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INITIAL REPORT



# Applied Nanotech Holdings, Inc. (OTCBB: APNT)

NOVEMBER 15, 2011 | TARGET PRICE: \$0.91 | RATING: BUY

## NANOTECHNOLOGY COMPANY BEGINNING TO COMMERCIALIZE THEIR INTELLECTUAL PROPERTY; INITIATING COVERAGE WITH BUY RATING

### ANALYST

Thomas Pfister

### MARKET DATA

TICKER	APNT
FISCAL YEAR	December
INDUSTRY	Nanotechnology
MARKET CAP	\$35.7M
RECENT PRICE	\$0.30
TARGET PRICE	\$0.91
52-WEEK HIGH-LOW	\$0.67 - \$0.25
PRICE/EARNINGS (TTM)	67.7x
PRICE/BOOK (MRQ)	10.8x
PRICE/SALES (TTM)	3.4x
SHARES OUTSTANDING	118.9M
FLOAT	107.6M
AVG DAILY VOL (3 MOS)	69,580
INSIDE OWNERSHIP	9.5%

As of November 14, 2011

### FINANCIAL DATA

REVENUE (TTM)	\$10.1M
REV (TTM) PER SHARE	\$0.09
OPERATING PROFIT (TTM)	\$1.6M
OPERATING MARGIN(TTM)	15.4%
EBITDA	\$1.6M
NET INCOME (TTM)	\$0.5M
DILUTED EPS (TTM)	\$0.00
CASH & EQUIV (MRQ)	\$4.2M
CASH (MRQ) PER SHARE	\$0.04
TOTAL DEBT/EQUITY	46.5%
BOOK VALUE PER SHARE	\$0.03
ROE (TTM)	N/A
ROA (TTM)	13.2%

### EPS ESTIMATES

4QFY10A	\$0.01	4QFY11E	(\$0.01)
1QFY11A	(\$0.01)	1QFY12E	(\$0.00)
2QFY11A	(\$0.00)	2QFY12E	\$0.00
3QFY11A	(\$0.00)	3QFY12E	\$0.00

Applied Nanotech Holdings, Inc. (“APNT”, “Applied Nanotech”, or “the Company”), is a research and commercialization organization focused on solving problems at the molecular level using nanotechnology. The Company’s goal is to either license their intellectual property to other companies with the purpose of creating products using this intellectual property that will deliver a portfolio of recurring royalty streams for APNT or to make direct product sales. The Company’s main focus is in the following areas:

**CNT Reinforced Composites:** APNT has a license agreement with Yonex Co., Ltd., a Japanese sporting goods company. Royalties from this agreement began in 2Q11 from sales of badminton racquets and golf clubs, and royalties from tennis racquets are expected to commence at some point in the future.

**Technical Inks Printing Solutions:** APNT has two separate license agreements in this area: 1) A license agreement with Ishihara Chemical Company, Ltd., for the development and sale for nanocopper inks. Marketing for the product began in early June, and royalties are expected to commence in 2012. 2) A license agreement with Sichuan Anxian Yinhe Construction and Chemical Group (YHCC) for APNT’s solar ink and paste technology (with aluminum pastes the first product to be produced), and following the completion of a manufacturing facility the pastes are expected to be produced and sold in 2012.

**CarbAl™ Thermal Management:** CarbAl™ won a R&D 100 award in 2009. Currently the Company is exploring a license agreement or potentially direct sales of CarbAl™, and the Company expects direct sales to commence in the near future.

**Nanosensors:** APNT has developed a number of sensors, with the most promising nanosensor being the Company’s Differential Mobility (DMS) sensor. APNT has developed a Mercaptan gas sensor for the Northeast Gas Association and is also looking to receive funding to tailor their sensor toward applications for the health industry.



In our view, the Company is on the brink of transitioning to a company wholly focused on research and development to a company that, while still focusing on R&D, will be able to deliver a steadier stream of license fees, royalties, and direct sales that will eventually lead to consistent profitability. Considering both this and the Company's impressive intellectual property, we initiate coverage with a BUY rating and price target of \$0.91.

### ***INVESTMENT RATIONALE***

**Royalty revenue streams expected to lead to consistent profitability.** The Company received their first royalty streams in APNT history in 2Q11, from the sale of Yonex badminton racquets and golf clubs that were enhanced by APNT's CNT epoxies. Additional royalties are expected from Yonex tennis racquets at some point in the future, and from nanocopper inks and solar inks and pastes in 2012. Royalties essentially are pure profit for the Company, as they do not directly bear the cost of producing these goods once the license agreement is in place, and as such, the royalties should contribute to more consistent profits once multiple product launches begin.

**Direct sales expected to commence in the near future.** The Company is in the process of hiring two to three business development executives to begin marketing direct sales of their CNT enhanced resins and CarbaI™. Direct sales have been made possible, in our view, by the Company developing processes and intellectual portfolio to a point that allows them to create materials that can be developed for different companies/products in a shorter period of time, which allows APNT to make direct sales to many different companies, as opposed to signing more specific license/royalty agreements. The Company expects direct sales to contribute higher net margins versus royalties, which have historically ranged from 2.5% – 4% of a sale.

**We believe that license agreements will be signed at a faster pace going forward.** As the Company advances the development of their intellectual property, we believe that the Company will sign more license agreements than they have historically, leading to additional license fees and royalties. Examples of this are the development of their solar inks (which was related to the years of R&D done with Ishihara) and the fact that the Company states that they now develop new CNT enhanced resins in a time frame of about 3-6 months (which is based on the years of R&D they spent developing their CNT enhanced resins with Yonex).

**“Cornerstone” investment from Sichuan Anxian Yinhe Construction and Chemical Group (YHCC).** Earlier this year, APNT received a \$2.5 million investment from YHCC, making YHCC the Company's largest shareholder (6,578,948 common shares held). APNT already has one license agreement in place with YHCC, and, considering YHCC's investment in APNT, we believe that it can be extrapolated that more agreements may happen in the future, possibly involving some of the Company's other technical inks and pastes (such as nanosilver inks). Additional licensing agreements would likely lead to greater future royalties.

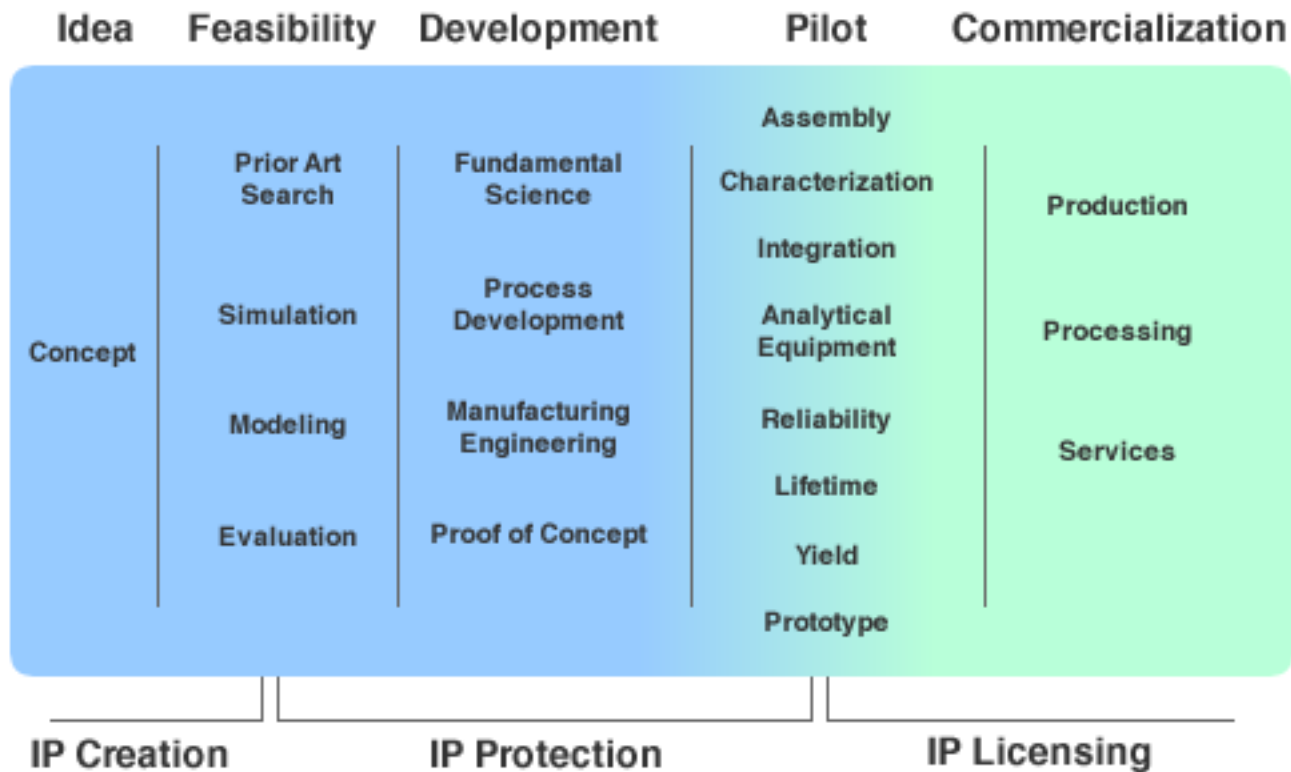


**Extensive intellectual property that has been developed for over 15 years (over 300 patent, patent applications, and provisional patents).** APNT's intellectual property portfolio should provide a strong base for developing solutions for organizations in the future. The Company has a young IP portfolio around some of their newer, core technologies, as focused development in these areas had begun occurring over the last few years. As APNT continues to build up their intellectual property, we believe that they will be able to more rapidly create new technologies, which will likely lead to greater license fees, royalties, and direct sales of products.

