Skip the navigation

News

Western Digital claims HDD capacity doubled with nanotech breakthrough

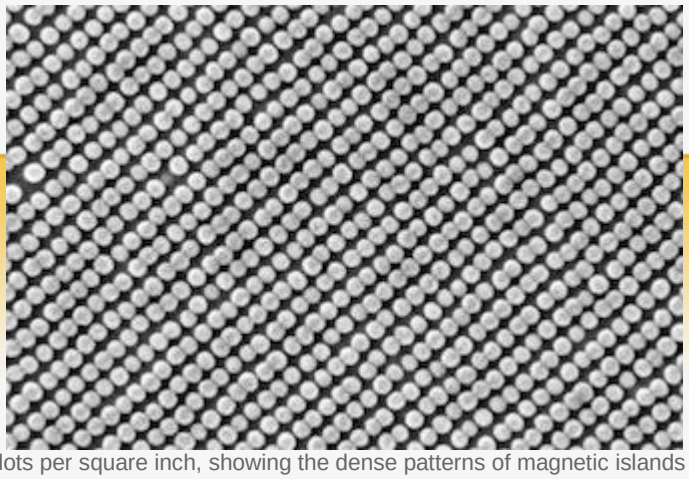
The nanotech discovery may lead to denser and denser HDDs

By Lucas Mearian
March 1, 2013 01:56 PM ET

Computerworld - Western Digital has announced what it said is a nanotechnology breakthrough that will allow the company to double data storage capacity on hard disk drives (HDD).

The discovery was made by HGST Labs, a company owned by Western Digital (WD), using a technique called nanolithography which is used to imprint patterns on the thin film of hard drive platters where data is to be stored. The process overcomes the challenges associated with photolithography, a semiconductor technology used for making successively smaller circuit features in shorter wavelengths of light, among other things.

The discovery allows for twice the bit density of today's disk drives. Nanolithography was used to make dense patterns of "magnetic islands" that appear as small dots in about 100,000 circular tracks required for disk drives.



This pattern has 1.2 trillion dots per square inch, showing the dense patterns of magnetic islands made by HGST Labs using such emerging nanotechnologies as self-assembling molecules, line doubling and nanoimprinting. Each dot can store a single bit of data (Source: HGST).

To make the magnetic islands, HGST Labs used the nanotechnologies to created dense patterns of even smaller 10-nanometer structures, each only about 50 atoms wide.

"We made our ultra-small features without using any conventional photolithography," Tom Albrecht, an HGST fellow, said in a statement. "With the proper chemistry and surface preparations, we believe this work is extendible to ever-smaller dimensions."

HGST said it is the first company to combine self-assembling molecules, line doubling and nanoimprinting to make rectangular features as small as 10 nanometers in the radial and circular paths necessary for rotating disk storage.

The company expects bit-patterned media similar to its discovery to become a cost-effective means of increasing data densities in magnetic hard disk drives before the end of the decade.

"The emerging techniques of self-assembling molecules and nanoimprinting utilized at the HGST Labs will have an enormous impact on nanoscale manufacturing, enabling bit-patterned media to become a cost-effective means of increasing data densities in magnetic hard disk drives before the end of the decade," Currie Munce, vice president of HGST Research, said in a statement.

Lucas Mearian *covers storage, disaster recovery and business continuity, financial services infrastructure and health care IT for* Computerworld*. Follow Lucas on Twitter at @lucasmearian or subscribe to Lucas's RSS feed. His e-mail address is lmearian@computerworld.com.*
See more by Lucas Mearian on Computerworld.com.
Read more about Data Storage in Computerworld's Data Storage Topic Center.