ALTAIR NANOTECHNOLOGIES INC
Form 10-K
March 16, 2009

UNITED STATES SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 10-K

[X] ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934 FOR THE FISCAL YEAR ENDED DECEMBER 31, 2008

[_] TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934 FOR THE TRANSITION PERIOD FROM _____ TO _____

ALTAIR NANOTECHNOLOGIES INC.

(Exact name of registrant as specified in its charter)

Canada	1-12497	33-1084375
(State or other jurisdiction of incorporation)	(Commission File No.)	(IRS Employer Identification No.)

204 Edison Way
Reno, Nevada 89502-2306

(Address of principal executive offices, including zip code)

Registrant's telephone number, including area code: (775) 856-2500

Securities registered pursuant to Section 12(b) of the Act:

Common Shares, no par value	NASDAQ Capital Market
(Title of Class)	(Name of each exchange on which registered)

Securities registered pursuant to Section 12(g) of the Act: None

Indicate by check mark whether the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. YES [_] NO [X]

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. YES [_] NO [X]

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. YES [X] NO [_]

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Report or any amendment to this Report. [_]

i

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer or a smaller reporting company. See definition of "accelerated filer", "large accelerated filer" and "smaller reporting company" in Rule 12b-2 of the Exchange Act (Check one):

[_] Large Accelerated Filer [X] Accelerated Filer
[_] Non-accelerated Filer [_] Smaller reporting Company
(Do not check if a smaller reporting company)

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act): YES [ ] NO [X]

The aggregate market value of the common shares held by non-affiliates of the Registrant on June 30, 2008, based upon the closing stock price of the common shares on the NASDAQ Capital Market of $1.70 per share on June 30, 2008, was approximately $121,269,755. Common Shares held by each officer and director and by each other person who may be deemed to be an affiliate of the Registrant have been excluded.

As of March 10, 2009, the Registrant had 95,153,271 common shares outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the Registrant's Proxy Statement on Schedule 14A for the Registrant's 2009 Annual Meeting of Shareholders are incorporated by reference in Part III as specified.

INDEX TO FORM 10-K

PART I

This Annual Report on Form 10-K for the year ended December 31, 2008 (this "Report") contains "forward-looking statements" within the meaning of Section 27A of the Securities Act of 1933, as amended (the "Securities Act"), and Section 21E of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), that involve risks and uncertainties. Purchasers of any of the common shares, no par value, (the "common shares") of Altair Nanotechnologies Inc. are cautioned that our actual results will differ (and may differ significantly) from the results discussed in the forward-looking statements. Factors that could cause or contribute to such differences include those factors discussed herein under "Item 1A. Risk Factors" and elsewhere in this Report generally. The reader is also encouraged to review other filings made by us with the Securities and Exchange Commission (the "SEC") describing other factors that may affect future results of the Company.

Unless the context requires otherwise, all references to "Altair," "we," "Altair Nanotechnologies Inc.," or the "Company" in this Report refer to Altair Nanotechnologies Inc. and all of its consolidated subsidiaries. Altair currently has one wholly owned subsidiary, Altair US Holdings, Inc., a Nevada corporation. Altair US Holdings, Inc. directly or indirectly wholly owns Altairnano, Inc., a Nevada corporation, Mineral Recovery Systems, Inc., a Nevada corporation ("MRS"), and Fine Gold Recovery Systems, Inc., a Nevada corporation ("Fine Gold") which was dissolved on December 30, 2008. AlSher Titania LLC, a Delaware limited liability company, is 70% owned by Altairnano, Inc. We have registered or are in the process of registering the following trademarks: Altair Nanotechnologies Inc.®, Altair Nanomaterials, Inc.®, Altairnano®, TiNano®, Nanocheck® and RenaZorb®. Any other trademarks and service marks used in this Report are the property of their respective holders.

Item 1. Business

We are a Canadian corporation, with principal assets and operations in the United States, whose primary business is developing and commercializing nanomaterial and titanium dioxide pigment technologies. For nearly all of 2008, we were organized into three divisions; a Power and Energy Group (formally known as the Advanced Materials and Power Systems Division), a Performance Materials Division, and a Life Sciences Division. Our research, development, production and marketing efforts have been directed toward three primary market applications that utilize our proprietary technologies:

- Power and Energy Group

- The design, development, and production of our nano lithium titanate battery cells, batteries, and battery packs as well as related design and test services.
- The development, production and sale for testing purposes of electrode materials for use in a new class of high performance lithium ion batteries called nano lithium titanate batteries.

- Performance Materials Division

- Through AlSher Titania, the development and production of high quality titanium dioxide pigment for use in paint and coatings and nano titanium dioxide materials for use in a variety of applications including those related to removing contaminants from air and water.
- The testing, development, marketing and/or licensing of nano-structured ceramic powders for use in various application, such as advanced performance coatings, air and water purification systems, and nano-sensor applications.

- Life Sciences Division

- The co-development of RenaZorb, a test-stage active pharmaceutical ingredient, which is designed to be useful in the treatment of elevated serum phosphate levels in human patients undergoing kidney dialysis.
- The development of a manufacturing process related to a test-stage active pharmaceutical ingredient, designed to be useful in the treatment of companion animals.

We also provide contract research services on select projects where we can utilize our resources to develop intellectual property and/or new products and technology. Although contract services revenue comprised a significant portion of our total revenues in recent years accounting for 87%, 55%, and 67%, respectively in 2008, 2007, and 2006, we do not expect this to continue. Near the end of 2008, we made the decision to focus on Power and Energy products as we believe that area contains the most promise for the Company. In the summary of our business below, we describe our various research products in connection with our description of the business segment to which each relates.

Our Proprietary Nanomaterials and Pigment Process

Most of our existing products, potential products and contract research services are built upon our proprietary nanomaterials and titanium dioxide pigment technology. We acquired the basis for this technology from BHP Minerals International, Inc. in 1999 and, over the past nine years, have continued to expand and refine various applications of the technology. Today, we use the technology in order to produce various finely-sized powders for diverse applications, including pharmaceuticals, titanium dioxide pigment, and high performance rechargeable batteries. Although the existing and potential applications are varied, each is directly or indirectly built upon the ingenuity of our management, research and development staff, engineering team and our proprietary nanomaterials technology.

This nanomaterials technology enables our production of conventional titanium dioxide pigment products that are finely sized powders consisting of titanium dioxide crystals. These powders are generally 170-300 nanometers in size. This technology is also capable of producing other metal and mixed metal oxide nanomaterials. These are specialty products with a size range of 10 to 100 nanometers (approximately one tenth the size of conventional titanium dioxide pigment). The primary products currently being produced in the processing plant are lithium titanate spinel and lanthanum based materials.

Using this technology, we are in various stages of research, development and marketing of numerous products and potential products. We also use this technology to provide contract research services on select projects where we can utilize our resources to develop intellectual property and/or new products and technology.

Power and Energy Group

Primary Products

Nano lithium titanate batteries and electrode materials

We are developing, marketing, producing and selling our proprietary rechargeable lithium ion battery, which we refer to as our nano lithium titanate batteries. We are also continuing to explore the license, manufacture and sale of our proprietary lithium titanate spinel (“LTO”) electrode materials for use in batteries being developed by other companies.

As explained in greater detail below, the principal features used to compare rechargeable batteries include charge and discharge rates, energy density, cycle life, and calendar life. In laboratory and field tests, our nano lithium titanate batteries have high rates of charge and discharge, long cycle life, extended calendar life and a broad operating temperature range, all of which far exceed those of rechargeable batteries currently being used for target applications. We believe that, with these strengths our nano lithium titanate batteries are superior alternatives for rechargeable battery uses that require power, durability and exposure to the elements. These include electric utility services, uninterruptible power supplies, hybrid electric and full electric vehicles.

Key Business Developments in Power and Energy

AES Relationship. In July 2007, we entered into a multi-year development and equipment purchase agreement with AES Energy Storage, LLC ("AES"), a subsidiary of global power leader The AES Corporation. The AES Corporation is one of the world's largest power companies, with operations in 28 countries on five continents. The AES Corporation generation and distribution facilities have the capacity to serve 100 million people worldwide. Under the terms of the agreement, we are working jointly with AES to develop a suite of energy storage solutions for AES and the broader market in general. In May of 2008, AES successfully completed the first major test of a 2 megawatt battery system that we manufactured for AES. The test consisted of AES connecting the battery to the electrical grid at a substation in Indiana and then performing a number of stringent tests to determine if it was capable of providing the services required. These tests were designed and overseen by KEMA, an independent outside agency, and demonstrated that the battery performed well in every respect, meeting or exceeding all expectations. Since then one of the 1MW units has been moved to Pennsylvania and connected into the electrical grid managed by PJM providing commercial, revenue generating services for AES. We are working with AES to apply these products and systems at other strategic points within the electrical grid to more efficiently deal with real-time fluctuations in electricity supply and demand. We believe that the quick response time, extended life, and power profile of our batteries and energy storage products are well suited to improving the electrical grid stability with lower environmental impact than traditional generation solutions.

Military Relationships. In January 2008, we entered into a development agreement with the Office of Naval Research for $2,490,000. This is a cost reimbursement agreement whereby we will develop a proof of concept battery system consisting of two 50-80 kilowatt hour batteries. Successful completion of this development work is required to qualify for further military grants with the Office of Naval Research ("ONR"). All testing associated with ONR Phase I was successfully completed in November 2008. We anticipate entering into Phase II in the first quarter of 2009, and the U.S. Congress appropriated funds for Phase III in the fall of 2008. During 2008 we also entered into various development agreements with the U.S. Army ("ARDEC") and the United Kingdom's Ministry of Defense for different battery systems to be used in field artillery units and other naval applications respectively. All development and testing results to date have met or exceeded customer expectations and we anticipate a continuation of these programs into 2009.

Phoenix Relationship. In January 2007, we entered into a multi-year purchase and supply agreement with Phoenix Motorcars, Inc., succeeded by Phoenix MC, Inc. ("Phoenix"), for lithium titanate battery packs to be used in electric vehicles produced by Phoenix. Although expectations for business expansion were high, these expectations were never realized. Our relationship with Phoenix was marked by a number difficulties, and in July 2008, we terminated our purchase and supply agreement by mutual agreement.