**Stable financial situation without the need for near-term financing.** As of September 30, 2011, APNT had \$4.2 million in cash. Given that the Company has been operating at least near breakeven over the past year, and our expectation for the Company's largest profits in history to be achieved in 2012, we feel that APNT can continue to grow their business without incurring additional equity or debt.

## ***COMPANY OVERVIEW***

Applied Nanotech, Inc., was founded in 1987, incorporated in Texas in 1989, and completed their IPO in 1993. Up until 2006, the Company primarily focused on developing electron emission technology; however, following 2006, APNT shifted their research toward the development of composites using nanotechnology, primarily in the area of carbon nanotube enhanced composites, and the development of technical inks using nanoparticles.



Source: Company Website

The Company’s research takes place in several phases:

**Phase 1:** Small project at usually <\$100,000 in funding, with the goal of proving the feasibility of the product or technology and moving it from concept to lab-based proof of concept. The Company may fund projects on their own that they view as low-risk, high-reward technologies. This phase encompasses the idea, feasibility, and development stages shown above.

**Phase 2:** Involves the development of a product using the technology, or moving the technology from the laboratory to early stage development, with funding usually in the range of \$100,000 - \$1,000,000. According to the Company, it is rare from them to enter this stage without outside funding. This phase encompasses the development and pilot stages shown above.

**Phase 3:** This stage involves the licensing/commercialization of products. The stage is typically structured as a joint venture, subsidiary, royalty, or some other form of relationship. This stage encompasses the pilot and commercialization stages shown above.



Obviously the most important stage to investors is the commercialization of the Company's products. Currently, the Company expects 3 separate royalty agreements to be coming to the Company as revenue streams: CNT resins with Yonex Co., Ltd. (Yonex), nanocopper inks with Ishihara Chemical Company, Ltd. (Ishihara), and solar ink and paste technology with Sichuan Anxian Yinhe Construction and Chemical Group (YHCC). Company management told us that the types of companies that will likely enter into license agreements with them are in the \$200 - \$600 million in annual revenue range, as these companies are large enough to be able to effectively manufacture and market products, which will provide APNT with greater royalties, and are small enough that they do not have as much capital to spend on R&D as multi-billion dollar multinationals. In our view, it is very important that APNT signs license agreements with quality companies, as this will play a large part in how much revenue APNT is going to receive from royalties.

As the Company improves and expands upon their intellectual property and technological knowhow, we expect the Company to gain additional licenses at a faster pace. We believe that this can be seen in the Company's technical inks and pastes segment; following years of research and development on nanocopper inks and a subsequent license agreement with Ishihara, the Company was able to use their knowledge to develop similar technology (aluminum inks) that led to a license agreement with YHCC. The Company's license agreement with YHCC came less than two years following their license agreement with Ishihara, which was a much shorter time period than had typically occurred in the past. Therefore, we believe that license agreements will happen at a faster rate for the Company going forward.

The Company has also indicated that they intend to begin making direct sales of some of their products to companies (without entering into a license agreement), which they say will essentially result in higher margins (as opposed to the 2.5 – 4% royalties they are earning currently). They have been making small volumes of sales of their resins to Yonex, and have added to additional salespeople recently to help get this effort off the ground. They plan to focus on making sales of their CNT resins and thermal management materials (CarbAI™). As of now, there have not been any significant sales generated through this avenue, although sales are expected to begin very shortly. Over the past year, APNT says that they have developed a process where they are able to quickly provide a CNT enhanced resin sample to a customer so that they can determine if they can use it in their products. Management also says that the Company can provide enough of the quantities of the CNT enhanced resin that would be needed for many applications. The Company can also develop new resins at a much faster pace than was previously attainable (development can now occur in 3 – 6 months), which we feel is critical to being able to make direct sales of the product, as too long of a development time would probably limit the Company to license/royalty agreements.

APNT also is planning on making direct sales of their thermal management material (CarbAI™). The Company says that they have refined the production process of CarbAI™ and have secured reliable supply sources that



will enable them to provide a reliable amount of material needed for many applications. Work on adopting the technology has already been done with multiple companies and APNT expects to begin making product sales of CarbAI™ to a customer that makes power LED lighting in the near future. Our feeling is that APNT will be focusing on using CarbAI™ only for direct sales and thus we do not expect any license/royalty agreements from this segment. APNT will not be constructing a manufacturing facility to make the base materials, high volume assembly, or processing operations needed for CarbAI™. Therefore, while they can produce some volumes on their own, if sales get large enough, the Company will outsource the additional production to a third-party contract manufacturer.

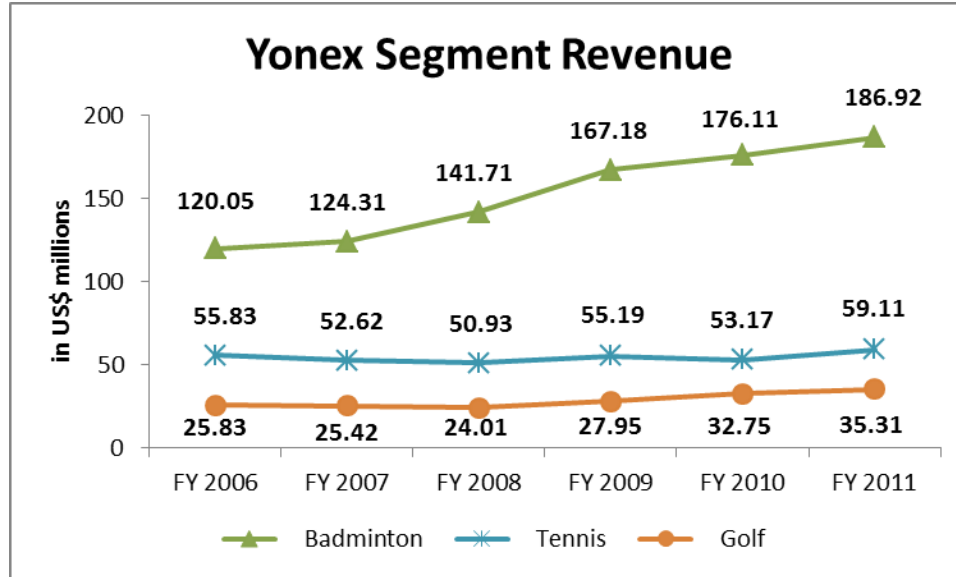
## **Nanocomposites**

### *Epoxies*

CNT epoxies are basically epoxies reinforced with carbon nanotubes (CNTs) to take advantage of CNTs mechanical properties while reducing the weight of materials needed for a particular application. APNT has created patented processes and know-how that has allowed them to disperse CNTs throughout the epoxy to create improvements in strength, toughness, durability, vibration dampening, and other properties, which essentially allows a reduction in the weight of materials used to create the product, while keeping constant or improving the product's other properties.

As an example of this, in September 2005, APNT signed a development contract with Yonex, a large Japanese sporting goods manufacturer, to develop nanocomposites to be used in their sporting equipment. Following three years of research, the Company signed a license agreement in October 2008 which allowed Yonex to use the technology in their tennis and badminton racquets. In 2010, an additional license agreement was signed with Yonex to use the technology in golf shafts. Yonex announced that golf shafts using this technology (the composite material is called Nanopreme™) was introduced in February 2011, followed by badminton racquets in March 2011. APNT expects Yonex to introduce tennis racquets at some point in the future.

During product testing of the golf clubs and badminton racquets, Nanopreme™ delivered improvements of 14% in flexural strength (bending strength), 21% in flexural modulus (stiffness), and 24% in impact strength (addressing external shock). These improvements result in golf clubs and racquets that are lighter, stronger, and more resilient, thus creating an improved product. APNT received an upfront royalty on the new Yonex products and will receive ongoing royalties (2.5% for golf clubs, 4% for badminton and tennis racquets) based on sales of Yonex's products that use the new CNT resins.



Source: Bloomberg  
FY Ending March 31

Given the worldwide economic downturn and the troubles currently plaguing the Japanese economy (this is where most of Yonex’s sales come from), Yonex had forecasted their net sales to decrease 1.6% to 36,100 million yen (\$469.3 million) for their 2012 fiscal year (April 1, 2011 – March 31, 2012). However, following the release of Yonex’s semiannual results, Yonex increased their net sales forecast to 38,200 yen (\$496.6 million), a 4.1% increase. Based on the % of total revenue that badminton, tennis, and golf sporting equipment make up, we estimate that the following royalties can be earned during each of the above segments from the April 1, 2011 – March 31, 2012 timeframe (also note that not all of Yonex’s sporting equipment use APNT’s technology; the percentage breakdown of products that use the technology and those that don’t use the technology are unknown):

Yonex quarterly royalty revenue	
Segment	Quarterly Revenue
Badminton	\$0.136M
Tennis	\$0.043M
Golf	\$0.016M
Total	\$0.195M

These estimates are slightly above the quarterly royalty revenue received from Yonex thus far (\$108,183 in 3Q11 vs. our going forward estimate of \$152,022, which is excluding royalties from tennis racquets), which is a result of our expectation that Yonex will sell an increasing portion of CNT enhanced sporting equipment as



users become more aware of the CNT enhanced product's superiority. We expect royalties will increase further if tennis racquets using APNT's technology are introduced.

