


[Home](#)

[Top Stories](#)


World's first programmable nanoprocessor developed

Britain News.Net

Thursday 10th February, 2011 (ANI)

Engineers and scientists have developed the world's first programmable nanoprocessor.

The groundbreaking prototype computer system, developed in at Harvard University and the MITRE Corporation, represents a significant step forward in the complexity of computer circuits that can be assembled from synthesized nanometer-scale components.

It also represents an advance because these ultra-tiny nanocircuits can be programmed electronically to perform a number of basic arithmetic and logical functions.

"This work represents a quantum jump forward in the complexity and function of circuits built from the bottom up, and thus demonstrates that this bottom-up paradigm, which is distinct from the way commercial circuits are built today, can yield nanoprocessors and other integrated systems of the future," says principal investigator Charles M. Lieber, who holds a joint appointment at Harvard's Department of Chemistry and Chemical Biology and School of Engineering and Applied Sciences.

The work was enabled by advances in the design and synthesis of nanowire building blocks. These nanowire components now demonstrate the reproducibility needed to build functional electronic circuits, and also do so at a size and material complexity difficult to achieve by traditional top-down approaches.

Moreover, the tiled architecture is fully scalable, allowing the assembly of much larger and ever more functional nanoprocessors.

"For the past 10 to 15 years, researchers working with nanowires, carbon nanotubes, and other nanostructures have struggled to build all but the most basic circuits, in large part due to variations in properties of individual nanostructures," says Lieber, the Mark Hyman Professor of Chemistry.

"We have shown that this limitation can now be overcome and are excited about prospects of exploiting the bottom-up paradigm of biology in building future electronics."

An additional feature of the advance is that the circuits in the nanoprocessor operate using very little power, even allowing for their miniscule size, because their component nanowires contain transistor switches that are "nonvolatile."

This means that unlike transistors in conventional microcomputer circuits, once the nanowire transistors are programmed, they do not require any additional expenditure of electrical power for maintaining memory.

"Because of their very small size and very low power requirements, these new nanoprocessor circuits are building blocks that can control and enable an entirely new class of much smaller, lighter weight electronic sensors and consumer electronics," says co-author Shamik Das, the lead engineer in MITRE's Nanosystems Group.

"This new nanoprocessor represents a major milestone toward realizing the vision of a nanocomputer that was first articulated more than 50 years ago by physicist Richard Feynman," says James Ellenbogen, a chief scientist at MITRE.

The study appears in the journal Nature. (ANI)

[Email this story to a friend](#)

IntelligentLabor & Moving

Experienced, Local & Friendly Residential and Piano Moving

Nanowire

Highly Conductive Silver Nanofiber Dispersions. Contact Us Today!

Ads by Google

• **Iran blocks BBC over Egypt coverage**

British broadcaster BBC said Iranian authorities were blocking its Persian language television for showing news related to the mass protests in Egypt. [\[read story\]](#)

• **Cat that looks like Harry Potter baddie struggling to find new home**

An ugly stray cat in Britain has been unable to find a new home - because it looks so much like the Harry Potter villain Lord Voldemort. [\[read story\]](#)

• **Christian Bale slams partying problem reports**

Christian Bale's representative has slammed rumours the star's alleged hard-partying ways are taking a toll on his marriage. [\[read story\]](#)

• **Ricky Martin's rep denies U.S. tour problems**

Ricky Martin's representative has dismissed rumours his upcoming U.S. tour is in jeopardy due to poor ticket sales. [\[read story\]](#)

• **Arnie planning to reprise his career as Hollywood action hero**

Arnold Schwarzenegger has revealed that that he is considering reprising his career as a Hollywood action hero. [\[read story\]](#)

IC Counterfeit Testing

Semiconductor IC validation and counterfeit testing services.
www.gd4test.com

Global Device Programming

Short Cycle Times; Lower Total Cost Simplify. Order Parts & Programming
www.arrownac.com/services-tools

Algorithmic Specification

Hi-level spec, modeling & synthesis for FPGA & ASIC architectures
www.bluespec.com

Intro to Nanotechnology

Definition, History & Uses. Free downloadable resources.
nano4me.live.subhub.com

Ads by Google

Have your say on this story

Your nickname	<input type="text"/> (required)
Message	<div><div></div></div>
<input type="button" value="Post comment"/>	

[Daily Newsletter](#) [Britain News RSS Feed](#) [World News RSS Feed](#) [Business and Finance RSS Feed](#)

[Home](#) | [Newsletter](#) | [Map](#) | [About Us](#) | [News Releases](#) | [Contact Us](#) | [Privacy Policy](#) | [Terms and Conditions](#) | [Site Map](#)

© 1999 - 2010 Mainstream Media EC - All rights reserved