Target Markets

According to information supplied by JMP Securities in January 2007, the market for power storage devices is approximately $55 billion ($31 billion lead acid, $9 billion alkaline, $8 billion lithium ion, and $7 billion all other). Lithium ion and advanced technology rechargeable batteries are expected to gradually increase their share of the world rechargeable battery market. New developments indicate that high power batteries of this type will ultimately be developed for application as replacements for lead acid batteries and Nickel Metal Hydride, or NiMH, batteries in automobiles, electric vehicles, and hybrid electric vehicles where direct electrical energy for starting and passing will assist the gasoline engines. Also, the development of power storage systems for stationary power, electric utility grid services and wind, fuel cell and solar generation systems will require enhanced battery capabilities. According to "Upcoming Advances in the Hybrid Vehicle Market" Japan's Nomura Research Institute in February 2007, the global market for hybrid vehicles will more than triple to 2.19 million units a year by 2012. They envision the US leading the demand with 1.68 million units followed by Japan at 460,000 and Europe at 52,000 units in 2012.

Our lithium-titanate technology provides a fundamental building block for a new generation of lithium ion rechargeable batteries. Currently, our primary markets are in the electric utility grid services and electric vehicle sector. As discussed above, we have an active development and supply relationship with AES in the electric utility grid market. We have also provided electrode materials, cells, batteries and battery packs to, and had early stage discussions with, various established automobile companies and cell manufacturers that are evaluating our technology for use in hybrid electric vehicles and plug-in electric vehicles. These discussions could lead to commercial relationships characterized by a revenue stream consisting of one or more of development funding, materials manufacturing and royalties.

In the transportation and military sectors requiring power-dependent battery systems and stationary power applications, we are focusing our marketing and development efforts on markets presently dominated by Nickel Cadmium, or NiCd, and NiMH batteries. We are well-positioned to leverage the unique performance attributes associated with the our lithium ion battery systems when applied to specific customer applications within these markets, in which rapid charging/discharging, long cycle life, high round-trip efficiencies, broad operating temperature and safety are considered necessary requirements.

The integration of renewable energy sources, such as solar and wind, coupled with rising global energy demand is placing unprecedented challenges on the stability and reliability of electricity grid systems, both domestically and abroad. Energy storage technologies are being examined closely to understand the role they can play in helping transform electricity grids into more reliable, secure, and efficient networks capable of responding to the massive changes in energy demand and energy policy anticipated over the next several decades.

There are two categories of energy storage currently being examined for utility applications, bulk energy storage and distributed energy storage. Pumped hydroelectric and compressed air energy storage ("CAES") technologies are considered bulk energy storage technologies. These systems are considered potentially practical for sustained requirements ranging from between 100 MW to several thousand MW. Demonstration of these technologies dates back as early as 1929 with the application of a 31 MW pumped hydroelectric power plant.

Distributed energy storage encompasses an emerging breed of batteries and energy storage systems suitable for smaller applications deployed near load centers, transmission system points of reinforcement, or renewable generation sources. Flow batteries, sodium sulfur (NaS) and sodium nickel chloride (NaNiCl) batteries are established, commercial technologies serving the distributed energy storage market. These systems are designed for charge/discharge durations up to eight hours a day.

Most recently, alternative energy storage devices including flywheels and lithium-based batteries, such as those manufactured by Altair, are being applied to frequency regulation, a service provided by vertically-integrated utility companies, independent service operators, and merchant operators, which manages second-by-second fluctuations between electricity generation and demand. For these systems, energy storage is measured in minutes.

Solar and wind power generation by nature are intermittent sources of energy. The adoption of these renewable energy generation systems, is likely to increase the need for effective, efficient, clean energy storage technologies to provide frequency regulation services and maintaining the reliability and stability of the associated electricity grid systems.

Key Features

Rechargeable batteries are made from various materials, each of which has certain characteristics or tendencies, depending upon how the products are configured. Some of the key concepts used when comparing rechargeable batteries include the following:

- Power: A battery's power rating is its ability to deliver current while maintaining its voltage.
- Discharge: Discharge refers to the dissipation of a battery's stored energy as a result of intended transfer of that energy (either gradually or in one or more large bursts) or as a result of the unintended leakage of that energy. This latter type of leakage is referred to as "self discharge" and is a natural tendency of all batteries at a rate that is proportional to temperature. A "deep discharge" refers to the discharge of substantially all of the stored energy in a battery between recharges. In general, deep discharges reduce the cycle life of batteries.
- Energy density: A battery's energy density is normally described as watt-hours/kilogram or watt-hours/liter and refers to the available energy per unit weight or per unit volume. A battery with high energy density will deliver more energy per unit weight or volume than a battery with lower energy density.
- Cycle life: The ability of a rechargeable battery to store energy tends to diminish as a result of repeated charge/discharge cycles. A battery's "cycle life" is the number of times it can be charged and discharged without a significant reduction in its energy storage capacity.
- Calendar life: A battery's calendar life relates to the period of time that a battery will preserve its capability to deliver a significant portion of its original energy storage capacity.
- Recharge time: Recharge time is the amount of time it takes to replenish a battery's energy.

Other important factors include the cost, safety, environmental friendliness and extreme temperature performance of a battery. Although being on the positive side of each of the characteristics is desirable in all rechargeable batteries, the importance of these various characteristics depends primarily upon the anticipated use of a battery. For example, high power, which is important in a hand-held cordless power tool is not very important in a battery designed to power a cell phone because a cell phone needs very little power; however, high specific energy density may be important in a cell phone battery because consumers desire to be able to use a cell phone for a long time between recharges and want to carry as little weight and volume as possible.

The principal advance we have made is in the optimization of nano-structured LTO electrode materials that replace graphite electrode materials used in the negative electrode of current lithium ion cells. When used with a positive electrode from a common lithium ion cell, very high charge and discharge rates are possible. Our current cells are capable of recharge times of 10 minutes to 90%, or more, of initial battery capacity and 10 minute discharges with 90%, or more, capacity utilization.

Our nano-structured LTO is non-reactive with the electrolytes used in common lithium ion systems. This greatly reduces the negative (anode) electrode resistance, and thus, passage of lithium ions to the electrode surface is enabled. Since the material is nano-structured, the surface area available to lithium ions is greatly enhanced – by up to 100 times – over graphite based systems. The material allows for a greatly facilitated, thus rapid, access to the active sites necessary for cell function. In addition, the small size of the nanoparticles dramatically reduces the distance from the surface to inner active sites, further reducing resistance to high rate operation. These characteristics permit our cells to deliver more power and recharge much faster than other types of rechargeable cells described in the subsection entitled “Competition” below.

Our nano-structured LTO is termed a zero strain material, meaning that the material essentially does not change shape upon the entry and exit of a lithium ion into and from the particle. Since most other anode materials suffer from this mechanical stress and strain, these other materials are subject to more rapid physical degradation. This leads to significantly shorter calendar and cycle life than with our LTO anodes. In January 2007, we completed 25,000 deep charge/discharge cycles of our innovative cells. Even after 25,000 cycles, the cells still retained over 80% of their original charge capacity. This represents a significant improvement over conventional, commercially available rechargeable battery technologies such as conventional lithium ion, NiMH and NiCD. These other commercially available rechargeable batteries typically retain that level of charge capacity only through approximately 1,000 to 3,000 deep charge/discharge cycles. Nano-structured LTO offers a near-term promise of lithium nano-titanate batteries with rapid charge and discharge capability and longer cycle life than either currently available NiMH or lithium ion batteries. These results support the feasibility of a power lithium nano-titanate battery pack half the size of those currently being tested for hybrid electric vehicle applications.

Our nano-structured LTO also represents a breakthrough in low- and high-temperature performance. Nearly 90% of room temperature charge retention is realized at -30°C from Altair’s nano-structured LTO cells. In contrast, common lithium ion technology possesses virtually no charging capabilities at this low temperature, and the other rechargeable battery types described in the subsection entitled “Competition” below take 10 to 20 times longer to charge at this low temperature.

We also believe that relative safety is one of the strengths of our nano-structured LTO. Any battery cell or large battery unit constructed from lithium ion cell technology must take into account safety considerations, the most important of which is thermal runaway. Thermal runaway occurs when the temperature of a given cell within the battery exceeds the point where chemical reactions between electrode and electrolyte become self-sustaining. This temperature is often referred to as the critical temperature. Critical temperature for lithium ion battery cells using conventional graphite anodes is around 130° C, a direct result of chemical reaction between the graphite and the electrolyte. With our lithium titanate anode in place of graphite and an appropriate cathode material, that critical temperature is near 250° C, an increase in safety margin of approximately 120° C. The batteries we and our partners are developing for high power applications often consist of dozens or even thousands of battery cells working together as part of a single modular battery unit. When a large number of batteries cells are aggregated into a single battery unit, the likelihood of, and risks associated with, thermal runaway increase. In this context, we believe that the additional temperature margin our individual battery cells can experience before reaching the critical temperature makes our battery cells better suited than competing lithium ion batteries for the high-power applications we are targeting. The current generation of batteries made with our nano-structured LTO exhibit lower energy density at room temperatures than conventional lithium ion systems. Our batteries made with our nano-structured LTO have

energy densities, watt-hours per kilogram that are better than lead acid, NiCd and NiMH batteries and approximately 50-70% of conventional lithium ion batteries. The disadvantage is significantly less as the operating temperature moves away from room temperature, particularly to colder environments. When the end use of the battery requires constant performance across a wide range of temperatures, such as the need for a hybrid automobile to function comparably in both winter and summer, our LTO cells may be the preferred design.

Proprietary Rights

We have been awarded 10 U.S. and 29 international patents protecting this technology including: 1) Method for producing catalyst structures, 2) Method for producing mixed metal oxides and metal oxide compounds, 3) Processing for making lithium titanate, and 4) Method for making nano-sized and sub-micron-sized lithium-transition metal oxides. The U.S. patents expire beginning in 2020.

We have filed 13 U.S. patent applications directed to a variety of inventions related to aspects of our electrochemical cells: "Nano-Materials – New Opportunities for Lithium Ion Batteries"; "Methods for Improving Lithium-Ion Battery Safety"; "Method for Preparing a Lithium-Ion Cell"; "Method for Preparing a Lithium-Ion Battery"; and, "Method for Synthesizing Nano-Sized Lithium Titanate Spinel."

Competition

Advanced Lithium Ion Batteries. We are not aware of any commercially available products that have similar performance attributes as our nano-structured LTO and our nano lithium titanate batteries and battery packs. A competitor company has recently announced an advanced Li-Ion battery. This battery appears to have some advantages over other types of common Li-Ion batteries particularly with respect to energy density, but appears to lack certain other features, such as cycle life and performance at temperature extremes, that distinguish our batteries from the competition. In addition, we believe, many large companies, such as automobile manufacturers, are attempting to develop lithium ion batteries that are suitable for high-power applications such as hybrid electric vehicles and plug-in hybrid electric vehicles. Many of these companies have significant human and financial resources, a well-known brand name, existing distribution channels and other advantages over us. Were such companies to develop a product technology with features that are similar or superior to those of our nano lithium titanate batteries, that company would have a significant competitive advantage.