### *Fibers*

On December 7, 2009, APNT announced that it had received a purchase order for \$25,000 from the US Army Engineer Research and Development Center's Construction Engineering Research Laboratory (ERDC-CERL) for test samples of its carbon nanotube (CNT) enhanced fiber reinforced polymer composites. The purpose of the samples shipped to the ERDC-CERL was to test the ballistic impact strength of APNT's patented CNT composite materials.

Following this, the ERDC-CERL awarded APNT a contract in the amount of \$168,643 to begin a research effort to develop stronger, stiffer and tighter composite panels with improved ballistic resistance and reduced weight using carbon nanotube reinforcement.

### **Nanoelectronics**

#### *Technical Inks and Pastes*

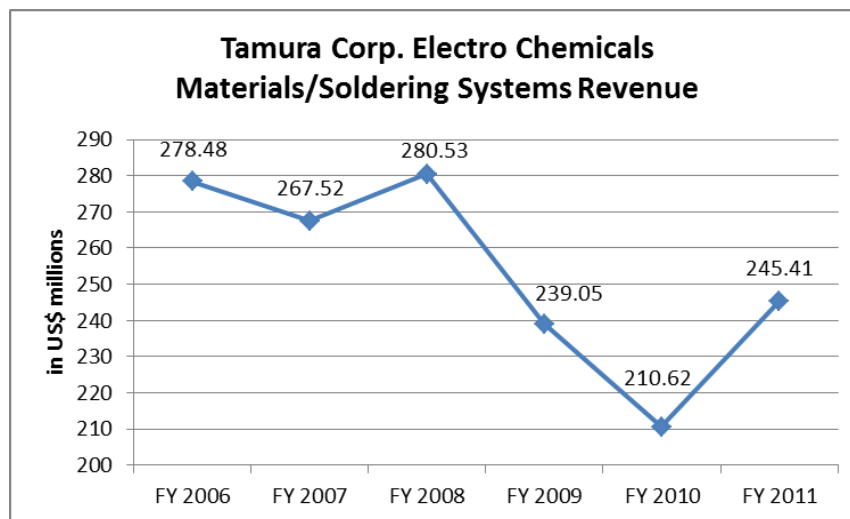
The Company's original work in the technical inks and pastes arena involved copper inks. APNT chose to begin their work with nanocopper inks due to copper's electrical conductivity properties, low cost, and because it is the choice material in the printed circuit board industry. On October 1, 2006, APNT entered into a R&D partnership with Ishihara to develop conductive inks that could be deposited using an additive process such as ink-jet printing, aerosol-jet printing or screen printing. On July 9, 2009, Applied Nanotech announced that it had entered into an exclusive worldwide license agreement with Ishihara to manufacture and commercialize nanocopper inks and pastes. APNT received an upfront payment of \$1.5 million along with a royalty of 4% of the sales of the copper inks and pastes sold by Ishihara. Later in the year, on October 1, 2009, APNT entered into a new R&D agreement with Ishihara (this was for the 4<sup>th</sup> phase of the contract), which focused on finalizing the technology transfer, personnel training, and the development of applications for copper nanoparticle inks and pastes for potential customers.

APNT and Ishihara were jointly awarded an R&D 100 award in 2010 for their copper inks, and following this award, it was announced that Ishihara would begin their marketing efforts on this technology on June 1 to 3, 2011, at the JPCA 2011, which is the 41<sup>st</sup> International Electronic Circuit Exhibition.



Nanoparticle copper inks are expected to begin to overtake copper soldering processes over the next few years, which is due to the fact that nanoparticle copper inks have lower melting points (which is due to the smaller size of their particles). This essentially means that nanoparticle copper inks can have lower costs than the previous method for printing copper inks onto circuits such as semiconductors, which was called copper soldering. Copper soldering requires a higher heating temperature, which can lead to higher costs if additional items such as cooling belts are needed to control the higher temperature.

As nanoparticle inks have improved in development over the past few years, sales of soldering machinery have declined, as shown by the sales from the Electro Chemical Materials/Soldering Systems division of Japanese company Tamura Corp.



Source: Bloomberg  
FY Ending March 31

We would like to note that soldering systems are used for many metals other than copper (gold, silver, tin, lead, aluminum, nickel, etc.) so we will assume that copper soldering revenue would make up about 1/6<sup>th</sup> of Tamura Corp.’s revenue, which would equate to approximately \$40.9 million in revenue from this segment.

When making our royalty estimate for this segment for APNT, we also note Ishihara’s smaller size relative to Tamura Corp. (Tamura - \$857.56M in revenue in FY11 vs. Ishihara - \$166.26M in revenue in FY11). Due to Ishihara’s smaller size, and the fact that we assume that nanocopper inks would only take a small part of the market away from copper soldering initially, we assume that in the 1<sup>st</sup> year of sales of nanocopper inks from Ishihara would total \$5 million. APNT will receive a 4% royalty from these sales, and thus we would assume \$200,000 in royalties to APNT in year 1. Ishihara began marketing nanocopper inks on June 1, 2011, and based on this, we estimate the first sales of nanocopper inks from Ishihara to begin in 2Q12. We estimate steadily



increasing royalties to APNT from 2Q12 to 1Q13 as the product becomes better known to more companies, with total royalties for the time period equaling \$200,000.

Projected Royalties from Ishihara			
2Q12	3Q12	4Q12	1Q13
\$25,000	\$45,000	\$60,000	\$70,000

The Company has also begun to develop conductive inks outside of copper, including nickel, silver, and aluminum. On September 16, 2010, the US Department of Energy awarded a \$1.6 million Phase III SBIR grant to establish a pilot production facility to manufacture and commercialize their conductive ink materials for the application of metallic conductor layers on thin silicon solar cells. The funding provided the capital needed to install the infrastructure needed for small capacity manufacturing of highly specialized ink materials. Essentially, the way nanoparticle solar inks work is that you can spray them onto the solar cell, as opposed to the current method where you have to spread them on. This can allow manufacturers to use much thinner solar cells (due to the inks being sprayed onto the solar cell it will not break) thus greatly lowering the cost of manufacturing the solar cell and improving its economic viability. Nanoparticle inks can also raise the efficiency of solar cells, thus making them more economic in that respect as well. Prior to the introduction of nanoparticle inks, most increases in solar cell efficiency would increase the manufacturing cost of the solar cell, thus dissuading solar cell manufacturers from making the improvements. However, nanoparticle solar inks have been able to improve efficiency at a minimal cost to solar cell manufacturers, thus increasing solar cell power at a lower cost.

The Company's work in this arena has paid off, as on July 19, 2011, APNT signed a license agreement for their solar ink and paste technology with Sichuan Anxian Yinhe Construction and Chemical Group (YHCC). The Company received an upfront payment of \$2.0 million for the license of the technology, with the first \$1.5 million already having been paid and the remaining \$500,000 payable in April 2012 (assuming certain technical specifications are met). APNT will also receive an ongoing royalty payment on 3% of sales of solar inks and pastes by YHCC. YHCC is currently constructing a manufacturing facility to produce solar inks in its technical park in China. APNT's aluminum pastes will be the first product sold by YHCC and they are projected to begin manufacturing and selling the pastes in 2012. YHCC is a Chinese diversified construction, manufacturing and chemical company that produced revenue of approximately \$330 million in 2010.

In our view, the potential for solar cell inks is enormous. In an interview Dr. Brian Korgel, a professor at the University of Texas at Austin, stated that the ultimate target is to lower manufacturing costs of solar cells by a factor of 10, which he believes can be achieved through the use of solar inks. This could help reach the goal of solar power, which is to become just as cost efficient as fossil fuels, thus making solar power a much more viable form of power as opposed to a technology that is currently funded in large part by subsidies. Samsung



SDI Co. Ltd. stated that they believe the global solar cell market will be worth \$70 billion by 2020, more than double the \$30 billion the solar cell market was worth in 2010.

According to an article written by Arno Harris, who is the CEO of Recurrent Energy, a leading developer of solar projects for utilities and large energy customers, solar panel prices have declined 70% over the past 24 months. Many solar panel manufacturers have begun to experience large losses, and if these losses continue, then they will probably reduce their R&D spending, said Paul Mints, director of energy at Navigant Consulting. This provides an opportunity for third parties to provide solutions that would either reduce costs or increase solar panel efficiency at a nominal cost.

