

# IVCA Private Equity Profile



## **Advanced Diamond Technologies**

*Management:* Neil Kane, President and co-founder

John Carlisle, Ph.D., Chief Technical Officer and co-founder

Charles West, VP of Engineering, ex-Battelle, co-founder of Questek Innovations, LLC

*Venture Capital Partners:* LaSalle Investments Inc., Illinois Ventures, LLC

*Headquarters:* Romeoville, Ill.

We Solve Hard Problems™. That's the tagline of Advanced Diamond Technologies, Inc., and the four year old diamond products company means that literally. ADT isn't a jewelry company but the diamond still reigns supreme there. And while diamonds may be a girl's best friend, ADT's diamond applications are increasingly the best friend of electronic mechanical/ industrial and medical customers.

Diamond is nature's perfect material, but it's difficult and challenging to work with other than for cutting applications. ADT employs research conducted at and is utilizing 14 patents received by the U.S. Dept. of Energy's Argonne National Laboratory to develop and apply diamond films for myriad applications. ADT uses proprietary techniques to capture many of the best properties of natural diamond in a nanocrystalline form known as UNCD®. The diamond films that ADT makers aren't diamond-like carbon films – they're actually phase-pure crystalline diamond materials produced at temperatures of 400-800 degrees Centigrade.

### ***A Snapshot of Advanced Diamond Technologies***

- ✓ **World leader in developing and applying diamond films for myriad applications.**
- ✓ **Multiple winner of awards and grants for technology innovation.**
- ✓ **Leader in energy-efficient technologies**

ADT has become the world leader in using these synthesized, mirror-smooth and ultra-thin diamond films known for their ability to integrate seamlessly with other materials. The investor-owned company offers several families of high-performance products that exploit diamond's unsurpassed properties. (Just how thin are the films? As thin as 100 nanometers or as thick as 20 microns. Consider: It takes 100,000 nanometers lined up side-by-side to equal the diameter of a human hair).

## **Just Scratching the Surface**

Indeed, the research and business communities look to ADT to develop breakthrough innovations with engineered diamond that are commercially viable and cost-effective. As ADT Chief Executive Officer Neil Kane points out, "We turn 50 cents worth of natural gas into \$500 of diamond by rearranging the carbon atoms. This is similar to the valuation increase one gets from turning beach sand into silicon wafers."

Already, UNCD applications in electronics encompass starter wafers for diamond micro-electrical-mechanical systems (MEMS), high-performance radio-frequency MEMS and bulk and surface acoustic wave devices. UNCD greatly improves performance for wireless applications while potentially reducing overall size and weight and manufacturing costs.

Mechanical/industrial applications range from low-friction, wear-resistant coatings and mechanical seals for pumps to AFM probes for nanoscale imaging and superior cutting tools. As for medical uses, UNCD is applied to electrochemical biosensors, implantable biomedical devices, biocompatible hermetic coatings and X-ray windows. But future new applications are countless, experts say, which explains another ADT tagline: *We haven't even scratched the surface™*.

Mr. Kane, a company co-founder, uses the versatility of the UNCD even for landing new business. At the 2007 World Economic Forum in Davos, Mr. Kane brought along gift tie clips with the names of well-known tech executives like Michael Dell and government luminaries like John McCain and Prince Andrew written in the thin diamond film.

### **ADT'S Origins**

ADT was formed in late 2003 by three co-founders to commercialize the UNCD technology. Besides Mr. Kane, the founders were Orlando Auciello, Ph.D., a senior scientist at Argonne National Laboratory's Materials Science Division and John Carlisle, Ph.D, formerly a scientist at Argonne who is now ADT's chief technical officer.

#### ***A Snapshot of LaSalle Investments***

- ✓ **An early-stage Chicago venture-capital investment company.**
- ✓ **Founded in 1978 by its president, Robert T. Geras, a legendary Chicago angel investor.**
- ✓ **In 2007, had a \$30 million portfolio in 18 companies.**

The three men at times faced what seemed like insurmountable obstacles to get the company off the ground. In May 2002, Mr. Kane, as a consultant, recommended that Argonne form a startup company to commercialize UNCD. But the Argonne lab had never formed such a startup so ADT was to be the first licensee in which Argonne took stock in the company. The founders and the lab had to get Dept. of Energy approval for the arrangements, including how the founders could hold stock in ADT and keep their Argonne jobs without breaking conflict-of-interest rules. This took a long time but it got done.