Existing Technologies. Lead acid, NiCd and NiMH batteries presently dominate our target markets. Lead acid batteries are used everyday by anyone who drives an automobile or operates an electric-powered wheel chair, scooter or golf cart. They are also the battery-of-choice for uninterruptible power supplies. Lead acid batteries are inexpensive, relatively simple to manufacture, possess a relatively low self discharge rate and are based on a mature, reliable technology. The modern sealed versions also need little or no maintenance. However, lead acid batteries are quite heavy, giving them very poor weight to energy and power ratios, which limit practical use to stationary and transportation applications. They also suffer from long recharge times, relatively low energy capacities and cannot be stored for long periods in a discharge state without service-life failure. In addition, they possess a very limited deep discharge cycle life, and thermal runaway can occur with improper charging. The highly toxic metal, lead, and highly corrosive sulfuric acid used as the electrolyte in lead acid batteries render them environmentally unfriendly.

NiCd batteries are inexpensive and fairly rugged, have the longest cycle life of currently available rechargeable battery types, work best on deep discharge cycles and accept recharge at moderately fast rates; however, charging rates must be reduced by a factor of 5 to 10 at temperatures below 0°C (32 °F) and above 30°C (86°F). NiCd batteries suffer from relatively low energy density and relatively high self-discharge rates necessitating re-charge after moderate periods of storage. More seriously, NiCd batteries are exceedingly environmentally unfriendly. The metal cadmium is toxic and can cause several acute and chronic health effects in humans, including cancer. As a result, NiCd usage is being severely restricted and/or phased-out altogether by some countries.

The metal hydride used in NiMH technology is a direct replacement for cadmium in NiCd batteries. Thus, NiMH batteries share and improve upon the attributes of NiCd batteries, yet introduce problems of their own. On the positive side, NiMH batteries improve upon the energy capacity and power capabilities of NiCd (for the same size cell) by 30% to 40%. Since they contain only mild toxins, NiMH batteries are more environmentally friendly than both lead acid and NiCd batteries. Like NiCd batteries, NiMH batteries can be charged in about 3 hours. Charging rates must be reduced by a factor of 5 to 10 at temperatures below 0°C (32°F) and above 40°C (104°F). NiMH batteries suffer from poor deep cycle ability, possessing a recharge capability on the order of 200 to 300 cycles. While NiMH batteries are capable of high power discharge, dedicated usage in high current applications limits cycle life even further. Shelf life is poor - on the order of three years. As noted above, NiCd batteries possess high self-discharge rates, but this problem is exacerbated by up to 50% in NiMH systems. NiMH batteries are intolerant to elevated temperature and, as a result, performance and capacity degrade sharply above room temperature. The most serious issue with NiMH involves safety accompanying recharge. The temperature and internal pressure of a NiMH battery cell rises sharply as the cell nears 100% state of charge, necessitating the inclusion of complex cell monitoring electronics and sophisticated charging algorithms in order to prevent thermal runaway. While NiMH technology is gaining prominence within the electric vehicle (EV) market and dominates the hybrid electric vehicle market, this gain is placing pressures on the limited supply of nickel, potentially rendering the technology economically infeasible for these applications as the demand continues to rise.

Of all of the available metals for use as a basis for practical batteries, lithium is the most reactive and least dense, allowing for batteries with high specific energy. Conventional lithium ion batteries exhibit voltages of about 3.6V as compared to about 1.2V for NiCd and NiMH and 2.0V for lead acid. Ohm's law defines the relationship between power P, voltage V and current I. This relationship is described by the formula: P=IV. Power is also defined as the time rate of energy transfer; thus higher voltages typically lead to larger power and / or energy densities. Lithium ion batteries are stable, charge somewhat rapidly (in hours), exhibit low self-discharge, and require very little maintenance. Except as explained below, the safety, cycle life, calendar life, environmental impact and power of lithium ion batteries is comparable to those of NiMH and NiCd batteries.

Conventional, graphite-based, lithium ion batteries are the batteries of choice in small electronics, such as cell phones and portable computers, where high energy and light weight are important. These same attributes are desired for electric vehicle, hybrid electric vehicle, power tool and uninterruptible power supply markets. However, these applications are principally high power demand applications and/or pose other demands on usage, such as extremes of temperature, need for short recharge times, high proportional (to stored energy) current rates and even longer extended lifetimes. Because of safety concerns related principally to the presence of graphite, conventional graphite-based lithium ion batteries sufficiently large for such power uses may raise safety concerns. In addition, current lithium ion technology is capable of about 1,000 to 3,000 cycles and has a life of about 3 years, whereas the vehicles in which they are used may have lifetimes as long as 10 to 15 years and require much larger cycle life. Conventional lithium ion batteries also do not function well at extremely hot or cold temperatures.

The Performance Materials Division

We have named the portion of the nanomaterials and titanium dioxide pigment technology that was developed to produce high quality titanium dioxide pigment the Altair Hydrochloride Pigment process, or AHP. This package of technologies includes four US patents, trade secrets and know-how developed over ten years of research and development. The technology represents a comprehensive process to extract heavy minerals such as titanium from raw materials, produce a high quality titanium dioxide pigment and minimize environmental impact.

In April 2007, a new company, AlSher Titania LLC was formed. AlSher Titania represents a joint venture with Sherwin-Williams, one of the world's leading manufacturers of paint and durable coatings. Construction of the 100 ton pigment processing pilot plant in connection with the joint venture agreement was completed, and the plant was commissioned in February 2008. Testing under the pilot program commenced, and although results to date have been positive, we have suspended full operations at this time. Considerable data has been generated and compiled into an engineering data package. Included is a process analysis and recommendation on next steps. Based on review of this package, its impact on financial projections, and input from our partner, we will consider in 2009 whether to undertake a more detailed engineering cost study relating to the potential scale up to a significantly larger demonstration plant. At this time, neither Altair nor Sherwin-Williams has expressed a willingness to finance the construction of the development scale plant that would be required as the next major milestone. AlSher is actively seeking a partner or partners to participate in this next phase. Several companies with raw materials resources have indicated interest in the technology, but none has been willing to make any commitment up to now. Without additional capital, it is unlikely that AlSher will be able to independently fund this effort.

In January 2004, we entered into a license agreement with Western Oil Sands, Inc., or Western Oil, with respect to its possible use of the AHP for the production of titanium dioxide pigment and pigment-related products at the Athabasca Oil Sands Project in Alberta, Canada, and elsewhere. Upon execution of the agreement, we granted Western an exclusive, conditional license to use the AHP on heavy minerals derived from oil sands in Alberta, Canada. The agreement also contemplated a three-phase, five-year program pursuant to which the parties would work together to further evaluate, develop and commercialize the AHP. In the first phase of the program, which was extended through December 2006, we, along with Western Oil, evaluated the AHP to confirm that the AHP will produce pigment from oil sands and to complete a characterization study.

During December 2006, Western Oil requested an additional extension of phase one to allow them to perform additional characterization of the feedstock source prior to committing to phase two of the license agreement scope of work. In light of the broad exclusive license granted to Western Oil in the initial agreement, we declined to extend the terms of the license in order to preserve our flexibility in other potential licensing arrangements that may not involve an exclusive license for Western Oil. Nonetheless, we continued to work with Western Oil, under a paid contract through December 31, 2007, to assist them in various development activities associated with production of a pigment feed source at a pilot plant located in our building. In the fourth quarter of 2007, Western Oil agreed to relocate its pilot plant from our building as of the end of March 2008 to one of its facilities. This relocation was completed in May 2008.

Proprietary Rights

We have been awarded four U.S. and 15 international patents protecting this technology including: 1) Processing titaniferous ore to titanium dioxide pigment, 2) Processing aqueous titanium chloride solutions to ultrafine titanium dioxide, 3) Processing aqueous titanium solutions to titanium dioxide pigment and 4) Method For Producing Mixed Metal Oxides and Metal Oxide Compounds. The U.S. patents expire in 2020 and 2021. Two new patent applications have also been filed recently.

Competition

Existing pigment production technologies are owned and guarded by the top tier producers that developed the technologies. Such producers typically do not grant licenses to competitors. As a result, companies seeking to enter into the pigment production business generally are required to use alternative technologies. Companies assessing the viability of our process to manufacture pigment from their resource are also evaluating alternatives, including producing mineral concentrates for sale to pigment producers and producing a high value synthetic rutile to be sold to pigment producers as feed stock. They may elect to commercialize either of these alternatives instead of producing pigment by the AHP. We believe there are no competing new technologies to produce titanium dioxide pigment.

Advanced Performance Coatings

We have developed thermal spray grade nanomaterial powders that can be applied as a coating on the surface of metals by standard thermal spray techniques. Our nanomaterials coatings possess enhanced toughness and increased hardness while retaining a flexible coating layer. These features contribute to superior abrasive wear resistance over the conventional coating of similar materials. The nanomaterial coatings also demonstrate improved porosity over standard thermal spray powders making them more resistant to corrosive attack. We believe these performance improvements will enable longer periods between maintenance, repairs and examinations of these critical components, therefore improving the economics of the industrial application. Such nanomaterial based thermal spray products could be used in a variety of harsh environment applications such as aerospace propulsion systems, gas turbines, medical applications, heavy machinery in all industries, boilers for power plants, waste incinerators, and the oil and gas industry.

We believe the market for each such product may be 2-5 tons annually in the near term with possible growth to as much as 20-30 tons per product annually in the future. In light of the limited size of the potential market, we do not expect these performance coatings to be a material source of revenue in the long term. Exclusive rights to this technology were granted to AlSher under our existing agreement.

In July 2007, we signed an agreement with PPG Industries, Inc. (“PPG”), as a sub-contractor to their United States Air Force Research Labs grant. Under the terms of this grant, we worked jointly with PPG to develop a nanometal oxide material and dispersion concentrates to create a primer to be utilized in aerospace applications. The total value of the agreement was $290,000 over an 18 month term. During 2008, we recognized approximately $26,440 of revenue from sales related to this initial work. Based on the limited revenue potential from this opportunity we have shifted our resources away from further development in this area.