As far as we are aware, there have not yet been any commercial sales of solar inks. Therefore, estimates as to its sales potential at this point will be highly speculative. However, we feel that the market opportunity for solar inks could be huge. The following table shows our initial annual estimate for royalties from APNT's solar inks. We assume a \$30 billion solar market (although as this total is from 2010, it has likely increased since then), with sales from YHCC's solar inks capturing 0.3% of this in year 1, representing \$90 million in revenue. 3% royalties to APNT would then deliver \$2.7 million in royalties to the Company.

<b>Solar Cell Market</b>	30,000,000,000
<b>YHCC sales as % of solar cell market</b>	0.30%
<b>YHCC sales</b>	90,000,000
<b>APNT royalties</b>	3%
<b>APNT royalty revenue</b>	2,700,000

YHCC is expected to begin producing and selling APNT's aluminum pastes in 2012, and as such, we assume that APNT will begin receiving royalty streams in 4Q12. Assuming that sales will increase throughout the year, we assume that royalty revenue in 4Q12 will equal 10% of our projection for APNT's year 1 royalty revenue, which would total \$270,000.

### **Thermal Management Composites**

APNT has a patented thermal management material called CarbAl™, which in 2009 earned an R&D 100 award from R&D magazine. CarbAl™ is a carbon based metal nanocomposite that is 80% carbonaceous matrix and a dispersed metal component of 20% aluminum. CarbAl™ also has a combination of low density, high thermal diffusivity, high thermal conductivity, and a low coefficient of thermal expansion. CarbAl™ is designed to provide a passive thermal management solution for temperature control issues that could reduce the costs and extend the lives of electronics applications.



The R&D 100 award received in 2009 for this technology attests to the viability that CarbAI™ may have in the marketplace. Since then, APNT has been working with potential customers and suppliers to both develop applications for the technology and also secure a reliable supply of base material. Additionally, since receiving the R&D 100 award in 2009, the Company has developed new additive materials and new processes that can be merged with the Company's CarbAI™ materials, thus adding further value to APNT's thermal management material offerings. APNT has developed processes that will allow the printing of electronic circuits directly onto CarbAI™ substrates; much of the development behind this process was related to the prior work the Company had completed with regards to technical inks and pastes, which relates back to a prior point we made about the Company being able to use previously generated intellectual portfolio to improve or develop other or new business lines. The Company is currently in the process of trying to make direct sales of CarbAI™ to various companies, along with looking at potential license agreements. APNT has a customer ready to use their thermal management material in power LED lighting and they expect to begin generating product sales of CarbAI™ in the near future.

## **Nanosensors**

### *Differential Mobility (DMS) Sensors*

APNT has developed a Mercaptan gas sensor for the Northeast Gas Association, in which Mercaptan is injected into the natural gas because gas does not have an odor. APNT's sensor is more sensitive than currently developed sensors, as APNT's sensor can measure in parts per trillion versus current sensors which can measure in parts per billion. Applied Nanotech is also looking into securing funding to tailor their sensor for applications in the health industry. APNT's sensor can be used to detect different the levels of various gases, which, depending on the reading, can indicate whether or not a person may be at an increased risk of having a particular illness.

### *Hydrogen Sensors*

The Company's hydrogen sensors were initially envisioned to be used in fuel cells for automobiles and remote monitoring of large power transformers. APNT had previously worked with two large manufacturers of instruments, controls, and monitoring systems used in the power transmission industry, and had an agreement with one of these companies that were subsequently terminated in 2010. APNT initiated the termination following cutbacks that occurred at the company APNT had the agreement with (this was due to the economic downturn in 2009) which caused the power transmission company to suspend the project. Due to this, APNT opted to terminate the agreement. They are currently exploring either selling or licensing their hydrogen sensor



patents to other companies. At the end of November, APNT will have a patent auction to potentially sell their hydrogen sensor patents.

APNT is also currently in the process of developing other sensors, including ion mobility sensors, carbon monoxide sensors, and biosensors. Essentially, all of the Company's sensors are designed to be used for applications such as the remote detection of explosives, environmental monitoring, health care, the food industry, biotech-biopharma applications, genetic biosensors, and immunosensors.

## **Electron Emission**

Up until 2006, APNT focused almost primarily on research related to electron emissions. The majority of this work involved Field Emission Display (FED) technology, which is a next generation display technology that is suited for use in large flat screen television. While the Company is no longer devoting funds to this area, they did recently (November 2010) sell and license (the Company told us that it licensed the patents that they felt were most important, which in particular is their Raman Spectrum patents) their entire electron emission patent portfolio to Samsung for \$3.75 million (APNT outright sold some of their patents to Samsung for \$1.25 million and licensed the rest of the patents for \$2.5 million). While Samsung paid a license fee for the technology, the license is nonexclusive, meaning that the same patents can be leased to other companies in the same arena. The hope is that if Samsung begins to incorporate APNT's technology into their products, that other large television manufacturers will follow suit and do the same, in which case APNT could land additional license fees. APNT has plans to attempt to auction a portion of their electron emission patents at the end of November, excluding their Raman Spectrum patents, which the Company believes to have high potential for future licensing.

## **MANAGEMENT**

### **Douglas P. Baker – CEO, CFO, Corporate Secretary, Director**

Doug Baker originally joined Applied Nanotech Holdings, Inc. as CFO in June 1996 and was appointed as the Company's CEO in May 2009. Prior to joining APNT, Mr. Baker worked for 9 years in public accounting at Plante & Moran, a large regional CPA firm, 4 years as CFO of a small privately held company, and 5 years as a divisional controller at MascoTech, Inc. a large publicly held automotive supplier. Mr. Baker has been a certified public accountant since 1980, and holds a BBA and an MBA from the University of Michigan.



**Zvi Yaniv, Ph.D. – President, Director, CEO of Applied Nanotech, Inc.**

Dr. Zvi Yaniv is the President of Applied Nanotech Holdings, Inc. and the CEO of Applied Nanotech, Inc. Dr. Yaniv has helped to guide the company to become a pioneer in nanotechnology in general, and a leader in utilizing electron field emission from carbon films/carbon nanotubes in the display industry. Additionally, under his watch, APNT was recognized in 2008 with a Nano 50 award for breakthrough technology in ionization and in 2009 with an R&D 100 Award by R&D Magazine for its technology for nano-thermal materials. Dr. Yaniv was a founder of Kent Display Systems, the “no-power” reflective LCD Company and of Optical Imaging Systems, Inc. (OIS). While at OIS, he led the company during its years of development and in the initial commercialization of advanced active matrix liquid crystal displays and amorphous silicon image sensors. While he was at OIS, he was also one of the founders of Unipac (now AU Optronics), which is one of the premier display companies in Taiwan. Dr. Yaniv is a member of the Board of Directors of the Texas Nanotechnology Initiative, the Nanomaterials Applications Center of Texas State University and the Society for Information Display (SID). Dr. Yaniv is also a Senior Research Fellow of the IC2 Institute of the University of Texas. In May 1989, Dr. Yaniv was elected Fellow of the Society for Information Display for “his innovation and leadership in the development of large area high performance active matrix LCDs and scanners.” In 2005, he received the Nano 50 Innovator Award from Nanotech Briefs for achievements in advancing the state of the art in nanotechnology. Dr. Yaniv earned his B.Sc. in physics/mathematics and a M.Sc. in electro-optics with distinction from the Hebrew University of Jerusalem, and earned a M.Sc. and a Ph.D. in physics at Kent State University. He has also received awards from both universities and the Scientific Research Society. He has also published over 250 articles and holds more than 150 patents.

**Richard Fink, Ph.D. – Executive Vice President for Applied Nanotech, Inc.**

Dr. Richard Fink is the Executive Vice President for Applied Nanotech, Inc., where he directs all engineering activities and leads projects related to sensor applications. He began his work on carbon-based field emission and ion source applications in 1993. Dr. Fink has served as chairman of the Texas Chapter of the Society for Information Display for the last 4 years, along with coordinating a biweekly Nanotechnology Colloquium and serving as volunteer director for two handbell choir groups. He also co-founded the Nanomaterials Applications Center (NAC), now at Texas State University San Marcos. He is the inventor or co-inventor of over 25 issued US patents, with many more pending.



## FINANCIAL RESULTS

Nine Month Summary		
	9M11 Actual Results	YOY Change
Revenue	5.8	52.9%
Operating Income	-0.8	N/A
Operating Margin	N/A	N/A
Net Income	-1.1	N/A
Net Margin	N/A	N/A
EPS	(0.01)	N/A

*in US\$ millions, except percentage, and EPS data*

- Total revenues increased from \$3.8 million in 9M10 to \$5.8 million in 9M11. The main reasons for the increase were a grant received from the U.S. Department of Energy, a \$1.5 million license fee received from YHCC, and royalty payments received from golf clubs and badminton racquets sold by Yonex.
- 2011 marked the first year in which APNT earned revenue from royalty payments. The large majority of the license fee and royalty revenue (excluding the \$1.5 million license fee from YHCC) was from royalty payments (worth about \$370,000) from product shipments by Yonex Corporation (golf clubs and badminton racquets).
- Revenues from government contracts increased from \$1.9 million in 9M10 to \$2.6 million in 9M11. The primary reason for the increase was a U.S. Department of Energy grant that was received relating to the development of conductive inks for solar cell production. This contract resulted in \$1.2 million in revenue over the first six months of 2011 and was mostly completed as of June 30, 2011.
- R&D expenses increased to \$4.4 million in 9M11 from \$3.3 million in 9M10. This is primarily related to increases in research revenue (research revenue of \$3.7 million in 9M11 versus \$2.7 million in 9M10). We consider research revenue to be a combination of government contracts and contract research.
- S,G&A expenses increased from \$1.5 million in 9M10 to \$2.2 million in 9M11. This is primarily due to a cost reduction plan that the Company had in place during 2010 to keep costs under control until needed funding was obtained; expenses for the Company in 2011 now are more in line with a cost level that is needed to grow the Company, whereas the Company reduced expenses in 2009 and 2010.



