

HP Licenses Technology to Create Nanoscale Electronic Devices

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HP today announced that it is beginning to reap returns from its 10-year investment in nanoscale electronics with the licensing of technology that could enable the fabrication of semiconductor chips significantly more powerful than those available today.

The technology involves a process called nanoimprint lithography (NIL) – a method of literally stamping out patterns of wires less than 50 atoms wide on a substrate. HP Labs researchers have created patented NIL technology, which has enabled the fabrication of laboratory prototype circuits with wire widths of 15 nanometers – about one-third the dimension of the features in the most advanced circuits that will be commercially available this year.

Once the NIL “master” is created, copies can be stamped out quickly and inexpensively, like manufacturing CDs or phonograph records. The patterns are then filled in with metals for the wires.

HP has licensed the technology to Nanolithosolutions, Inc., of Carlsbad, Calif., which has developed a tool based on HP’s technology. The tool consists of a module that fits into a mask aligner. The module is used to create the patterns for wires and transistors on a substrate. The tool is simple and inexpensive to use and turns commonly available mask aligners into high-resolution NIL machines. The technology is also being offered to others through HP’s Intellectual Property Licensing organization.

“By building on HP’s extensive research in nanoimprint lithography, we believe we have a tool that will enable reliable, repeatable processes for exploring biochips, photonics chips and many other applications,” said Bo Pi, chief executive officer, Nanolithosolutions. “We believe this will be an extremely useful tool for academic and commercial users worldwide because it will be about a tenth the cost of current technology.”

Nanolithosolutions was created by Pi and Yong Chen, a UCLA professor and former member of HP Labs. HP also has an equity stake in the company. Further details of the arrangements were not disclosed.

“Because HP and other companies need unique tools to conduct nanoscale research and development, we created the underlying technology that makes this tool possible,” said Stan Williams, HP Senior Fellow and director, Quantum Science Research, HP Labs. “But we rely on innovative companies like Nanolithosolutions to do the additional engineering necessary to make user-friendly tools commercially available. This will help create future generations of chips that will go beyond the capabilities of today’s fabrication technologies at an affordable cost.”

Source: HP

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