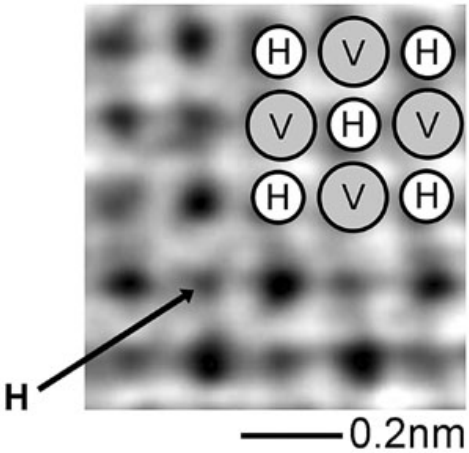
Friday, Nov. 5, 2010

Research team takes image of hydrogen atom

Kyodo News

A research team led by Yuichi Ikuhara, a professor of material science at the University of Tokyo, said Thursday they have succeeded in taking an image of a single hydrogen atom, the smallest and lightest of the chemical elements.

Although it had been thought acquiring direct images of a hydrogen atom, whose diameter is about one-ten-millionth of a millimeter, was impossible, the team managed the feat with a state-of-the-art "scanning transmission electron microscope" while examining vanadium hydride, a hydrogen storage material.



Nothing tinier: An arrow points at an image of a single hydrogen atom in this photo supplied by University of Tokyo professor Yuichi Ikuhara. KYODO PHOTO

The microscope scanned an electron beam onto a tiny spot, placed at a theoretically calculated location, on the specimen to enable a detector to catch and film the image of the hydrogen atom as well as the vanadium atom.

The same method can be used to take images of atoms of various kinds of specimens, according to the team. Earlier means of taking images of a hydrogen atom involved indirect methods, like image processing.

A technique for viewing a single hydrogen atom had been sought amid active research on hydrogen storage materials as a clean source of energy.

"Now we can view all atoms that exist in the world," Ikuhara said. "This will be a breakthrough toward future manufacturing that will be compelled to involve consideration of each individual atom and molecule."

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