FY10 Summary		
	FY10 Actual Results	YOY % Change
Revenue	8.0	98.5%
Operating Income	1.4	N/A
Operating Margin	18.0%	N/A
Net Income	0.4	N/A
Net Margin	5.1%	N/A
EPS	0.00	N/A

*in US\$ millions, except percentage and EPS data*

- Revenues in FY10 essentially doubled compared to FY09. The increases were from two main areas: License fees increased from \$500,000 in FY09 to \$3.8 million in FY10. \$2.5 million of the license fees came from Samsung Electronics Co, Ltd., \$1.0 million from Ishihara Chemical Company, Ltd., and \$250,000 from Yonex Co., Ltd. License fee and royalty revenue is the key for the Company's profitability, as revenue from government contracts and other contract research tends to be exceeded by R&D expenses. This is borne out by the increase in license fee and royalty revenue leading to the Company's first profitable year, with net income coming in at \$411,304 in FY10, versus net losses of (\$2.2 million) in FY09 and (\$2.7 million) in FY08. The other driver of revenue for the year was an increase in government revenues from \$1.7 million in 2009 to \$2.9 million in 2010.
- R&D expenses increased 32% from 2009 to 2010, while revenues from research (this includes revenues from government contracts and contract research) only increased by 17%. Costs for research increased more quickly than revenues because APNT did preliminary work in a number of areas for unfunded projects.
- APNT recorded a gain related to the sale of intellectual property of \$1,019,531. The vast majority of this gain was due to sale proceeds of \$1.25 million related to the sale of 29 patents to Samsung, minus a prorata share of the expenses related to a patent broker that was part of the sale.
- Applied Nanotech paid \$618,750 worth of Korean taxes that were withheld for the Samsung sale/license transaction in 2010. These taxes may offset U.S. income taxes in the future. Excluding these taxes from net income, APNT would have earned net income of \$1.0 million in 2010 (we highlight this figure as the income taxes paid in 2010 may offset taxes in the future, and APNT has significant net operating loss carry forwards that we believe will keep income taxes very low for the foreseeable future).



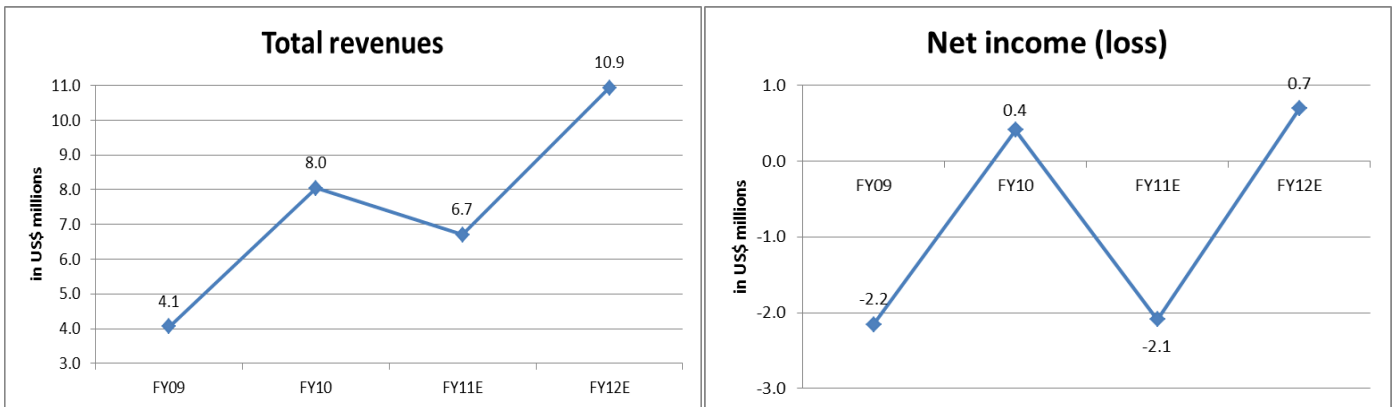
Balance Sheet and Liquidity Summary		
	3Q11	3Q10
Cash	4.2	1.3
Accounts Receivable Turnover	15.0	15.2
Working Capital	3.0	0.3
Quick Ratio	2.2	1.1
Short-term Debt	1.5	0.0
Long-term Debt	0.1	1.7
Capital Lease Obligations	0.0	0.0
Cash From Operations (ttm)	0.7	-1.4
Cash From Financing (ttm)	2.2	2.1
Capex (ttm)	0.1	0.0
Free Cash Flow (ttm)	0.7	-1.4

*in US\$ millions*

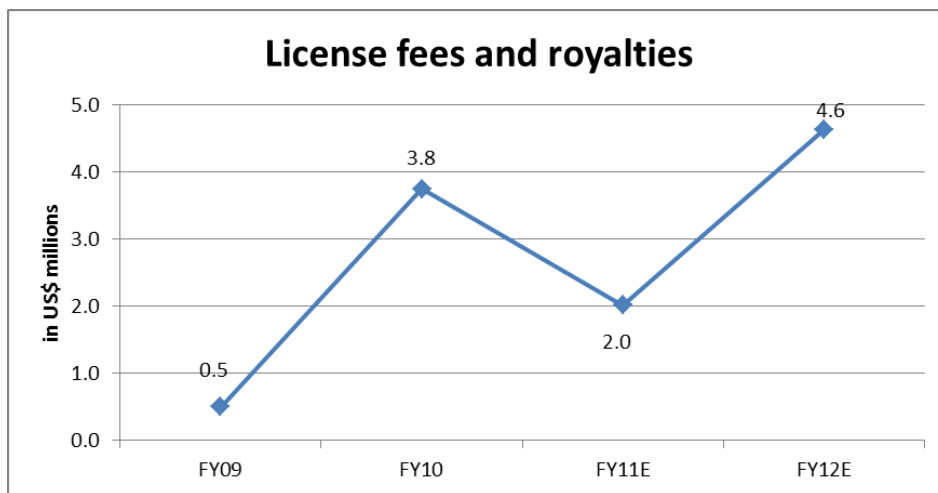
- Convertible notes, with a face value of \$1,620,000, were outstanding as of September 30, 2011. These notes can be converted between strike prices of \$0.20 - \$0.25. At the current share price of \$0.31, the exercise price is in the money. This represents the majority of the Company's debt (\$1.4 million). The rest of the Company's debt are obligations under capital leases (\$0.1 million).
- The cash that the Company has received from financing over the past year has been primarily from an approximately \$2.5 million investment from YHCC. Following this agreement, APNT signed a license agreement for its solar ink and paste technology with YHCC (on July 19, 2011) for an upfront payment of \$2 million and ongoing royalties of 3%. Given the investment made in APNT by YHCC, we expect additional licensing and royalty agreements to come out of their partnership and for APNT to be able to more effectively focus their R&D toward applications for which they will receive license and royalty fees (we believe YHCC will feed APNT research projects with the intent to eventually commercialize the technology). This investment has also played a large part in improving the Company's working capital.



OUTLOOK



We forecast that APNT will run a net loss of approximately \$2.1 million in 2011, but will return to profitability in FY12 with a net profit of \$0.7 million (potential net profit upside exists if the Company completes any patent sales). This is primarily due to increases in license fees and royalties revenue:



License fees and royalties drop to the bottom line essentially as pure profit, making increases in this segment vital for the Company's profitability. A couple of other notes regarding our outlook:

- As stated above, we assume royalties from tennis racquets (Yonex) to begin in 2Q12, nanocopper inks (Ishihara) to begin in 2Q12, and aluminum pastes (YHCC) to begin in 4Q12.
- We assume that the Company will earn \$3 million from license fees in 2012, as opposed to \$2 million in 2011. We believe that the Company will be able to earn greater license fees as a result of being able to



develop new IP more quickly (as in the case where APNT can develop resins from 3-6 months while the original resin took years to develop) and as a result of more of their R&D projects being in later stages of development, which will lend itself to having a greater chance of commercialization. We assume \$0.75 million in license fees every quarter, however, it is difficult to predict when the Company may receive these license fees (i.e. APNT might receive a license fee for \$2 million in 1Q12, and then receive no license fees in 2Q12). Therefore, we urge investors to look at our full year projection more so than our quarterly projections.

