Companies to Watch

Nanochip

[Private]

www.nanochip.com 510-770-9778
Fremont, California
Chief Executive: Gordon Knight
What it does: AFM-inspired technology for flash memory cards.

Right now one of the hottest sectors in the data storage industry is flash memory cards. They are those wafers or sticks you use to capture images on digital cameras or cell phones, or to store music on your MP3 player. Flash memory makers like **Lexar Media** [LEXR] and **SanDisk** [SNDK] have seen their stocks run up 386% and 285% in the past year. Flash memory accounted for about one third of the $32.5 billion semiconductor market in 2003.

I discussed **IBM's** [IBM] Millipede memory technology a year ago (*see "IBM's Millipede Crawls to Market," April 2003*). Now Fremont, California-based Nanochip is challenging IBM and other memory card makers with wafers that cram 100 gigabits onto a square inch. And Nanochip is confident it can go even further—to 50,000 gigabits or more per square inch. In contrast, current flash memory can hold about 50 gigabits and Millipede prototypes run about 100-300 gigabits per square inch. Like the Millipede, Nanochip draws its inspiration from atomic force microscopes. An array of atomic force tips punches divots into a surface or erases them to creates the bits of storage information.

Nanochip CEO Gordon Knight believes Nanochip has an edge over Millipede from a technology point of view. For starters, Nanochip structures its tip differently and punches into a different surface. It also uses multiple recording platforms and fewer tips overall. Nanochip claims these differences make its devices faster and easier to manufacture, and give them a wider temperature range. Nanochip's patents also predate the Millipede effort, and rumor has it that IBM might put the highly-touted Millipede up for sale or license depending on which technical standards the industry moves towards.

Nanochip just raised $20 million from JK&B Capital, New Enterprise Associates and **Microsoft** [MSFT]. Its goal is to reach beta trials with customers in 2005 and get chips into production by the end of 2005. To that end, Nanochip has partnerships with two foundries, one in San Jose and Singapore-based MEMS Technology Sdn Bhd, owned by Nanochip investor **AKN Technology Bfd** [AKNMF.PK].

Time and testing will tell whether Nanochip's devices really are faster, denser and more robust than Millipede or other new developments in areas like **Hitachi's** [HIT] MicroDrives. If its technology can catch the eye of high-end flash memory makers—Lexar Media, SanDisk, **Sony** [SNE] and **Toshiba** [TOSBF.PK]—or their customers—manufacturers of cell phones, digital cameras and PDAs—it might make itself a nice acquisition target.

Polaron plc

[LSE: POL]

www.polaron.co.uk +011 44 1923 495495
Watford, England
Chief Executive: Joseph Stelzer
What it does: Makes Atom Probe nano scopes.

Has Prince Charles' preoccupation with the dangers of "grey goo" had an impact on British investors' appetite for nanotech? Not in the slightest, according Polaron plc CEO Joe Stelzer. And he should know: he just took a nanotech company public on the London Stock Exchange's Alternative Investment Market, a global market for smaller, growing companies.

However, investors should not lump Polaron in with the new breed of nanotech pure-plays. It has been around since 1963, largely as a holding company for technology in three scientific instruments markets: control systems, components and software republishing. It recently added a fourth division specializing in nanotech.

In 2002, Polaron acquired a 75% stake in Oxford University spinoff Oxford Nanosciences Ltd. (ONS), which makes 3-dimensional atom probes. An atom probe is an analytical "nano" scope that allows visualization and analysis of materials spatially and compositionally on an atomic scale.

I don't consider the company a direct competitor to Imago Scientific (*see Companies to Watch, May 2002*), which employs similar technology. Imago focuses mainly on the semiconductor industry, while Oxford's atom probes sell for less than $1 million largely to academic research centers like the Indian government's Defense Metallurgical Research Laboratory.

So far only one-sixth of the company's revenue is from its nanotech division. But Stelzer says all four divisions of the company are now profitable and showing signs for more growth. Polaron raised roughly $20 million with its IPO, and $14 million of that was used to buy out the 25% stake in ONS held by Stelzer's father. That means that just $6 million is left—leaving only a portion for ONS's atom probe.

What can investors expect from Oxford in the next year? "The U.K. nanotech market is growing rapidly and we're looking to acquire companies to add new product lines to our portfolio," says Stelzer. Yet, according to their IPO prospectus, Polaron has also applied for Venture Capital Trust recognition in the U.K. This would allow it to become similar to venture fund **Harris & Harris** [TINY]. Whether Polaron turns into a U.K.-version of TINY by acquiring stakes in private companies remains to be seen. One thing is for certain though: With 25% of the IPO proceeds coming from private investors and the remaining from U.K.-based institutional investors, the Brits are building up an appetite for nanotech.

Nano in the News

Merrill Lynch Launches Nanotech Index

Merrill Lynch [MER] recently launched an equally-weighted index of 25 companies it believes will have a significant percentage of their future profits tied to nanotech. All of the *Forbes/Wolfe* Nanosphere stocks (with the exception of IBM and HPQ) are listed in the index. The Nanotech Index will be quoted intraday by the American Stock Exchange under the symbol "NNZ." At the current time you cannot trade NNZ and there are no plans to launch a nanotech exchange-traded fund based on the index. The constituents of the index have already been updated once and could expand as more pure plays become public.