Proprietary Rights

Our thermal spray grade powders are protected by U.S. Patent titled, “Processing aqueous titanium chloride solutions to ultrafine titanium dioxide,” which expires in 2020. We have also been issued a U.S. Patent titled “Process for making nano-sized zirconia” which expires on November 2, 2021.

We have filed several patent applications directed to metal oxides, including: “Nano-Structured Iron Oxide”; “Nano-Structured Indium-Doped Iron Oxide”; and, “Method for Low Temperature Production of Nano-Structured Iron Oxide Coatings.”

We have filed a patent application entitled, "TEFLON Replacements and Related Production Methods.

Nanosensors Research Program

Since September 2003, pursuant to a teaming/research agreement with Western Michigan University funded by the Department of Energy, we have been engaged in the development of a technology used in the detection of chemical, biological and radiological agents. We generated approximately $15,000 and $482,000 in revenues through December 2006 and 2005, respectively, as part of this program. In August 2006, $981,000 of the $2.5 million Department of Energy research grant received by Altair and its partners was allocated to the continuation of this program. Of this amount, we recognized approximately $897,000 of revenues over the life of this program of which $500,000 was earned by and paid to Western Michigan University under a subcontract. Late in 2008, we were awarded a $1.83 million Army research Office ("ARO") grant to continue the nanosensor program. We are currently awaiting formalization of the associated contract in order to begin the actual work with our partner, Western Michigan University, which will receive about half of the grant funds as a subcontractor to Altair. The scope of work associated with this grant further builds upon the accomplishments and progress made under the prior grants and will focus on a second-generation hand held device currently being developed using a new as well as a previously developed library of sensing molecules for identification of a multiplicity of agents.

In mid-2008, we completed work with the University of Nevada, Reno to act as a subcontractor under a $1,095,000 grant awarded by the Department of Energy to develop nanosensors for the detection of chemical, biological and radiological agents. This subcontract provided for total payments to Altair of $250,000 through May 2008. Through this project, the viability of lanthanide particles and complexes for the detection of nerve agents was demonstrated.

Life Sciences

RenaZorb® Products

RenaZorb is a highly active, lanthanum-based nanomaterial with low intestinal solubility and excellent in-vitro phosphate binding. Animal testing of RenaZorb has been conducted in dogs, cats and rats; however, no human tests have yet been conducted. Based upon our initial laboratory and animal testing, we believe that RenaZorb may offer the following advantages over competing products:

- Lower dosage requirements because of better phosphate binding per gram of drug compared with existing or currently proposed drugs;
- Fewer and less severe side effects because of less gassing and lower dosage; and
- Better patient compliance because of fewer and smaller tablets.

In all animal testing conducted on RenaZorb, which to date included three separate testing protocols, no adverse side effects were reported. In all testing, RenaZorb was administered to the animals by mixing the drug with the food they eat. In no case was there any reduction in the amount of food the animals consumed when RenaZorb was mixed with the food. The drug appears to be tasteless.

Target Markets

Our pharmaceutical product RenaZorb was developed to treat elevated phosphate levels in human patients with chronic kidney disease specifically in patients with stage five, end-stage renal disease. According to the National Kidney Foundation web page referenced on March 7, 2008, there are 20 million adults with chronic kidney disease of which 500,000 are in stage five. In November 2007 the Cardiovascular and Renal Drugs Advisory Committee of the Federal Drug Administration ("FDA") recommended that phosphate binders be used to treat hyper-phosphatemia in stage four kidney patients. According to the Medline Plus web page supported by the U.S. National Library of Medicine and the National Institutes of Health referenced on March 7, 2008, an additional 400,000 patients with significant kidney function loss are classified as being at stage four.

Research, Testing and Development

In January 2005, we signed a license agreement with Spectrum Pharmaceuticals, Inc., which grants Spectrum exclusive worldwide rights to develop, market and sell RenaZorb. Upon signing the license agreement, Spectrum issued to us 100,000 restricted shares of their common stock, purchased 38,314 restricted shares of our common stock at the then current market value of $2.61 per share, and also paid us $100,000 in connection with the license agreement. In June 2006, Spectrum issued to us 100,000 restricted shares of their common stock at the then current market value of $3.88 per share in connection with the first milestone payment due upon demonstration of satisfactory lanthanum serum levels. An additional 40,000 shares were also issued in payment of research and development services provided by us in 2006. Additional payments by Spectrum are contingent upon the achievement of various milestones in the testing, regulatory approval and sale of RenaZorb. Although work continues to refine and test RenaZorb, no milestones were achieved in 2008.

Additional, contingent consideration under the license agreement may include the following:

- purchases of a specified dollar amount of common shares of the Company at a premium above market price upon the reaching of various milestones representing progress in the testing and obtaining of regulatory approval for RenaZorb;
- milestone payments upon obtaining approval from the FDA and similar regulatory agencies in Europe and Japan to market RenaZorb;
- milestone payments as certain annual net sales targets are reached;
- royalty payments based upon a percentage of net revenue from sales of RenaZorb in each country (subject to adjustment for combined products and in other circumstances) as long as patents applicable to that country remain valid; and
- technology usage payments thereafter until generic competition emerges.

RenaZorb must undergo animal and human testing and receive approval from the FDA in the U.S. and similar regulatory bodies in other parts of the world before it can be approved for marketing. Pre-clinical testing to determine safety and toxicity will take one to two years and is required before Spectrum can submit an investigational new drug application to the FDA. Human testing typically takes 1 to 2 years and, if merited by the results of human testing, the process of seeking U.S. regulatory approval typically takes between 3 and 5 years; however, timing for FDA and other regulatory approval of drug candidates is unpredictable. Spectrum, with technical assistance from Altair, is responsible for the clinical testing and other activities necessary to obtain regulatory approval of RenaZorb. Spectrum has begun the process of information and data collection and presentation required to file an investigational new drug application with the FDA, which is the first stage of seeking regulatory approval.

Proprietary Rights

We have applied for patent protection for the manufacture of RenaZorb and a wide range of similar compounds for the application as an orally administered phosphate binder for patients suffering from end stage renal disease. These patent applications are “Rare earth metal compounds, methods of making and methods of using the same,” “Devices for removing phosphate from biological fluids,” “Processes for making rare earth metal oxycarbonates” and “Rare-earth metal composites for treating hyperphosphatemia and related methods.”

Competition

Existing phosphate binders include Tums antacid, which contains calcium carbonate, as well as aluminum hydroxide-based products such as Gaviscon manufactured by Glaxo Smith Kline, both of which are available over the counter. Renagel manufactured by Genzyme and Phoslo, manufactured by Fresenius Medical Care, are available only by prescription. In addition, Fosrenol, another lanthanum based active pharmaceutical agent developed by Shire Pharmaceuticals of the UK, is available only by prescription.

While over-the-counter phosphate binders are relatively inexpensive, they have several disadvantages. In high doses, calcium carbonate-containing phosphate binders such as Tums may cause increased blood pressure and increased risk of cardiovascular disease and are generally not recommended for long-term use by dialysis patients. With prolonged use, aluminum hydroxide-based phosphate binders, such as Gaviscon, may cause toxic neurological effects and are generally avoided by physicians. Aluminum dementia has been widely reported in kidney dialysis patients using these products.

In October 2007, the FDA granted Genzyme marketing approval for Renvala for dialysis patients. Renvala is Genzyme's next generation version of Renagel but has lower incidents of gastrointestinal adverse effects.

Phoslo is a calcium acetate phosphate binder that produced approximately $40 million in revenues in 2006. In October 2006, Nabi Biopharmaceuticals sold Phoslo, an oral drug used by dialysis patients to reduce phosphorus absorption, in a deal worth $150 million to Fresenius Medical Care. In January 2007, Fresenius submitted an application to extend use of Phoslo to stage four chronic kidney disease patients.

Fosrenol was introduced in the United States in January 2005 and, according to a Shire Pharmaceutical Group news release dated February 21, 2008, has increased its average share of the total US phosphate binding market to 8.6 % in 2007. Also according to a Shires Interim 2008 report, "Forensol has been launched in 29 countries and global sales totaled $78.6 million for the six months to June 30, 2008." This is compared to $47.3 million in the first six months of 2007. Similarly, US sales of Fosrenol were up 37.5% in the first six months of 2008 compared to the same period in 2007. Fosrenol is marketed as large chewable tablets with a proposed dosage of 1.5 to 3.0 grams active drug per day.

RenaZorb, which is nanotechnology based, is expected to be developed in a tablet dosage form with a projected dosage of 0.6 to 3.0 grams API per day. Although we have done no human testing on RenaZorb, we believe RenaZorb has the potential for fewer side effects, lower cost and better patient compliance. We base these possible advantages upon in vitro testing conducted by Altair in which RenaZorb was compared to lanthanum carbonate tetrahydrate, the API in Fosrenol. Our in vitro testing showed that RenaZorb binds 30% more phosphate per gram of drug than LCTH, therefore requiring a lower dose. Lower dose often correlates well with a reduction of observed side effects in chemically related compounds. No adverse side effects were reported in all animal testing conducted on RenaZorb, which to date included three separate testing protocols. In all testing, RenaZorb was administered to the animals by mixing the drug with the food they eat. In no case was there any reduction in the amount of food the animals consumed when RenaZorb was mixed with the food. The drug appears to be tasteless.

Renalan

Renalan is a highly active, lanthanum-based nanomaterial with low intestinal solubility and excellent in-vitro phosphate binding. Animal testing of Renalan has been conducted in dogs, cats and rats. Based upon our initial laboratory and animal testing, we believe that Renalan may offer the following benefits:

- Specifically targeted to address chronic kidney disease in companion animals
- Palatable with normal food intake regime
- Can be administered in powder form which can be mixed with the pet's food.

Target Markets

Renalan was developed to treat elevated phosphate levels in animals with chronic kidney disease. According to information published in the Textbook of Veterinary Internal Medicine by Stephen J. Ettinger, DVM and Edward C. Feldman, DVM, the dog chronic kidney disease population is variously estimated at between 0.5% and 7% of population, resulting in a worldwide chronic kidney disease population of between 0.75 million and 10.5 million dogs. The textbook estimates that the cat chronic kidney disease population is estimated at between 1.6% and 20% of total population, resulting in a worldwide chronic kidney disease population of between 2.8 million and 35 million cats. Using the rest of the data in their textbook and average life expectancy curves yields a worldwide cat chronic kidney disease population of approximately 4.2 million and a dog chronic kidney disease population of about 1.2 million.