- We assume the Company will begin earning revenue of \$2 million from direct sales in 4Q12, with a corresponding gross margin of 20%. The Company has not yet released any specific gross margin projections relating to direct product sales; we believe 20% to be a fair and conservative estimate, keeping in mind that, at the least, net margins on product sales should at least be above 5% (in line with company guidance on expecting higher net margins on direct product sales versus royalties).
- We assume government revenue will return to the levels seen in the first 3 quarters of 2010, which is due to the completion of the Company's contract with the U.S. Department of Energy that they received related to the development of conductive inks for solar cell production.
- For 2012, we assume that R&D expenses as a percentage of government revenue and contract revenue will be 119%, which is in line with historical percentages.
- We expect S,G&A expenses will be at 41% of revenue for the first 3 quarters of 2012, which is in line with the 1<sup>st</sup> three quarters of 2011. While not increasing on a percentage of revenue basis, S,G&A expenses will increase on an absolute basis, which we attribute to staff increases arising from the hiring of salespeople for the Company's direct sales effort and additional staff hired due to higher revenues. We project that S,G&A expenses will decline to 25% of revenue in 4Q12, which is primarily due to higher revenues as a result of the beginning of direct sales.
- We don't forecast the Company to pay any income taxes despite the return to profitability; this is due to their significant net operating loss carry forwards (approximately \$83 million from 2011 to 2029, with the majority expiring after 2011).



Looking forward, we make the following projections for 2015:

2015 Projections:		
Revenue		CAGR (2013-2015)
License Revenue	\$6,591,000	30%
Yonex Royalty	\$853,593	5%
Ishihara Royalty	\$658,560	40%
YHCC Royalty	\$5,676,750	45%
Additional Royalty	\$12,000,000	
Direct Sales	\$45,000,000	88%
Govt. & Contract Rev	\$4,442,448	5%
Cost of Goods Sold	\$36,000,000	
Gross Profit	\$39,222,351	
<b>Operating Expenses</b>		
R&D Expenses	\$5,108,815	115%
		<b>% of Total Rev</b>
S,G&A Expenses	\$11,283,353	15%
<b>Income Before Taxes</b>		
Income Before Taxes	\$22,830,183	
Income Tax Rate	5%	
Net Income	\$21,688,674	
Diluted Shares Outstanding	127,015,698	
Diluted EPS	\$0.17	

- We expect revenue from license fees to grow at a 30% CAGR due to the fact that we believe that the continued building of the Company’s intellectual portfolio will lead to greater license fees per year.
- We believe that royalties from the Company’s solar inks will grow at a 45% CAGR due to what we feel is the large potential present in that area.
- We feel that Yonex royalties will grow at a much slower 5% CAGR, which is due to weakness in the Japanese economy.
- Additional royalties assume that the Company will receive two new royalty streams from licenses per year, each totaling \$2 million (this would equate to APNT earning a 4% royalty on products that have sales of \$50M per year).
- We project direct sales to grow to \$45 million by 2015 (versus management estimates of about \$55 million, while maintaining our 4Q12 gross margin projection of 20%)
- We forecast R&D expenses as a % of government and contract revenue to remain constant to fall slightly from our 2012 estimate of 119% to 115%. This is in line with historical figures.
- We believe S,G&A expenses as a % of revenue will fall significantly after 2012, as we believe that APNT will only need to add a small amount of additional staff to go along with the additional revenue;

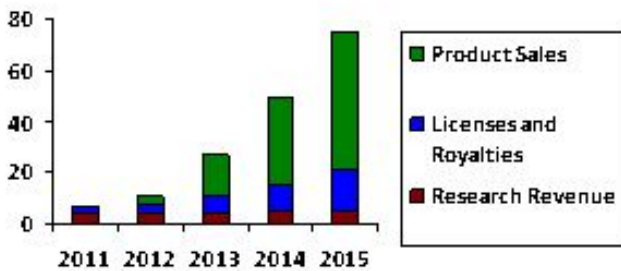


royalties are sustaining and are dependent upon sales of products from third parties, and we believe that much of the additional growth in license fees will come from building upon the Company’s already impressive intellectual portfolio.

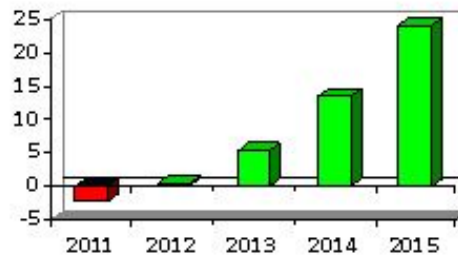
- We assume a low 5% tax rate; this is due to the Company’s large amount of net operating loss carryforwards.
- Diluted shares outstanding is mostly in line with our 2012 estimate, although we have added a small amount of shares to account for the conversion of the rest of the Company’s convertible note. Seeing as we believe the Company has currently reached a self-sustaining state where it does not need to access capital markets to fund operations, we do not forecast additional dilution.

Our 2015 projections come in slightly below management’s recent projections from their November 4, 2011, shareholder letter. Management projections are shown in the graphs below:

Projected/Targeted Revenue



Projected/Targeted Income (Loss)



Source: APNT 11/4/11 Shareholder Letter; Graphs Above in US\$million

INVESTMENT CONCLUSION

According to a recent presentation done by BASF, the global nanotechnology market is expected to grow to \$1.05 trillion by 2015, representing an annual growth rate of about 10-15% annually. Considering this growth rate, we assume a P/E of 12.5x for APNT and applying this to our 2015 diluted EPS estimate of \$0.17, derive a target price of \$2.14. Due to the long-term nature of our earnings estimate and the speculative nature of forecasting license fees, royalties, and direct sales, we apply a discount rate of 30% per annum to our price target, which gives us a price target of \$0.91. We believe that APNT has begun to make a transition from being essentially an R&D company into a company that will be able to deliver sustainable profits to shareholders. Additionally, we have confidence in the Company’s financial position given the fact that they currently have over \$4 million in cash on the balance sheet, are on the cusp of reporting sustainable quarterly profits and have a cornerstone investor in YHCC. Given these factors, we initiate coverage on APNT with a Buy rating.



## *INVESTMENT ISSUES*

**Reliant on sales of other companies products to drive profitability.** APNT is reliant on royalties from sales of other companies products (such as Yonex's badminton racquets, YHCC's solar inks etc.) that use APNT's intellectual property. If these companies do not perform well and sales of their products suffer, than APNT's royalty streams will be reduced, which will likely reduce the Company's profitability.

**Large proportion of research & development comes from government contracts.** APNT has built up a large portion of their intellectual property from research & development contracts with government agencies. If government agencies were to reduce their budgets on some of these R&D programs, APNT may have a reduced amount of research projects to choose from, which could lower the value of their intellectual property over the long-term.

**Research & development done on a particular technology may not be accepted by the market.** Given the nature of researching unproven, new technologies, certain technologies may not ultimately reach the point of product commercialization (an example of this would be APNT's earlier work on electron emission technology). However, many times, the R&D that was done in a certain area can be applied to new technologies (much of APNT's earlier work on electron emission technology has been used to help develop the Company's current nanotechnology offerings).

**Our projections are speculative.** Many of our future projections are based upon revenue streams which have not yet begun to materialize (direct product sales, Ishihara and YHCC royalties, and additional future licenses/royalties), which means that there is a greater probability that our estimates will differ materially (either positively or negatively) from future results.

**The Company may be unable to enforce a patent in a particular area.** In particular, this risk pertains to the Company's venture into China with YHCC. While China has made progress with regards to the enforcement of patent protection laws, the possibility still exists that other companies may infringe upon the Company's patented intellectual property.

**Possible need for external financing.** If royalty payments and license fees do not materialize as quickly as expected, the Company may have to access the equity or debt markets for additional financing. However, given the fact that the Company had cash of \$4.2 million on its balance sheet as of September 30, 2011, and the fact that the Company has been operating at least near breakeven for the past year, we do not view this as a large risk.



Income Statement					
All Figures in US\$, except share data					
FY Ending December 31,	3Q10	4Q10	1Q11	2Q11	3Q11
<b>Revenues</b>					
Government contracts	685,662	994,901	1,251,092	1,081,544	284,025
Contract research	197,133	351,272	548,790	294,809	242,782
License fees and royalties	-	2,750,000	-	261,700	1,608,103
Other	66,438	122,814	137,099	24,481	114,109
<b>Total revenues</b>	<b>949,233</b>	<b>4,218,987</b>	<b>1,936,981</b>	<b>1,662,534</b>	<b>2,249,019</b>
<b>Research and development</b>					
Research and development	1,244,015	1,549,555	1,601,734	1,391,906	1,434,599
<b>Selling, general and administrative expenses</b>					
Selling, general and administrative expenses	644,759	1,309,541	817,555	638,141	792,070
<b>Operating costs and expenses</b>	<b>1,888,774</b>	<b>2,859,096</b>	<b>2,419,289</b>	<b>2,030,047</b>	<b>2,226,669</b>
<b>Gain on sale of intellectual property and other assets</b>					
Gain on sale of intellectual property and other assets	-	1,019,532	-	-	-
<b>Income (loss) from operations</b>	<b>(939,541)</b>	<b>2,379,423</b>	<b>(482,308)</b>	<b>(367,513)</b>	<b>22,350</b>
<b>Other income (expense), net</b>					
Interest expense	(119,812)	(144,842)	(132,431)	(78,140)	(86,238)
Interest income	649	624	942	12,534	1,822
Other	4,707	-	-	-	-
<b>Total other income (expense)</b>	<b>(114,456)</b>	<b>(144,218)</b>	<b>(131,489)</b>	<b>(65,606)</b>	<b>(84,416)</b>
<b>Income (loss) from continuing operations before taxes</b>	<b>(1,053,997)</b>	<b>2,235,205</b>	<b>(613,797)</b>	<b>(433,119)</b>	<b>(62,066)</b>
<b>Provision for taxes</b>	<b>-</b>	<b>618,750</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>Net income (loss)</b>	<b>(1,053,997)</b>	<b>1,616,455</b>	<b>(613,797)</b>	<b>(433,119)</b>	<b>(62,066)</b>
<b>Earnings (loss) per share</b>					
Basic and Diluted	(0.01)	0.01	(0.01)	-	(0.00)
<b>Weighted average shares outstanding</b>					
Basic	108,841,403	108,517,922	110,759,903	118,756,832	118,853,585
Diluted	108,841,403	109,452,930	110,759,903	118,756,832	118,853,585
<b>R&amp;D expenses as % of government and contract rev</b>					
R&D expenses as % of government and contract rev	140.9%	115.1%	89.0%	101.1%	272.3%
<b>S,G,&amp;A % of rev</b>					
S,G,&A % of rev	67.9%	31.0%	42.2%	38.4%	35.2%