"I wrote a business plan and started making presentations at venture conferences seeking seed capital," recalls Mr. Kane. In September 2002, ADT was voted the "Most Promising Company" at a Nanotechnology Venture Fair but, at the time, a company didn't really exist yet and there wasn't a license from Argonne. In March 2003, however, after Mr. Kane presented at a venture capital meeting in Chicago, a dealmaker for one of the largest companies in the U.S. heard him and then visited the founders. Soon thereafter, they had a funding term sheet.

But their problems weren't over. They still didn't have a license or people. The investors wanted Mr. Kane as CEO and Dr. Carlisle as CTO. At the time, though, the two men were being paid by Argonne and conflicts of interest remained. The investors finally grew tired and withdrew their term sheet. "After about 18 months worth of effort, we were back to the starting point," says Mr. Kane.

## Investors Finally Signed On

But the founders persevered and formed a new company and got a license contingent on their ability to raise money. “Over two years after the idea hatched, we did our first close of \$500,000 on a \$1 million seed round,” recounts Mr. Kane. Seven months later, in August 2004, they finished the Series A financing round. The key investor was LaSalle Investments, Inc., whose president Robert T. Geras, now an ADT director, had become enamored with the company’s diamond technologies and the outlook for UNCD applications. Mr. Geras is considered an uber-angel investor in startup ventures.

Along the way, ADT also received Small Business Innovation Research grants and a \$1.4 million grant from the Defense Advanced Research Projects Agency, or DARPA, for a notable project. “We have a perfect batting average in getting the government to pay for our R&D and product development. We’ve actually raised very little equity financing to date,” says Kane. The company also received some debt financing from one of its vendors, allowing it to start manufacturing sooner than otherwise planned.

Its first products were UNCD-coated silicon wafers. With its commercial scale platform, ADT raised its next round of financing in November 2006 to launch more products. LaSalle Investments and Illinois Ventures LLC led this funding round, which also included Nomad Ventures as well as individual investors. Illinois Ventures, a seed and early-stage tech investment firm that deploys funding from public and private sources, took a \$500,000 equity position.

ADT has received numerous awards and grants for its technologies, which have accentuated interest in the company. And new developments keep occurring. In late February 2008, ADT launched a revolutionary family of diamond mechanical seals that improve efficiency, save energy and reduce costs in fluid pumping systems. Known as UNCD<sup>®</sup> Seals, the products furnish the benefits of diamond at prices that compare to less-effective silicon carbide face seals. The new applications reflect nearly 10 years of research at Argonne and about \$10 million in Dept. of Energy funding. “We’re seeing strong market interest in our seals products,” says Kane, “and now that the products have been introduced to the market, we’re looking for another round of financing to fund market expansion.”

ADT’s future appears especially bright. No longer is it quite a diamond in the rough.

### *A Snapshot of Illinois Ventures LLC.*

- ✓ **A seed and early-stage tech investment firm with special interest in startups deriving from research conducted at the University of Illinois.**
- ✓ **As of June 30, 2007, it had invested nearly \$7.5 million in advances and equity funding in startup ventures and investment in Illinois Emerging Technologies Fund.**
- ✓ **Offices in Chicago on U of I campuses in Champaign/ Urbana and Chicago.**

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The **IVCA Private Equity Profiles**, a continuing series of portraits of Illinois venture capital and private equity investments, spotlights companies that are

emerging or proven successes. Each account furnishes information about the company and the private equity firm or firms that invested in it, illuminating the important role they play in nurturing the companies.

**IVCA** is a non-profit trade association that serves the Midwest venture and buyout community. It focuses on expanding the size of the industry in Illinois and the Midwest by improving the local ecosystem for investors, entrepreneurs and limited partners. On behalf of its members, IVCA advocates pro-growth government policies, provides a virtual community via [www.illinoisVC.org](http://www.illinoisVC.org) for deal flow and networking, and hosts educational and entrepreneurial events that offer networking opportunities for local investors, entrepreneurs, governmental stakeholders and tech-transfer groups.