Research, Development and Licensing

In May 2006, we entered into a collaborative research, license and commercialization agreement with the Elanco Animal Health Division of Eli Lilly and Company ("Elanco"). Under the terms of the agreement, Elanco had exclusive rights to develop animal health products using our nanotechnology-based products. In September 2008, this Agreement was jointly terminated when Elanco curtailed their R&D expenditures. Upon termination all rights granted to Elanco reverted back to Altair. At the present time Altair is exploring interest from other parties to continue in this development work.

The active pharmaceutical ingredient in Renalan must undergo animal testing and receive approval from the FDA in the U.S. and similar regulatory bodies in other parts of the world before it can be approved for marketing as a drug. The FDA approval process for companion animal use is expected to take two to three years to complete; however timing for FDA and other regulatory approval of drug candidates is unpredictable.

Proprietary Rights

We have filed one U.S. patent application for this product entitled "Compositions and methods for treating hyperphosphatemia in domestic animals." Additionally, Renalan is a compound very similar to RenaZorb and is protected by the patent applications discussed under "RenaZorb" above.

Competition

In late 2005, Vetoquinol, a French animal health company, released Epakitin in the US. Vetoquinol positions Epakitin as a chitosan-based phosphate binder and uremic reducer for chronic kidney disease in dogs and cats. The product has not been on the market long enough to determine its market strength or effectiveness.

In October 2006, Bayer HealthCare submitted and application to the European Food Safety Authority ("EFSA") for a new food additive for adult cats to restrict internal phosphorus absorption. In October 2007, EFSA released a positive opinion on the safety and efficacy of Lantharenol as a feed additive for cats to restrict the absorption of phosphorus. Bayer launched Lantharenol in September 2008.

Other Nanomaterials Research

In September 2006, the Nanomaterials characterization program was funded by $311,000 of the $2.5 million Department of Energy grant. This research was conducted in collaboration with the University of California, Santa Barbara and was completed in May 2008. The research focused on interaction mechanisms between cells and nanoparticles, with the goal of understanding how specific chemical and physical properties of these nanoparticles influence that interaction. The research with UCSB examined a range of microbes that have environmental or societal importance. The results of this research are expected to provide the basis for both 1) predicting potential negative impacts of specific nanoparticle characteristics on the environment and human health and 2) developing novel antimicrobial agents and surface treatments that could defeat antibiotic-resistant strains of harmful microbes. At this time, two publications documenting final results are in progress.

In August 2008 we entered into a contract with the Environmental Protection Agency to collaborate in researching the safety and potential health hazards of working with nanoparticles in the manufacturing process. This is a new area of development with very little data. Altair is committed to producing both products that are safe for their ultimate consumers, and also for the people involved in their manufacture.

Research and Development Expenses

Total research and development expenses were $16,908,447, $15,443,703 and $10,077,231, for the years ended December 31, 2008, 2007 and 2006, respectively, while research and development costs funded by customers were $4,969,361, $5,050,202 and $2,897,859, for the years ended December 31, 2008, 2007 and 2006, respectively.

Dependence on Significant Customers

During the year ended December 31, 2008, we recorded revenues from three major customers, who accounted for 44%, 9% and 11% of revenues as follows: Office of Naval Research revenues of $2,493,489 and the AES Corporation revenues of $505,750 in the Power and Energy Group; and Eli Lilly/Elanco revenues of $622,804 in the Life Sciences Division.

Government Regulation

Most of our current and proposed activities are subject to a number of federal, state, and local laws and regulations concerning machine and chemical safety and environmental protection. Such laws include, without limitation, the Clean Air Act, the Clean Water Act, the Resource Conservation and Recovery Act, and the Comprehensive Environmental Response Compensation Liability Act. We are also subject to laws governing the packaging and shipment of some of our products, including our nano lithium titanate batteries. Such laws require that we take steps to, among other things, maintain air and water quality standards, protect threatened, endangered and other species of wildlife and vegetation, preserve certain cultural resources, reclaim processing sites and package potentially flammable materials in appropriate ways and pass stringent UN mandated testing standards before shipping our battery products.

Compliance with federal, state, or local laws or regulations represents a small part of our present budget. If we fail to comply with any such laws or regulations, however, a government entity may levy a fine on us or require us to take costly measures to ensure compliance. Any such fine or expenditure may adversely affect our development.

We are committed to complying with and, to our knowledge, are in compliance with, all governmental regulations. We cannot predict the extent to which future legislation and regulation could cause us to incur additional operating expenses, capital expenditures, and/or restrictions and delays in the development of our products and properties.

Environmental Regulation and Liability

Any proposed processing operation at our main operating facility in Reno, Nevada or any other property we use will be subject to federal, state, and local environmental laws. In addition, our cleanup efforts on the Tennessee mineral property have been, and will continue to be, subject to such environmental laws. Under such laws, we may be jointly and severally liable with prior property owners for the treatment, cleanup, remediation, and/or removal of substances discovered at any other property used by us; to the extent the substances are deemed by the federal and/or state government to be toxic or hazardous. Courts or government agencies may impose liability for, among other things, the improper release, discharge, storage, use, disposal, or transportation of hazardous substances. We use hazardous substances in our testing and operations and, although we employ reasonable practicable safeguards to prevent any liability under applicable laws relating to hazardous substances, companies engaged in materials production are inherently subject to substantial risk that environmental remediation will be required.

Financial Information about Segments and Foreign Sales

Information with respect to assets, net sales, loss from operations and depreciation and amortization for the performance materials, power and energy group, and life sciences segments is presented in Note 18, Business Segment Information, of Notes to Consolidated Financial Statements in Part IV.

Information with respect to foreign and domestic sales and related information is also presented in Note 18, Business Segment Information, of Notes to Consolidated Financial Statements in Part IV.

Subsidiaries

Altair Nanotechnologies Inc. was incorporated under the laws of the province of Ontario, Canada in April 1973 under the name Diversified Mines Limited, which was subsequently changed to Tex-U.S. Oil & Gas Inc. in February 1981, then to Orex Resources Ltd. in November 1986, then to Carlin Gold Company Inc. in July 1988, then to Altair International Gold Inc. in March 1994, then to Altair International Inc. in November 1996 and then to Altair Nanotechnologies Inc. in July 2002. In July 2002, Altair Nanotechnologies Inc. redomesticated from the Ontario Business Corporations Act to Canada's federal corporate statute, the Canada Business Corporations Act.

Altair US Holdings, Inc. was incorporated by Altair in December 2003 for the purpose of facilitating a corporate restructuring and consolidation of all U.S. subsidiaries under a U.S. holding company. At the completion of the corporate restructuring, Fine Gold, MRS, and Altairnano, Inc. (f/k/a Altair Nanomaterials, Inc.) were direct wholly-owned subsidiaries of Altair US Holdings, Inc., while Tennessee Valley Titanium, Inc. previously a wholly-owned subsidiary of MRS, has been dissolved.

Altair acquired Fine Gold in April 1994. Fine Gold has earned no operating revenues to date. Fine Gold acquired the intellectual property associated with the now defunct Altair jig, a fine particle separation device for use in minerals processing, in 1996. Fine Gold was formally dissolved on December 30, 2008.

Mineral Recovery Systems, Inc., or MRS, was incorporated in April, 1987 and was formerly known as Carlin Gold Company. MRS previously has been involved in the exploration for minerals on unpatented mining claims in Nevada, Oregon and California and the holding of mineral leases in Tennessee. Other than a single mineral lease related to the remediation site in Tennessee, MRS does not continue to hold any properties or leases.

Altair Nanomaterials, Inc. was incorporated in 1998 as a wholly-owned subsidiary of MRS and holds all of our interest in our nanomaterials and titanium dioxide pigment technology and related assets. Altair Nanomaterials Inc. was subsequently renamed Altairnano, Inc. on July 6, 2006.

AlSher Titania LLC was incorporated in April 2007 as a joint venture company which is 70% owned by Altairnano, Inc. This company was formed to combine certain technologies of Altairnano, Inc. with the Sherwin-Williams Company in order to develop, market, and produce titanium dioxide pigment for use in a variety of applications.

Corporate History

Altair Nanotechnologies Inc. was incorporated under the laws of the Province of Ontario, Canada in April 1973 for the purpose of acquiring and exploring mineral properties. It was redomesticated in July 2002 from the Business Corporations Act (Ontario) to the Canada Business Corporations Act, a change that causes Altair to be governed by Canada's federal corporate statute. The change reduced the requirement for resident Canadian directors from 50% to 25% of the board of directors, which gives us greater flexibility in selecting qualified nominees to our board.

During the period from inception through 1994, we acquired and explored multiple mineral properties. In each case, sub-economic mineralization was encountered and the exploration was abandoned.

Beginning in 1996, we entered into leases for mineral property near Camden, Tennessee and owned the rights to the Altair jig. However, we have terminated our leases on all of the Tennessee mineral properties and are limiting our expenditures on our centrifugal jig to patent maintenance expenses. Since we see no future opportunities in this area we are currently in the process of disposing of these jigs and patents.

In November 1999, we acquired all the rights of BHP Minerals International, Inc., or BHP, in the nanomaterials and titanium dioxide pigment technologies and the nanomaterials and titanium dioxide pigment assets from BHP. We are employing the nanomaterials and titanium dioxide pigment technology as a platform for the sale of contract services, intellectual property licenses and for the production and sale of metal oxide nanoparticles in various applications.

We have experienced an operating loss in every year of operation. In the fiscal year ended December 31, 2008, we experienced a net loss of $29,068,165.

Employees

Our business is currently managed by Dr. Terry Copeland, President and Chief Executive Officer, Mr. John Fallini, Chief Financial Officer, Dr. Bruce Sabacky, Chief Technology Officer, Mr. Steven Balogh, Vice President – Human Resources, Mr. Dan Voelker, Vice President Operations, and Mr. C. Robert Pedraza, Vice President – Corporate Strategy and Business Development. Dr. Alan J. Gotcher was the President and Chief Executive Officer of the Company until February 27, 2008. We have 92 additional regular employees. As of December 31, 2008, we have employment agreements with Messrs. Copeland, Fallini, Balogh, Pedraza, Sabacky and Voelker.

17

During 2009, we may hire additional employees, primarily in operations and engineering. Such additional hiring, if it occurs, will be dependent upon business volume growth.