Balance Sheet					
All Figures in US\$					
FY Ending December 31,	3Q10	4Q10	1Q11	2Q11	3Q11
<b>Assets</b>					
<b>Current assets</b>					
Cash and cash equivalents	1,291,744	2,732,570	4,566,011	4,197,359	4,190,585
Accounts receivable, net	409,607	757,507	1,102,178	1,205,449	932,199
Prepaid expenses and other current assets	100,858	116,784	178,492	159,637	191,231
<b>Total current assets</b>	<b>1,802,209</b>	<b>3,606,861</b>	<b>5,846,681</b>	<b>5,562,445</b>	<b>5,314,015</b>
Property and equipment, net	229,025	215,289	208,914	219,092	321,185
Other assets	17,119	22,233	22,233	22,233	25,894
<b>Total assets</b>	<b>2,048,353</b>	<b>3,844,383</b>	<b>6,077,828</b>	<b>5,803,770</b>	<b>5,661,094</b>
<b>Liabilities and stockholders equity</b>					
<b>Current liabilities</b>					
Accounts payable	432,262	545,973	548,050	518,054	487,318
Notes payable	290,000	-	-	-	-
Convertible notes payable	-	-	-	-	1,434,660
Obligations under capital lease	21,138	17,317	13,365	9,293	39,680
Accrued liabilities	499,094	566,623	304,321	307,281	339,312
Deferred revenue	285,455	320,000	526,910	506,200	5,750
<b>Total current liabilities</b>	<b>1,527,949</b>	<b>1,449,913</b>	<b>1,392,646</b>	<b>1,340,828</b>	<b>2,306,720</b>
Obligations under capital lease, long-term	15,735	13,819	11,836	9,782	59,223
Convertible notes payable, long-term	1,641,986	1,570,571	1,346,782	1,382,810	-
<b>Total Liabilities</b>	<b>3,185,670</b>	<b>3,034,303</b>	<b>2,751,264</b>	<b>2,733,420</b>	<b>2,365,943</b>
<b>Stockholders' equity</b>					
Preferred stock	-	-	-	-	-
Common stock	108,975	109,968	118,641	118,773	118,916
Additional paid-in capital	110,656,168	110,986,117	114,107,725	114,284,498	114,571,222
Accumulated deficit	(111,902,460)	(110,286,005)	(110,899,802)	(111,332,921)	(111,394,987)
<b>Total stockholders' equity</b>	<b>(1,137,317)</b>	<b>810,080</b>	<b>3,326,564</b>	<b>3,070,350</b>	<b>3,295,151</b>
<b>Total liabilities and stockholders' equity</b>	<b>2,048,353</b>	<b>3,844,383</b>	<b>6,077,828</b>	<b>5,803,770</b>	<b>5,661,094</b>



Cash Flow Statement					
All Figures in US\$					
FY Ending December 31,	9M10	FY10	1Q11	6M11	9M11
Cash flows from operating activities					
Net income (loss)	(1,205,151)	411,304	(613,797)	(1,046,916)	(1,108,982)
Adjustments to reconcile net loss to net cash used in operating activities:					
Depreciation and amortization expense	48,393	63,356	14,883	30,601	50,084
Amortization of discount on debt	167,402	270,987	93,211	138,239	190,089
Stock based compensation expense	205,892	353,292	196,360	338,041	564,908
Changes in assets and liabilities:					
Accounts receivable, trade	(160,443)	(508,343)	(344,671)	(447,942)	(174,692)
Prepaid expenses and other assets	(27,753)	(48,793)	(61,708)	(42,853)	(78,108)
Accounts payable and accrued liabilities	143,210	332,992	(169,618)	(195,867)	(134,572)
Deferred revenue	(24,545)	10,000	206,910	186,200	(314,250)
Total adjustments	352,156	473,491	(64,633)	6,419	103,459
Net cash provided by (used in) operating activities	(852,995)	884,795	(678,430)	(1,040,497)	(1,005,523)
Cash flows from investing activities					
Purchases of property and equipment	(10,410)	(11,637)	(8,508)	(34,404)	(70,611)
Net cash used in investing activities	(10,410)	(11,637)	(8,508)	(34,404)	(70,611)
Cash flows from financing activities					
Repayment of capital leases	(16,190)	(21,927)	(5,935)	(12,061)	(17,602)
Payments on notes payable	(50,000)	(340,000)	-	-	-
Proceeds from long-term debt	1,730,000	1,730,000	-	-	-
Proceeds from stock issuance, net of costs	204,368	204,368	2,526,314	2,551,751	2,551,751
Net cash provided by financing activities	1,868,178	1,572,441	2,520,379	2,539,690	2,534,149
Net increase in cash and cash equivalents					
Cash and cash equivalents, beginning of period	286,971	286,971	2,732,570	2,732,570	2,732,570
Cash and cash equivalents, end of period	1,291,744	2,732,570	4,566,011	4,197,359	4,190,585



Income Statement			
All Figures in US\$, except share data			
FY Ending December 31,	FY08	FY09	FY10
<b>Revenues</b>			
Government contracts	2,295,887	1,694,082	2,920,030
Contract research	824,358	1,767,144	1,137,370
License fees and royalties	577,000	500,000	3,750,000
Other	260,587	91,250	236,395
<b>Total revenues</b>	<b>3,957,832</b>	<b>4,052,746</b>	<b>8,043,795</b>
<b>Research and development</b>			
Selling, general and administrative expenses	3,897,939	2,540,816	2,781,483
<b>Operating costs and expenses</b>	<b>8,512,583</b>	<b>6,203,139</b>	<b>7,621,039</b>
<b>Gain on sale of intellectual property and other assets</b>			
Income (loss) from operations	(3,225,180)	(2,144,393)	1,445,020
<b>Other income (expense), net</b>			
Interest expense	(7,180)	(10,089)	(421,704)
Interest income	46,493	1,877	2,031
Other	500,000	-	4,707
<b>Total other income (expense)</b>	<b>539,313</b>	<b>(8,212)</b>	<b>(414,966)</b>
<b>Income (loss) from continuing operations before taxes</b>	<b>(2,685,867)</b>	<b>(2,152,605)</b>	<b>1,030,054</b>
Provision for taxes	-	-	618,750
<b>Net income (loss)</b>	<b>(2,685,867)</b>	<b>(2,152,605)</b>	<b>411,304</b>
<b>Earnings (loss) per share</b>			
Basic and Diluted	(0.03)	(0.02)	-
<b>Weighted average shares outstanding</b>			
Basic	107,292,686	107,427,877	108,835,772
Diluted	107,292,686	107,427,877	109,069,524
R&D expenses as % of government and contract rev	147.9%	105.8%	119.3%
S,G,&A % of rev	98.5%	62.7%	34.6%



Balance Sheet			
All Figures in US\$			
FY Ending December 31,	4Q08	4Q09	4Q10
<b>Assets</b>			
Current assets			
Cash and cash equivalents	710,111	286,971	2,732,570
Accounts receivable, net	661,704	249,164	757,507
Prepaid expenses and other current assets	121,920	67,340	116,784
<b>Total current assets</b>	<b>1,493,735</b>	<b>603,475</b>	<b>3,606,861</b>
Property and equipment, net	278,853	267,008	215,289
Other assets	19,901	22,884	22,233
<b>Total assets</b>	<b>1,792,489</b>	<b>893,367</b>	<b>3,844,383</b>
<b>Liabilities and stockholders equity</b>			
Current liabilities			
Accounts payable	438,878	952,679	545,973
Obligations under capital lease	35,012	21,939	17,317
Accrued liabilities	207,809	482,629	566,623
Deferred revenue	224,595	310,000	320,000
<b>Total current liabilities</b>	<b>906,294</b>	<b>1,767,247</b>	<b>1,449,913</b>
Obligations under capital lease, long-term	27,909	31,124	13,819
Convertible notes payable, long-term	-	165,834	1,570,571
<b>Total Liabilities</b>	<b>934,203</b>	<b>1,964,205</b>	<b>3,034,303</b>
Stockholders' equity			
Preferred stock	-	-	-
Common stock	107,395	107,473	109,968
Additional paid-in capital	109,295,595	109,518,998	110,986,117
Accumulated deficit	(108,544,704)	(110,697,309)	(110,286,005)
<b>Total stockholders' equity</b>	<b>858,286</b>	<b>(1,070,838)</b>	<b>810,080</b>
<b>Total liabilities and stockholders' equity</b>	<b>1,792,489</b>	<b>893,367</b>	<b>3,844,383</b>



