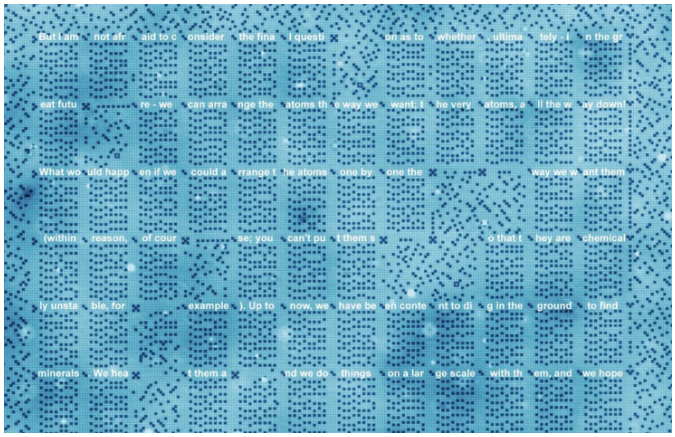
Researchers at Delft University of Technology build a prototype storage device able to store data using single atoms-- providing theoretical capacity of 500TB per square inch.



Such capacity is 500 times more dense than the highest capacity HDDs available to date and, as lead scientist Sander Otte puts it, “would allow all books ever created by humans to be written on a single post stamp.”

The atomic storage technology makes use of a scanning tunneling microscope (STM), a technique allowing the moving of individual atoms. The prototype consists of a flat copper bed covered with around 60000 chlorine atoms, with 8000 empty spaces left around them. The STM was used to arrange the atoms in a grid with gaps representing data, bringing about a means of storage that works more or less like a sliding puzzle.

Why use gaps to represent data? Apparently it is a much more reliable (by 99%) means to encode bits of information than the arrangement of individual atoms.

Of course, such a process takes a long of time-- the prototype shown by the researchers offers 1 kilobyte of storage, and took around a week to assemble, even if re-writes take "just a few hours." The prototype also requires a vacuum environment and the extremely low temperature (-196 degrees Celsius) provided by liquid nitrogen.

"The actual storage of data on an atomic scale is still some way off," the researchers admit. "But through this achievement we have certainly come a big step closer.”

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