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News

Research team succeeds in taking image of hydrogen atom

TOKYO, Nov. 4, (Kyodo) -- A research team led by Yuichi Ikuhara, a professor of material science at the University of Tokyo, said Thursday it has succeeded in taking an image of a single hydrogen atom, the smallest and lightest of the chemical elements.

Although it had been thought that shooting direct images of a hydrogen atom, whose diameter is about one-10 millionth of a millimeter, was impossible, the team managed to do so using a state-of-the-art "scanning transmission electron microscope" while examining vanadium hydride, known as a hydrogen storage material.

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 on various kinds of specimens, according to the team. Earlier means of taking images of a hydrogen atom involved indirect methods such as through image processing.

A technique for viewing a single hydrogen atom had been sought amid active research on hydrogen storage materials as a next-generation clean source of energy, as the sequence of atoms determines the performance of such material.

"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."

(Mainichi Japan) November 4, 2010

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