

Nano World: \$30 billion in nano goods

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Emerging nanotechnology made its way into more than \$30 billion in manufactured goods in 2005, more than double the year before, experts tell UPI's Nano World.

"The overall story that we're seeing for nanotechnology is motion out of the lab and onto the shelves," said New York-based nanotechnology analyst firm Lux Research President and Director of Research Matthew Nordan.

Products enabled by nanotechnology on the market today, ranging from antimicrobial refrigerators to drugs boosted by nanoparticles, carry an average price premium of 11 percent vs. comparable products.

Nanotechnology is expected to be incorporated into \$2.6 trillion in global manufactured goods in 2014, or roughly 15 percent of total output, Lux Research revealed in a report Monday.

Asia is rising in the nanomaterial supply field. "You have more than 30 companies in China alone when it comes to ceramic nanoparticles, with 120 in the rest of the world. You see CNT Co. in Korea, with carbon nanotubes at 200 dollars a kilogram, undercutting Western suppliers by more than 50 percent. That's pretty dramatic," Nordan said. "Asia can compete aggressively not only in labor, but in capital. In the long run, nanomaterials will probably be owned by East Asian companies."

Governments, corporations and venture capitalists worldwide spent \$9.6 billion on nanotechnology research and development in 2005, up 10 percent from 2004. Corporations grew the most in spending, with \$4.5

billion on nanotechnology R&D worldwide in 2005, up 18 percent from 2004. Of this, \$1.9 billion was in North America, \$1.7 billion in Asia, \$850 million in Europe and \$70 million in the rest of the world.

"We earlier predicted that government spending would be surpassed by corporate spending. It's almost there," Nordan said.

Governments worldwide still invested the most in nanotechnology in total, at \$4.6 billion in 2005, but this was up only 3 percent from 2004. Government funding is slowing as expenditure shifts from constructing new nanotechnology research facilities to operating ones already built, Nordan said. North America, almost entirely accounted for by the United States and Asia, dominated by Japan, each spent \$1.7 billion. Western Europe, led by Germany, spent \$1.1 billion, while the rest of the world spent \$100 million.

Venture capitalist in nanotechnology reached \$497 million globally in 2005, making up roughly 2 percent of total global venture-capital flows, up 17 percent from 2004. While the average size of venture-capital deals in nanotechnology shot up to \$10.9 million in 2005 on large series C and D for late-stage companies like Nanomix, Aspen Aerogels and Nanosys, overall deal numbers are down, falling 17 percent from 2004. Venture capital in nanotech is highly concentrated, with the top 10 percent of the 143 nanotechnology startups that have received institutional venture-capital funding since 1998 accounting for 43 percent of cumulative funding.

"There is a herd mentality in venture capital that waits until a validation of the field," Nordan said. "There is another crop of IPOs coming up, and if those succeed, we'll see much larger business creation events, and probably see some bad money spent."

Charles Harris, chairman and chief executive officer of venture-capital

firm Harris & Harris Group in New York, commented that the increase in nanotech-deal sizes and decrease in deal numbers reflected a trend in venture capital in general.

"Venture capital firms now have more money under management, and need to do larger deals to employ the additional capital they've raised. Also, all venture capitalists are struggling with the fact that the number of venture-backed IPOs is way down from where it was from the bust in 2000. In the first quarter of this year, there were only 13 venture-backed IPOs, and in the boom years from the mid-90s to the year 2000, a typical quarter might have anywhere from 25 to 75 venture-backed IPOs," Harris said.

Harris added publicly held companies are now dealing with the Sarbanes-Oxley Act of 2002, a federal law that came in the wake of corporate financial scandals such as those involving Enron, Tyco and WorldCom, which covers issues such as corporate responsibility and establishing oversight boards. "It's very expensive to comply with it, which makes it hard to go public unless a company is big enough, so venture capitalists have to invest in bigger companies," he explained.

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