

There's (Still) Plenty of Room at the Bottom

by *Christian DeHeamer*

people tell me about miniaturization, and how far it has progressed today. They tell me about electric motors that are the size of the nail on your small finger. And there is a device on the market, they tell me, by which you can write the Lord's Prayer on the head of a pin. But that's nothing; that's the most primitive, halting step in the direction I intend to discuss. It is a staggeringly small world that is below. In the year 2000, when they look back at this age, they will wonder why it was not until the year 1960 that anybody began seriously to move in this direction.

Why cannot we write the entire 24 volumes of the Encyclopedia Britannica on the head of a pin?

—Richard P. Feynman, December 29, 1959

Back in 1959, Richard Feynman stated that there was no scientific law that would prohibit the manipulation of matter atom by atom. He offered two US\$1,000 prizes the first for anyone who could write the encyclopedia on the head of a pin, in other words shrink it by a factor of 25,000. The second for anyone who could create a 0.4-mm motor. Both prizes have been claimed.

For years, the science of nanotechnology has progressed in relative obscurity. You may remember IBM writing IBM using 35 xenon atoms back in 1989. At *Taipan*, we've been writing about the coming nanotech revolution for more than five years, but the technology has never quite made it out of the lab and into our portfolio until now.

A strong foundation

There are now products on the market. In chemicals, manufacturing, biotechnology, semiconductors and energy — in almost everything produced by man — nanotechnology will lead to innovative new products. 80% of top executives believe that nanotechnology is relevant to their specific industry.

This is the ultimate disruptive technology. Estimates are that nanotech products and services will represent US\$1 trillion in revenue by 2015. And I believe it. There are, right now on the market, buckyballs made out of carbon molecules (a buckyball or fullerene is the shape of a soccer ball — the strongest geometrical form known to man).

They can be stretched into tubes — nanotubes. They now cost US\$20 a gram, down from US\$600. These can be woven together into nanoropes or nanofibers to create materials that are 100 times stronger than steel, with electrical conductivity similar to copper and the thermal conductivity of diamonds. A single nanotube is 100,000 times smaller than a human hair.

Nissan has an SUV with a nanotube-enhanced bumper (5% of the plastic) that will automatically return to its original shape after a fender-bender. It's for sale in Japan.

This isn't the Internet

Many people compare this to the Internet revolution. It's not. You won't find any frat boys thinking up ideas in their garages. The tools necessary to manipulate atoms are very expensive. The barriers to entry are very high. So the number of companies playing in this sphere is limited. Right now there are about 20 on my watch list. Some of these companies will win, some will lose, but most will launch as more and more real products hit the market.

Picks and shovels redux

One way to play this emerging technology is to buy the companies that make R&D possible. One of these companies is VECO.

Veeco Instruments (VECO:NASDAQ) is the top manufacturer of measurement tools used in disk drives and semiconductor chips. They sell to the likes of IBM and AMD. This company has proven its ability to grow quickly by acquiring and integrating competing technology and making it their own. In November they acquired Advanced Imaging, a company that makes equipment for thin-film magnetic head data storage.

VECO is the biggest supplier of atomic force/scanning probe microscopes — a must have for any nano research.

The company recently hit a new 52-week high at US\$30.25 before selling off and falling back to its trend-line at US\$25. This looks like a great buy opportunity, a way to get in before the next leg up. It also provides a nice stop-loss point at US\$24 — just in case things get hairy.

Semiconductor equipment can be a tricky, volatile market, but this company has managed to stabilize its returns. With a market cap of US\$855 million, this nanotech leader will capture the investment world's attention and has a good chance of becoming a market darling.

Nanotech has all the components necessary to create a market bubble:

- Experts are predicting huge revenues (\$1 trillion) a decade hence.
- There is only a small number of pure plays (twenty on my watch list, many of them bulletin-board stocks or large caps like IBM and NEC — in other words, not pure plays).
- It is a complex science that few people understand, and can be easily spun.
- An incredible number of possible products that will change the way we live. Each of these products will generate media and Wall Street hype.

The nanotech boom will be similar to the Internet boom, only more so because it has a high barrier to entry and very real products. You must own the core group of pure nanotech stocks while the values are reasonable. By this time next year they won't be.

Buy VECO today. You should be able to get in under US\$30. ■