Available Information

We file annual, quarterly and current reports and other information with the SEC. These materials can be inspected and copied at the SEC's Public Reference Room at 100 F Street, N.E., Washington, D.C. 20549. Copies of these materials may also be obtained by mail at prescribed rates from the SEC's Public Reference Room at the above address. Information about the Public Reference Room can be obtained by calling the SEC at 1-800-SEC-0330. The SEC also maintains an Internet site that contains reports, proxy and information statements, and other information regarding issuers that file electronically with the SEC. The address of the SEC's Internet site is www.sec.gov.

We make available, free of charge on our Internet website located at www.altairnano.com behind the "Investors" tab under "SEC Filings," our most recent Annual Report on Form 10-K, our most recent Quarterly Report on Form 10-Q, any current reports on Form 8-K filed since our most recent Annual Report on Form 10-K and any amendments to such reports as soon as reasonably practicable following the electronic filing of such report with the SEC. In addition, we provide electronic or paper copies of our filings free of charge upon request.

Enforceability of Civil Liabilities Against Foreign Persons

We are a Canadian corporation, and three of our directors and our Canadian legal counsel are residents of Canada. A fourth director is a resident of Dubai. As a result, investors may be unable to effect service of process upon such persons within the United States and may be unable to enforce court judgments against such persons predicated upon civil liability provisions of the U.S. securities laws. It is uncertain whether Canadian courts or Dubai courts would enforce judgments of U.S. courts obtained against us or such directors, officers or experts predicated upon the civil liability provisions of U.S. securities laws or impose liability in original actions against us or our directors, officers or experts predicated upon U.S. securities laws.

Forward-Looking Statements

This Report contains various forward-looking statements. Such statements can be identified by the use of the forward-looking words “anticipate,” “estimate,” “project,” “likely,” “believe,” “intend,” “expect,” or similar words. statements discuss future expectations, contain projections regarding future developments, operations, or financial conditions, or state other forward-looking information. When considering such forward-looking statements, you should keep in mind the risk factors noted in Item 1A and other cautionary statements throughout this Report and our other filings with the SEC. You should also keep in mind that all forward-looking statements are based on management’s existing beliefs about present and future events outside of management’s control and on assumptions that may prove to be incorrect. If one or more risks identified in this Report or any other applicable filings materializes, or any other underlying assumptions prove incorrect, our actual results may vary materially from those anticipated, estimated, projected, or intended.

Item 1A. Risk Factors

An investment in our common shares and related derivative securities involves significant risks. You should carefully consider the risks described in this Report before making an investment decision. Any of these risks could materially and adversely affect our business, financial condition or results of operations. In such case, you may lose all or part of your investment. Some factors in this section are forward-looking statements.

We may continue to experience significant losses from operations.

We have experienced a net loss in every fiscal year since our inception. Our losses from operations were $30,126,010 in 2008, $33,067,474 in 2007 and $17,681,415 in 2006. Even if we do generate operating income in one or more quarters in the future, subsequent developments in the economy, our industry, customer base, business or cost structure, or an event such as significant litigation or a significant transaction, may cause us to again experience operating losses. We may never become profitable.

Our quarterly operating results have fluctuated significantly in the past and will continue to fluctuate in the future, which could cause our stock price to decline.

Our quarterly operating results have fluctuated significantly in the past, and we believe that they will continue to fluctuate in the future, due to a number of factors, many of which are beyond our control. If in future periods our operating results do not meet the expectations of investors or analysts who choose to follow our company, our stock price may fall. Factors that may affect our quarterly operating results include the following:

- fluctuations in the size and timing of customer orders from one quarter to the next;
- timing of delivery of our services and products;
- additions of new customers or losses of existing customers;
- positive or negative business or financial developments announced by our key customers;
- our ability to commercialize and obtain orders for products we are developing;
- costs associated with developing our manufacturing capabilities;
- new product announcements or introductions by our competitors or potential competitors;
- the effect of variations in the market price of our common shares on our equity-based compensation expenses;
- technology and intellectual property issues associated with our products; and
- general political, social, geopolitical and economic trends and events.

A majority of our revenue has historically been generated from low-margin contract research and development services; if we cannot expand revenues from other products and services, our business will fail.

Historically, a majority of our revenue has come from contract research and development services for businesses and government agencies. During the years ended December 31, 2008, 2007 and 2006, contract service revenues comprised 87%, 55% and 67% respectively, of our operating revenues. Contract services revenue is low margin, or has negative margins, and is unlikely to grow at a rapid pace. Our business plan anticipates revenues from product sales and licensing, both of which have potential for higher margins than contract services and have potential for rapid growth, increasing in coming years. If we are not successful in significantly expanding our revenues, or if we are forced to accept low or negative margins in order to achieve revenue growth, we may fail to reach profitability in the future.

Our patents and other protective measures may not adequately protect our proprietary intellectual property, and we may be infringing on the rights of others.

We regard our intellectual property, particularly our proprietary rights in our nanomaterials technology, as critical to our success. We have received various patents, and filed other patent applications, for various applications and aspects of our nanomaterials technology and other intellectual property. In addition, we generally enter into confidentiality and invention agreements with our employees and consultants. Such patents and agreements and various other measures we take to protect our intellectual property from use by others may not be effective for various reasons, including the following:

- Our pending patent applications may not be granted for various reasons, including the existence of conflicting patents or defects in our applications;
- The patents we have been granted may be challenged, invalidated or circumvented because of the pre-existence of similar patented or unpatented intellectual property rights or for other reasons;
- Parties to the confidentiality and invention agreements may have such agreements declared unenforceable or, even if the agreements are enforceable, may breach such agreements;
- The costs associated with enforcing patents, confidentiality and invention agreements or other intellectual property rights may make aggressive enforcement cost prohibitive;
- Even if we enforce our rights aggressively, injunctions, fines and other penalties may be insufficient to deter violations of our intellectual property rights; and
- Other persons may independently develop proprietary information and techniques that, although functionally equivalent or superior to our intellectual proprietary information and techniques, do not breach our patented or unpatented proprietary rights.

Because the value of our company and common shares is rooted primarily in our proprietary intellectual property rights, our inability to protect our proprietary intellectual property rights or gain a competitive advantage from such rights could harm our ability to generate revenues and, as a result, our business and operations.

In addition, we may inadvertently be infringing on the proprietary rights of other persons and may be required to obtain licenses to certain intellectual property or other proprietary rights from third parties. Such licenses or proprietary rights may not be made available under acceptable terms, if at all. If we do not obtain required licenses or proprietary rights, we could encounter delays in product development or find that the development or sale of products requiring such licenses is foreclosed.

The commercialization of many of our technologies is dependent upon the efforts of commercial partners and other third parties over which we have no or little control.

We do not have the expertise or resources to commercialize all potential applications of our nanomaterials and titanium dioxide pigment technology. For example, we do not have the resources necessary to complete the testing of, and obtain FDA approval for, RenaZorb and other potential life sciences products or to construct a commercial facility to use our titanium dioxide pigment production technology. Other potential applications of our technology, such as those related to our nano-structure LTO electrode materials, are likely to be developed in collaboration with third parties, if at all. With respect to these and substantially all other applications of our technology, the commercialization of a potential application of our technology is dependent, in part, upon the expertise, resources and efforts of our commercial partners. This presents certain risks, including the following:

- we may not be able to enter into development, licensing, supply and other agreements with commercial partners with appropriate resources, technology and expertise on reasonable terms or at all;
- our commercial partners may not place the same priority on a project as we do, may fail to honor contractual commitments, may not have the level of resources, expertise, market strength or other characteristics necessary for the success of the project, may dedicate only limited resources to, and/or may abandon, a development project for reasons, including reasons, such as a shift in corporate focus, unrelated to its merits;
- our commercial partners may be in the early stages of development and may not have sufficient liquidity to invest in joint development projects, expand their businesses and purchase our products as expected or honor contractual commitments;
- our commercial partners may terminate joint testing, development or marketing projects on the merits of the projects for various reasons, including determinations that a project is not feasible, cost-effective or likely to lead to a marketable end product;
- at various stages in the testing, development, marketing or production process, we may have disputes with our commercial partners, which may inhibit development, lead to an abandonment of the project or have other negative consequences; and
    - even if the commercialization and marketing of jointly developed products is successful, our revenue share may be limited and may not exceed our associated development and operating costs.

As a result of the actions or omissions of our commercial partners, or our inability to identify and enter into suitable arrangements with qualified commercial partners, we may be unable to commercialize apparently viable products on a timely and cost-effective basis, or at all.

Interest in our nano-structured LTO battery materials and batteries is affected by energy supply and pricing, political events, popular consciousness and other factors over which we have no control.

Currently, our marketing and development efforts for our batteries and battery materials are focused primarily on transportation, military and stationary power applications. In the transportation and military markets, batteries containing our nano-structured LTO materials are designed to replace or supplement gasoline and diesel engines. In the stationary power applications, our batteries are designed to conserve and regulate the stable supply of electricity, including from renewable sources. The interest of our potential customers and business partners in our products and services is affected by a number of factors beyond our control, including:

- economic conditions and capital financing and liquidity constraints;
- short-term and long-term trends in the supply and price of gasoline, diesel, coal and other fuels;
- the anticipated or actual granting or elimination by governments of tax and other financial incentives favoring electric or hybrid electric vehicles and renewable energy production;
- the anticipated or actual funding, or elimination of funding for, programs that support renewable energy programs, electric grid improvements, certain military electric vehicle initiatives and related programs;
- changes in public and investor interest, for financial and/or environmental reasons, in supporting or adopting alternatives to gasoline and diesel for transportation and other purposes;
- the overall economic environment and the availability of credit to assist customers in purchasing our large battery systems;
- the expansion or contraction of private and public research and development budgets as a result of global and U.S. economic trends; and
- the speed of incorporation of renewable energy generating sources into the electric grid.

Our nano-structured LTO battery materials and battery business is currently dependent upon a few customers and potential customers, which presents various risks.

Our nano-structure LTO battery materials and battery business has historically been dependent upon a few customers, including the U.S. government, affiliates of AES Corporation and smaller companies developing electric or hybrid electric cars and buses. In addition, most of these customers are development partners, who are subsidizing the research and development of products for which they may be the sole, or one of a few, potential purchasers. As a result of the small number of potential customers and partners, our existing customers and partners may have significant leverage on pricing terms, exclusivity terms and other economic and noneconomic terms. This may harm our attempts to sell products at prices that reflect desired gross margins. In addition, the decision by a single customer to abandon use or development of a product, or budget cutbacks and other events harming the ability of a single customer to continue to purchase products or continue development, may significantly harm both our financial results and the development track of one or more products.

