



Technology

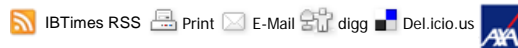
Home > Technology > Business Tech

Latest News [Bush Seeks to Reduce Farm Payments](#)

Intel, IBM Make CPU Breakthroughs

By Daniel Jacobs
Posted 29 January 2007 @ 06:57 pm EST

Font Scale: [A](#) [A](#) [A](#)



(International Business Times) - Semiconductor firm Intel (NASDAQ: INTC) and technology solutions provider International Business Machines (NYSE: IBM) announced separately this weekend that both companies have solved a puzzle that will allow the semiconductor industry to keep making ever smaller computer chips.

Article Tags

[cpu](#) [ibm](#) [intc](#) [intel](#)

- Intel, IBM Make CPU Breakthroughs
 - Intel Head Links Technology, Health Care
 - Intel's New Chips Raises Margins and Risks: Analyst
- [More News Related to cpu >>](#)

Most of today's current semiconductor chips use a manufacturing process that builds transistors - the tiny gates inside of a chip - at a width of 90nm, or about 1000 times smaller than the width of a human hair. Cutting edge processes, such as those used to build today's consumer grade microprocessors, are about two-thirds the size, measuring in at 65nm.

Intel and IBM both said they have developed new materials allowing the industry to continue to shrink the building blocks of chips to 45nm.

The path to smaller chips encounters limitations, explained electrical engineering professor Bernhard Boser of the University of California, Berkeley on Monday.

"In order to be able to turn a transistor on and off, we put a gate on top of the [conducting] channel," Boser began.

As transistors become smaller and smaller, the insulating material between the gate and the channel becomes thinner as well. This insulation keeps electrical current from leaking - critical for proper and efficient operation.

As the semiconductor shrinks however, "you make a very thin insulating material, [and] it is no longer insulating," Boser said.

Both companies have said, however, that they have been able to combat the problem with new, "high-k dielectric" materials.

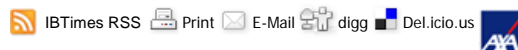
"Until now, the chip industry was facing a major roadblock in terms of how far we could push current technology," said Dr. T.C. Chen, vice president of Science and Technology, IBM Research. "After more than ten years of effort, we now have a way forward."

Instead of using traditional silicon-dioxide, the companies now use Hafnium, a material that can maintain its resistance to current, even at thinner slices.

The results will open up a new era of faster computers and mobile electronics. And because the 45nm transistors are smaller than the previous generation, they take less energy to operate, reducing switching power by approximately 30 percent, Intel said.

But while some see the results as a breakthrough, the technology is seen as a natural next-step in semiconductor technology.

While impressive, Merrill Lynch's Joe Osha says "the industry has been talking about new transistor materials at the 45nm node for years."



This article is copyrighted by International Business Times.

E-Newsletter

Sign up to receive IBTimes top daily news!

Email

[Members Log in](#) | [Get Free Membership](#)

Today's Most Popular Stories

[Most Read](#) [Editor's Pick](#) [Discussed](#)

- [Nvidia Shares Affected by Weaker Playstation 3 Demand](#)
- [Blackberry and iPhone in Different Classes: Analysts](#)
- [Nokia Targets Motorola in 2007](#)
- [Mutual Funds Made Simple: Index Funds](#)
- [Four New Colors for Apple's iPod Shuffle](#)
- [Intel, IBM Make CPU Breakthroughs](#)
- ['Sunshine' Actors Get Ensemble SAG Award](#)

advertisement



MarketWatch

Symbol	Last	Chng.
DJIA	12,541.90	+18.59
NASDAQ	2,438.55	-10.09
SP500	1,426.82	-2.00
Russell 1000	777.69	-1.10

Quick Quote
Enter Symbol: go

djia

Dow Jones Industrial...
INDEX: DJIA
12,533.08 9.77 0.08%

Day's range:
12,505.20 - 12,544.70
Volume: 31.6M

10:05 AM ET 1/31/07
[disclaimer](#)

Top Stories on Technology

[News RSS](#)

[1 Google Mini Upgraded](#)

WaMu Free Checking
Now add 5.00% Savings
A non-traditional offer from a different kind of bank
START NOW Learn more
WaMu
 FDIC insured

READER COMMENT

 **Comment on this story**

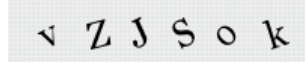
Nick Name

Comment (maximum 1000 characters)

Submit Comments

Registration Security Code

Please enter the code in the image below.



[See all Comments](#)

[Most commented story >>](#)

Also in IBTimes



Tiny London Apartment on Sale for \$335K

Location, location, location. Almost anywhere else, the tiny dilapidated studio wouldn't attract much more than mice. But this is London...






McDonald's Sees Heavyweight Profits

Fast food heavyweight McDonald's Corp. said Wednesday that its fourth-quarter profit more than doubled, thanks in large part to the spi...

 **IBTimes RSS**
 **Newsletter** Sign up to receive IBTimes top daily news



	 <p> Nokia 8801 Phone Nokia New \$488.88 Best \$479.99 </p>	 <p> Tag Heuer SLR Mercedes B... Tag Heuer New \$3,275.00 Best \$3,275.00 </p>
-------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

ibtimes.com : [GLOBAL NEWS](#) | [COMPANIES](#) | [MARKETS](#) | [PERSONAL FINANCE](#) | [TECHNOLOGY](#) | [COLUMNS](#)

Advanced Search |  [RSS Feeds?](#) | [Stock Charts](#) | [Toolbar](#) | [Login](#) | [Newsletter](#) | [Financial-Glossary](#) | [Calendar](#) | [Today's History](#) | [Web Directory](#) | [E-Library](#) | [Calculators](#)

© 2006 **The Ibtimes Company**. All Rights Reserved. [Terms of service](#) | [Privacy Policy](#) | [Advertising](#) | [About Us](#) | [Contact Us](#) | [Archives](#)



- 2 HDTV Prices Falling, Availability Rising
- 3 Sony Seeks to Break Even in Gaming
- 4 3 Spacewalks in 9 Days for Astronauts
- 5 Clever mobile enhancements on the rise
- 6 Clever Mobile Enhancements on the Rise
- 7 NFL to Offer Video Downloads on iTunes

Get the Latest [Technology](#) News>>

ADVERTISEMENTS

Web Design

From Design to Search Engine Marketing to Customer Loyalty Professionals, skills, and tools to take your online business to the top!

www.GalaxyWD.com

Make the most of your sales leads with CardScan

Scan business cards quickly and save into Outlook, Notes, PDAs, and CRM systems with CardScan's 5-star...

www.cardscan.com/home/index.asp

Cig-Corporate Incentives & Gifts

Looking for ways to increase customer loyalty? Motivate employees? Say thanks? Over 30 year PR experience

www.ciggifts.com