Cash Flow Statement			
All Figures in US\$			
FY Ending December 31,	FY08	FY09	FY10
Cash flows from operating activities			
Net income (loss)	(2,685,867)	(2,152,605)	411,304
Adjustments to reconcile net loss to net cash used in operating activities:			
Depreciation and amortization expense	70,536	64,353	63,356
Amortization of discount on debt	-	834	270,987
Stock based compensation expense	654,001	188,481	353,292
Changes in assets and liabilities:			
Accounts receivable, trade	(407,741)	412,540	(508,343)
Prepaid expenses and other assets	50,522	51,597	(48,793)
Accounts payable and accrued liabilities	96,578	788,621	332,992
Deferred revenue	(81,832)	85,405	10,000
Total adjustments	382,064	1,591,831	473,491
Net cash provided by (used in) operating activities	(2,303,803)	(560,774)	884,795
Cash flows from investing activities			
Purchases of property and equipment	(35,943)	(20,901)	(11,637)
Net cash used in investing activities	(35,943)	(20,901)	(11,637)
Cash flows from financing activities			
Repayment of capital leases	(31,489)	(41,465)	(21,927)
Payments on notes payable	-	-	(340,000)
Proceeds from long-term debt	-	200,000	1,730,000
Proceeds from stock issuance, net of costs	61,250	-	204,368
Net cash provided by financing activities	29,761	158,535	1,572,441
Net increase (decrease) in cash and cash equivalents	(2,309,985)	(423,140)	2,445,599
Cash and cash equivalents, beginning of period	3,020,096	710,111	286,971
Cash and cash equivalents, end of period	710,111	286,971	2,732,570



Income Statement					
All Figures in US\$, except share data					
FY Ending December 31,	1Q11	2Q11	3Q11	4Q11E	FY11E
<b>Revenues</b>					
Government contracts	1,251,092	1,081,544	284,025	284,025	2,900,686
Contract research	548,790	294,809	242,782	317,679	1,404,060
License fees and royalties	-	261,700	1,608,103	152,022	2,021,825
Other	137,099	24,481	114,109	114,109	389,798
<b>Total revenues</b>	<b>1,936,981</b>	<b>1,662,534</b>	<b>2,249,019</b>	<b>867,835</b>	<b>6,716,369</b>
<b>Research and development</b>					
Research and development	1,601,734	1,391,906	1,434,599	1,083,067	5,511,306
<b>Selling, general and administrative expenses</b>					
Selling, general and administrative expenses	817,555	638,141	792,070	694,268	2,942,034
<b>Operating costs and expenses</b>	<b>2,419,289</b>	<b>2,030,047</b>	<b>2,226,669</b>	<b>1,777,335</b>	<b>8,453,340</b>
<b>Gain on sale of intellectual property and other assets</b>					
Gain on sale of intellectual property and other assets	-	-	-	-	-
<b>Income (loss) from operations</b>	<b>(482,308)</b>	<b>(367,513)</b>	<b>22,350</b>	<b>(909,500)</b>	<b>(1,736,971)</b>
<b>Other income (expense), net</b>					
Interest expense	(132,431)	(78,140)	(86,238)	(73,117)	(369,926)
Interest income	942	12,534	1,822	1,819	17,117
Other	-	-	-	-	-
<b>Total other income (expense)</b>	<b>(131,489)</b>	<b>(65,606)</b>	<b>(84,416)</b>	<b>(71,298)</b>	<b>(352,809)</b>
<b>Income (loss) from continuing operations before taxes</b>	<b>(613,797)</b>	<b>(433,119)</b>	<b>(62,066)</b>	<b>(980,798)</b>	<b>(2,089,780)</b>
<b>Provision for taxes</b>					
Provision for taxes	-	-	-	-	-
<b>Net income (loss)</b>	<b>(613,797)</b>	<b>(433,119)</b>	<b>(62,066)</b>	<b>(980,798)</b>	<b>(2,089,780)</b>
<b>Earnings (loss) per share</b>					
Basic and Diluted	(0.01)	-	(0.00)	(0.01)	(0.02)
<b>Weighted average shares outstanding</b>					
Basic	110,759,903	118,756,832	118,853,585	118,915,698	116,821,505
Diluted	110,759,903	118,756,832	118,853,585	118,915,698	116,821,505
<b>R&amp;D expenses as % of government and contract rev</b>					
R&D expenses as % of government and contract rev	89.0%	101.1%	272.3%	180.0%	128.0%
<b>S,G,&amp;A % of rev</b>					
S,G,&A % of rev	42.2%	38.4%	35.2%	80.0%	43.8%



Income Statement					
All Figures in US\$, except share data					
FY Ending December 31,	1Q12E	2Q12E	3Q12E	4Q12E	FY12E
<b>Revenues</b>					
Government contracts	641,710	641,710	641,710	641,710	2,566,839
Contract research	317,679	317,679	317,679	317,679	1,270,715
License fees and royalties	902,022	1,470,020	990,020	1,275,020	4,637,081
Direct Sales	-	-	-	2,000,000	2,000,000
Other	114,109	114,109	114,109	114,109	456,436
<b>Total revenues</b>	<b>1,975,519</b>	<b>2,543,517</b>	<b>2,063,517</b>	<b>4,348,517</b>	<b>10,931,071</b>
Cost of Goods Sold	-	-	-	1,600,000	1,600,000
<b>Gross Profit</b>	<b>1,975,519</b>	<b>2,543,517</b>	<b>2,063,517</b>	<b>2,748,517</b>	<b>9,331,071</b>
Research and development	1,141,672	1,141,672	1,141,672	1,141,672	4,566,689
Selling, general and administrative expenses	809,963	1,042,842	846,042	1,087,129	3,785,976
<b>Operating costs and expenses</b>	<b>1,951,635</b>	<b>2,184,514</b>	<b>1,987,714</b>	<b>2,228,801</b>	<b>8,352,665</b>
Gain on sale of intellectual property and other assets	-	-	-	-	-
<b>Income (loss) from operations</b>	<b>23,884</b>	<b>359,003</b>	<b>75,803</b>	<b>519,716</b>	<b>978,406</b>
Other income (expense), net					
Interest expense	(73,117)	(73,117)	(73,117)	(73,117)	(292,470)
Interest income	1,819	1,819	1,819	1,819	7,276
Other	-	-	-	-	-
<b>Total other income (expense)</b>	<b>(71,298)</b>	<b>(71,298)</b>	<b>(71,298)</b>	<b>(71,298)</b>	<b>(285,193)</b>
<b>Income (loss) from continuing operations before taxes</b>	<b>(47,414)</b>	<b>287,705</b>	<b>4,505</b>	<b>448,417</b>	<b>693,212</b>
Provision for taxes	-	-	-	-	-
<b>Net income (loss)</b>	<b>(47,414)</b>	<b>287,705</b>	<b>4,505</b>	<b>448,417</b>	<b>693,212</b>
<b>Earnings (loss) per share</b>					
Basic and Diluted	(0.00)	0.00	0.00	0.00	0.01
<b>Weighted average shares outstanding</b>					
Basic	118,915,698	118,915,698	118,915,698	118,915,698	118,915,698
Diluted	118,915,698	118,915,698	118,915,698	118,915,698	118,915,698
R&D expenses as % of government and contract rev	119.0%	119.0%	119.0%	119.0%	119.0%
S,G,&A % of rev	41.0%	41.0%	41.0%	25.0%	34.6%



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#### STRONG BUY

The current price reflects a substantial discount from the market and from its peers, and the company does not possess significant financial risk within its risk category. Future growth potential is undervalued relative to the company's stock price. The analyst believes the stock at current levels represents a compelling opportunity for capital gains over the time period to its target price.

#### BUY

The current price reflects a discount from the market and from its peers, and the company does not possess significant financial risk within its risk category. The analyst believes the stock at current levels will provide an opportunity for capital gains over the period of its target price. Several factors can indicate an undervaluation of the company's shares.

#### SPECULATIVE BUY

The current price appears to offer potential gains though risk is considerably higher given its risk category. There may be insufficient historical data or clear-cut prospects to warrant a "Buy," but the analyst believes that the long run prospects of the Company are positive. The analyst believes its risk reward ratio advocates purchase of the stock. In the short term, the stock may be subject to high volatility and continue to trade at a discount to its market.

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The analyst is unable to assign a buy rating due to a number of specified factors noted in the report. These include the stock being fairly valued relative to its peers and the market, or the company may have risks that make it potentially unsuitable for investment within its risk category. Similarly there are no currently known compelling factors that would warrant selling. The analyst will remain neutral pending developments.

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