If we acquire or invest in other companies, assets or technologies and we are not able to integrate them with our business, or we do not realize the anticipated financial and strategic goals for any of these transactions, our financial performance may be impaired.

As part of our growth strategy, we routinely consider acquiring or making investments in companies, assets or technologies that we believe are strategic to our business. We do not have extensive experience in conducting diligence on, evaluating, purchasing or integrating new businesses or technologies, and if we do succeed in acquiring or investing in a company or technology, we will be exposed to a number of risks, including:

- we may find that the acquired company or technology does not further our business strategy, that we overpaid for the company or technology or that the economic conditions underlying our acquisition decision have changed;
- we may have difficulty integrating the assets, technologies, operations or personnel of an acquired company, or retaining the key personnel of the acquired company;
- our ongoing business and management's attention may be disrupted or diverted by transition or integration issues and the complexity of managing geographically or culturally diverse enterprises;
- we may encounter difficulty entering and competing in new product or geographic markets or increased competition, including price competition or intellectual property litigation; and
- we may experience significant problems or liabilities associated with product quality, technology and legal contingencies relating to the acquired business or technology, such as intellectual property or employment matters.

In addition, from time to time we may enter into negotiations for acquisitions or investments that are not ultimately consummated. These negotiations could result in significant diversion of management time, as well as substantial out-of-pocket costs. If we were to proceed with one or more significant acquisitions or investments in which the consideration included cash, we could be required to use a substantial portion of our available cash. To the extent we issue shares of capital stock or other rights to purchase capital stock, including options and warrants, existing stockholders would be diluted. In addition, acquisitions and investments may result in the incurrence of debt, large one-time write-offs, such as acquired in-process research and development costs, and restructuring charges.

We intend to expand our operations and increase our expenditures in an effort to grow our business. If we are unable to achieve or manage significant growth and expansion, or if our business does not grow as we expect, our operating results may suffer.

During the past several years, we have increased our research and development expenditures in an attempt to accelerate the commercialization of certain products, particularly our nano-structured LTO electrode materials and battery systems. Our business plan anticipates continued expenditure on development, manufacturing and other growth initiatives. We may fail to achieve significant growth despite such expenditures. If achieved, significant growth would place increased demands on our management, accounting systems, network infrastructure and systems of financial and internal controls. We may be unable to expand associated resources and refine associated systems fast enough to keep pace with expansion, especially as we expand into multiple facilities at distant locations. If we fail to ensure that our management, control and other systems keep pace with growth, we may experience a decline in the effectiveness and focus of our management team, problems with timely or accurate reporting, issues with costs and quality controls and other problems associated with a failure to manage rapid growth, all of which would harm our results of operations.

Our competitors have more resources than we do, and may be supported by more prominent partners, which may give them a competitive advantage.

We have limited financial, personnel and other resources and, because of our early stage of development, have limited access to capital. We compete or may compete against entities that are much larger than we are, have more extensive resources than we do and have an established reputation and operating history. In addition, certain of our early stage competitors may be partnered with, associated with or supported by larger business or financial partners. This may increase their ability to raise capital, attract media attention, develop products and attract customers despite their short operating history and small size. Because of their size, resources, reputation and history (or that of their business and financial partners) certain of our competitors may be able to exploit acquisition, development and joint venture opportunities more rapidly, easily or thoroughly than we can. In addition, potential customers may choose to do business with our more established competitors, without regard to the comparative quality of our products, because of their perception that our competitors are more stable, are more likely to complete various projects, are more likely to continue as a going concern and lend greater credibility to any joint venture.

We will not generate substantial revenues from our life science products unless proposed products receive FDA approval and achieve substantial market penetration.

We have entered into development and license agreements with respect to RenaZorb, a potential drug candidate for humans with kidney disease, and may enter into similar agreements with respect the other products. Most of the potential life sciences applications of our technologies are subject to regulation by the FDA and similar regulatory bodies. In general, license agreements in the life sciences area call for milestone payments as certain milestones related to the development of the products and the obtaining of regulatory approval are met; however, the receipt by the licensor of substantial recurring revenues is generally tied to the receipt of marketing approval from the FDA and the amount of revenue generated from the sale of end products. There are substantial risks associated with licensing arrangements, including the following:

- Further testing of potential life science products using our technology may indicate that such products are less effective than existing products, unsafe, have significant side effects or are otherwise not viable;
- The licensees may be unable to obtain FDA or other regulatory approval for technical, political or other reasons or, even if it obtains such approval, may not obtain such approval on a timely basis; in this regard, we note that Spectrum Pharmaceuticals, Inc., the license of RenaZorb, has been significantly delayed in testing on RenaZorb; and
- End products for which FDA approval is obtained, if any, may fail to obtain significant market share for various reasons, including questions about efficacy, need, safety and side effects or because of poor marketing by the licensee.

If any of the foregoing risks, or other risks associated with our life science products were to occur, we would not receive substantial, recurring revenue from our life science division, which would adversely affect our overall business, operations and financial condition.

We and Sherwin-Williams may be unable to find a new investor to participate in AlSher, and consequently terminate the joint venture disposing of its remaining assets.

We are currently working with Sherwin-Williams to identify an interested third party to invest in AlSher and undertake the next phase in the proposed development of our titanium dioxide pigment manufacturing process, which is the construction of an approximately 5,000 ton per year demonstration plant. Neither Sherwin nor Altair has indicated a willingness to fund this next phase of development. Should the parties be unable to find an acceptable third party investor, the AlSher joint venture will in all likelihood be terminated and its remaining assets written off or sold. If this joint venture is terminated, it is unlikely that we will realize any material revenue from its titanium dioxide pigment production process.

If manufacturing becomes a larger part of our operations, we will become exposed to accompanying risks and liabilities.

We have not produced any products using our nanomaterials and titanium dioxide pigment technology and equipment on a sustained commercial basis. In-house or outsourced manufacturing is expected to become an increasingly significant part of our business over the next few years. As a result, we expect to become increasingly subject to various risks associated with the manufacturing and supply of products, including the following:

- If we fail to supply products in accordance with contractual terms, including terms related to time of delivery and performance specifications, we may be required to repair or replace defective products and may become liable for direct, special, consequential and other damages, even if manufacturing or delivery was outsourced;
- Raw materials used in the manufacturing process, labor and other key inputs may become scarce and expensive, causing our costs to exceed cost projections and associated revenues;
- Manufacturing processes typically involve large machinery, fuels and chemicals, any or all of which may lead to accidents involving bodily harm, destruction of facilities and environmental contamination and associated liabilities;
- As our manufacturing operations expand, we expect that a significant portion of our manufacturing will be done overseas, either by third-party contractors or in a plant owned by the company. Any manufacturing done overseas presents risks associated with quality control, currency exchange rates, foreign laws and customs, timing and loss risks associated with overseas transportation and potential adverse changes in the political, legal and social environment in the host county; and
- We may have made, and may be required to make, representations as to our right to supply and/or license intellectual property and to our compliance with laws. Such representations are usually supported by indemnification provisions requiring us to defend our customers and otherwise make them whole if we license or supply products that infringe on third-party technologies or violate government regulations.

Any failure to adequately manage risks associated with the manufacture and supply of materials and products could lead to losses (or small gross profits) from that segment of our business and/or significant liabilities, which would harm our business, operations and financial condition.

We may not be able to raise sufficient capital to meet future obligations.

As of December 31, 2008, we had approximately $28.1 million in cash and cash equivalents. As we take additional steps to enhance our commercialization and marketing efforts, or respond to acquisition and joint venture opportunities or potential adverse events, our use of working capital may increase. In any such event, absent a comparatively significant increase in revenue, we will need to raise additional capital in order to sustain our ongoing operations, continue unfinished testing and additional development work and, if certain of our products are commercialized, construct and operate facilities for the production of those products.

We may not be able to obtain the amount of additional capital needed or may be forced to pay an extremely high price for capital. Factors affecting the availability and price of capital may include the following:

- market factors affecting the availability and cost of capital generally, including recent increases or decreases in major stock market indexes, the stability of the banking and investment banking systems and general economic stability or instability;
- the price, volatility and trading volume of our common shares;
- our financial results, particularly the amount of revenue we are generating from operations;
- the amount of our capital needs;
- the market's perception of companies in one or more of our lines of business;
- the economics of projects being pursued; and
- the market's perception of our ability to execute our business plan and any specific projects identified as uses of proceeds.

If we are unable to obtain sufficient capital or are forced to pay a high price for capital, we may be unable to meet future obligations or adequately exploit existing or future opportunities. If we are unable to obtain sufficient capital in the long run, we may be forced to curtail or discontinue operations.

Our past and future operations may lead to substantial environmental liability.

Virtually any prior or future use of our nanomaterials and titanium dioxide pigment technology is subject to federal, state and local environmental laws. In addition, we are in the process of reclaiming mineral property that we leased in Tennessee. Under applicable environmental laws, we may be jointly and severally liable with prior property owners for the treatment, cleanup, remediation and/or removal of any hazardous substances discovered at any property we use. In addition, courts or government agencies may impose liability for, among other things, the improper release, discharge, storage, use, disposal or transportation of hazardous substances. If we incur any significant environmental liabilities, our ability to execute our business plan and our financial condition would be harmed.

Certain of our experts and directors reside in Canada or Dubai and may be able to avoid civil liability.

We are a Canadian corporation, and three of our directors and our Canadian legal counsel are residents of Canada. A fourth director is a resident of Dubai. As a result, investors may be unable to effect service of process upon such persons within the United States and may be unable to enforce court judgments against such persons predicated upon civil liability provisions of the U.S. securities laws. It is uncertain whether Canadian or Dubai courts would enforce judgments of U.S. courts obtained against us or such directors, officers or experts predicated upon the civil liability provisions of U.S. securities laws or impose liability in original actions against us or our directors, officers or experts predicated upon U.S. securities laws.

We are dependent on key personnel.

Our continued success will depend, to a significant extent, on the services of our executive management team and certain key scientists and engineers. We do not have key man insurance on any of these individuals. Nor do we have agreements requiring any of our key personnel to remain with our company. The loss or unavailability of any or all of these individuals could harm our ability to execute our business plan, maintain important business relationships and complete certain product development initiatives, which would harm our business.

We may issue substantial amounts of additional shares without stockholder approval.

Our articles of incorporation authorize the issuance of an unlimited number of common shares that may be issued without any action or approval by our stockholders. In addition, we have various stock option plans that have potential for diluting the ownership interests of our stockholders. The issuance of any additional common shares would further dilute the percentage ownership of our company held by existing stockholders.

