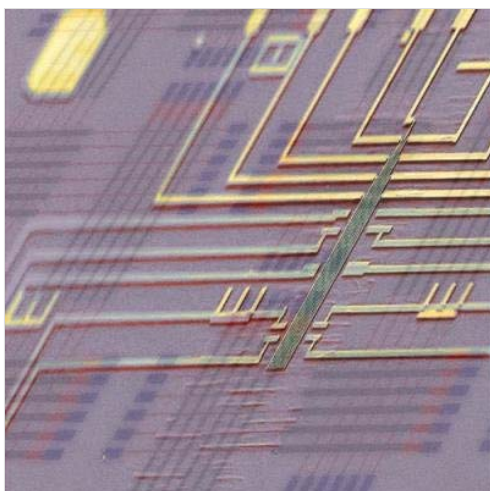




The World's First Programmable Nanoprocessor Takes Complex Circuitry to the Nanoscale

By [Clay Dillow](#) Posted 02.09.2011 at 1:00 pm



The World's First Programmable Nanoprocessor An electron microscopy image shows a programmable nanowire nanoprocessor super-imposed on a schematic nanoprocessor circuit architecture. *Photo courtesy of Charles M. Lieber, Harvard University.*

Nanocomputers have been around for decades as a concept, but in actual practice they've been harder to come by. Now, engineers collaborating at Harvard and the MITRE Corporation have taken a huge step forward for the field of nanocomputing by creating the [world's first programmable nanoprocessor](#).

Enabled by a series of advances in the design of nanowire building blocks and the way they are synthesized to create completed nanocircuitry, the method allows for far more complex circuits to be assembled at very small scales. Described in a paper publishing today in the journal *Nature*, these super-small nanocircuits can be electronically programmed to carry out a variety of mathematic and logical functions.

Further, the technology is scalable, meaning that while it is now possible to program a tiny nanoprocessor to carry out simple functions, its architecture allows for the creation of much larger circuits capable of ever larger functions. Coupled with the low power consumption inherent in the circuits' efficient transistor switches, and this new nanoprocessor breakthrough could mark the beginning of a shift toward smaller and smaller consumer electronics and sensor tech, not to mention far less-dense computers with increased capacity to compute.

All that, naturally, is a ways off. As with all big nano breakthroughs (can a nano breakthrough be big?), this tech will take time to smooth out and refine. But the idea of electronically programmable nanocircuitry is tantalizing. Once harnessed, such nanotech building blocks have the ability to create complex circuits at scales and with materials that current manufacturing approaches simply can't achieve. That, in turn, could breed a whole new kind of electronics.

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7 COMMENTS

geebob

02/09/11 at 2:23 pm

this new nanoprocessor breakthrough could mark the beginning of a shift toward smaller and smaller consumer electronics and sensor tech,

Finally, cause the trend of making them bigger and bigger is getting to be a nuisance. I can't even lift my cell phone anymore.

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GetRevenge32

02/09/11 at 4:09 pm

Don't let apple get a hold of this technology... we want finger nail size ipods!

[Link to this comment](#)

GetRevenge32

02/09/11 at 4:10 pm

Sorry I meant to say "we don't want"

[Link to this comment](#)

BankDuds

02/09/11 at 6:55 pm

put a chip in your brain.... sideways

[Link to this comment](#)

Foomypoo

02/09/11 at 7:27 pm

Geebob...good call my friend! My 20lb mp3 player is killing back!

[Link to this comment](#)

TheScotsman

02/09/11 at 8:48 pm

Neuro implants enabling echolocation by enhancing humans range of hearing?

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inaka_rob

02/09/11 at 10:05 pm

can someone explain to me what exactly nanoproccor. I thought nano simply refereed to the scale. I thought current CPUs fit into that scale decades ago. not just cpus but stuff like flash memory as well. please correct me if I am wrong, but I thought we were right on the door step of the phycical limitations of current materials. I believe Panasonic (I may be wrong about the company) has created the worlds smallest flash memory with a size of 13microns (the average is about 19 I believe) but scientists think it simply can not get much smaller than 9 or 10 microns with the current materials like silicon. So can some please explain how CPU and FLASH mem is not a nano scale, and how this "new" nano scale circuitry is ANY different than what has been made for the last 10 or so years.

if you ask me this article reads like it was written 15 or 20 years ago unless I am missing some thing. When they say nano processor, do they mean simply nano circuitry. like all the stuff not included the mem and cpu? if that is the case I would LOVE to hear how they are shrinking resistors and capicitors and other similar parts to nano scale. that would BE REALLY interesting, but they dont mention that at all.

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