The market price of our common shares is highly volatile and may increase or decrease dramatically at any time.

The market price of our common shares is highly volatile. Our stock price may change dramatically as the result of announcements of product developments, new products or innovations by us or our competitors, uncertainty regarding the viability of our technology or any of our product initiatives, significant customer contracts, significant litigation or other factors or events that would be expected to affect our business, financial condition, results of operations and future prospects.

The market price for our common shares may be affected by various factors not directly related to our business or future prospects, including the following:

- intentional manipulation of our stock price by existing or future shareholders or a reaction by investors to trends in our stock rather than the fundamentals of our business;
- a single acquisition or disposition, or several related acquisitions or dispositions, of a large number of our shares, including by short sellers covering their position;
- the interest of the market in our business sector, without regard to our financial condition, results of operations or business prospects;
- positive or negative statements or projections about our company or our industry, by analysts, stock gurus and other persons;
- the adoption of governmental regulations or government grant programs and similar developments in the United States or abroad that may enhance or detract from our ability to offer our products and services or affect our cost structure; and
- economic and other external market factors, such as a general decline in market prices due to poor economic conditions, investor distrust or a financial crisis.

We may be delisted from the NASDAQ Capital Market if the price of our common shares does not remain above $1.00 per share.

Under NASDAQ rules, a stock listed on NASDAQ Capital Market must maintain a minimum bid price of at least $1.00 per share. During late 2008 and early 2009, the minimum bid price for our common shares has fallen below $1.00 on several occasions. As a matter of practice, NASDAQ generally gives a company a notice of delisting if its common shares trades below $1.00 for 30 consecutive trading days. After receiving the notice, the company will generally be delisted if the trading price for its common stock has not exceeded $1.00 for 10 consecutive days within 90 days of the date of the notice. NASDAQ has temporarily suspended its minimum bid price requirements until April 2009 in light of recent declines in the value of equity securities overall. NASDAQ is not, however, required to extend this rule suspension or give a company any grace period and may delist a company's stock immediately after violation of an applicable rule. Accordingly, if the price of our common shares trades below $1.00 for a sustained period of time, or if NASDAQ decides to delist our common shares based upon a one-time violation of the bid-price rule or any other rule, we may be delisted from the NASDAQ Capital Market.

Following any such delisting, our common shares would likely be eligible for quotation on the OTC Bulletin Board or other quotation service. Nonetheless, even if our common shares are quoted on an alternative quotation service, the fact of being delisted from the NASDAQ Capital Market will likely harm the price and trading volume for our common shares. Once delisted, our common shares would not be eligible for relisting until, among other things, our common shares traded at or above $4.00 per share.

We have never declared a cash dividend and do not intend to declare a cash dividend in the foreseeable future.

We have never declared or paid cash dividends on our common shares. We currently intend to retain any future earnings, if any, for use in our business and, therefore, do not anticipate paying dividends on our common shares in the foreseeable future.

We are subject to various regulatory regimes, and may be adversely affected by inquiries, investigations and allegations that we have not complied with governing rules and laws.

In light of our status as a public company and our lines of business, we are subject to a variety of laws and regulatory regimes in addition to those applicable to all businesses generally. For example, we are subject to the reporting requirements applicable to Canadian and United States reporting issuers, such as the Sarbanes-Oxley Act of 2002, the rules of the NASDAQ Capital Market and certain state and provincial securities laws. We are also subject to state and federal environmental, health and safety laws, and rules governing department of defense contracts. Such laws and rules change frequently and are often complex. In connection with such laws, we are subject to periodic audits, inquiries and investigations. Any such audits, inquiries and investigations may divert considerable financial and human resources and adversely affect the execution of our business plan.

Through such audits, inquiries and investigations, we or a regulator may determine that we are out of compliance with one or more governing rules or laws. Remedying such non-compliance diverts additional financial and human resources. In addition, in the future, we may be subject to a formal charge or determination that we have materially violated a governing law, rule or regulation. We may also be subject to lawsuits as a result of alleged violation of the securities laws or governing corporate laws. Any charge or allegation, and particularly any determination, that we had materially violated a governing law would harm our ability to enter into business relationships, recruit qualified officers and employees and raise capital.

Item 1B. Unresolved Staff Comments

None

Item 2. Description of Property

Our corporate headquarters is located at 204 Edison Way, Reno, Nevada 89502 in a building we purchased in August 2002. Our nanomaterials and titanium dioxide pigment assets are located in this building, which contains approximately 100,000 square feet of production, laboratory, testing and office space. We have pledged our corporate headquarters and associated land to secure a promissory note we issued to BHP Minerals International, Inc. in the amount of $3,000,000, at an interest rate of 7%. The balance on the note following our February 8, 2009 payment is $600,000. A final payment of $600,000 plus accrued interest is due on February 8, 2010.

In July 2007, we signed a new lease agreement effective as of July 1, 2007 for 30,000 square feet of space in the Flagship Business Accelerator Building located at 3019 Enterprise Drive, Anderson, Indiana. The space is used for the production of prototype batteries and battery cells. The lease is for an initial term of 5 years with a single one-year renewal term. On March 1, 2008, we signed an addendum to this lease that increased the space leased by 40,000 square feet and set forth corresponding adjustments in our rent. Total rent to be paid over the 5 year term including real estate taxes is $1,267,297. In addition to the Flagship lease, we rent another 2,210 square feet of space at 1305 W. 29th Street, Anderson, Indiana, on a month to month basis.

We also maintain a registered office at 360 Bay Street, Suite 500, Toronto, Ontario M5H 2V6. We do not lease any space for, or conduct any operations out of, the Toronto, Ontario registered office.

We have terminated the mineral leases on all but the primary lease for our Tennessee mineral property that is subject to remediation. Remediation work on the properties has been completed and reviewed by the applicable regulatory authorities. Final inspections and full release is expected to occur in the first half of 2009. Future remediation costs are not expected to be significant.

Item 3. Legal Proceedings

We are not a party to any pending or threatened litigation, the outcome of which could be expected to have a material adverse effect upon our financial condition, our results of operations or cash flows.

Item 4. Submission of Matters to a Vote of Security Holders

We did not submit any matters to a vote of security holders during the fourth quarter of the 2008 fiscal year.

PART II

Item 5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities

Market Price

Our common shares are traded on the NASDAQ Capital Market under the symbol "ALTI." The following table sets forth, during the periods indicated, the high and low sales prices for our common shares, as reported on our principal trading market at the time.

Fiscal Year Ended December 31, 2007	Low	High
1st Quarter	$2.48	$4.10
2nd Quarter	$2.92	$3.75
3rd Quarter	$2.80	$4.09
4th Quarter	$3.23	$5.45

Fiscal Year Ended December 31, 2008	Low	High
1st Quarter	$1.97	$4.81
2nd Quarter	$1.63	$2.73
3rd Quarter	$1.45	$2.94
4th Quarter	$0.75	$2.40

The last sale price of our common shares, as reported on the NASDAQ Capital Market on March 10, 2009, was $0.68 per share.

Outstanding Shares and Number of Shareholders

As of March 10, 2009, the number of common shares outstanding was 93,153,271 held by approximately 431 holders of record. In addition, as of the same date, we have reserved 4,176,416 common shares for issuance upon exercise of options that have been, or may be, granted under our employee stock option plans and 431,482 common shares for issuance upon exercise of outstanding warrants.

Dividends

We have never declared or paid cash dividends on our common shares. Moreover, we currently intend to retain any future earnings for use in our business and, therefore, do not anticipate paying any dividends on our common shares in the foreseeable future.

Securities Authorized for Issuance under Equity Compensation Plans

We have stock option plans administered by the Compensation Committee of our Board of Directors that provide for the granting of options to employees, officers, directors and other service providers of the Company. Security holders have approved all option plans. The following table sets forth certain information with respect to compensation plans under which equity securities are authorized for issuance at December 31, 2008:

Plan Category	Number of securities to be issued upon exercise of outstanding options, warrants and rights (a)	Weighted-average exercise price of outstanding options, warrants and rights (b)	Number of securities remaining available for future issuance under equity compensation plans (excluding securities reflected in column (a)) (c)
Equity compensation plans approved by security holders	3,956,507	$3.028	5,420,419
Equity compensation plans not approved by security holders	None	N/A	None
Total	3,956,507	$3.028	5,420,419

Recent Sales of Unregistered Securities

Except as previously reported, we did not sell any securities in transactions that were not registered under the Securities Act in the quarter ended December 31, 2008.

Transfer Agent and Registrar

The Transfer Agent and Registrar for our common shares is Equity Transfer Services, Inc., 200 University Ave, Suite 400, Toronto, Ontario, M5H 4H2.

Certain Canadian Federal Income Tax Considerations

Dividends paid on our common shares which are owned by non-residents of Canada (for purposes of the Income Tax Act (Canada)(the “Tax Act”)(a “Non-Resident”) will be subject to Canadian withholding tax generally at the rate of 25%. However, Article X of the Canada -United States Income Tax Convention (1980), as amended, (the “Treaty”) generally limits the rate of withholding tax on dividends paid to United States residents to 15%. The Treaty further limits the rate of withholding tax to 5% if the beneficial owner of the dividends is a U.S. company that owns at least 10% of the voting shares of the Company.

A capital gain realized on the disposition of our common shares by a Non-Resident will generally not be subject to tax under the Tax Act provided the shares are not “taxable Canadian property” of the Non-Resident. In general, our common shares will not be taxable Canadian property of a Non-Resident at a particular time provided that: (i) such shares are listed on a “designated stock exchange” (which currently includes NASDAQ) for the purposes of the Tax Act at the time of disposition; and (ii) at no time during the 60 month period immediately preceding the disposition of such shares were 25% or more of the issued shares of any class or series of the our capital stock owned by the Non-Resident, by persons with whom the Non-Resident did not deal at arm’s length, or by the Non-Resident together with such persons.

This summary is of a general nature only and is not intended to be, nor shall be construed to be, legal or tax advice to any particular Non-Resident. Accordingly, Non-Resident holders of our common shares are urged to consult their own tax advisors for advice with regard to their particular circumstances

Item 6. Selected Financial Data

The following table sets forth selected consolidated financial information with respect to the Company and its subsidiaries for the periods indicated. The data is derived from financial statements prepared in accordance with accounting principles generally accepted in the United States of America ("U.S. GAAP"). The selected financial data should be read in conjunction with the section entitled "Management's Discussion and Analysis of Financial Condition and Results of Operations" and the consolidated financial statements and accompanying notes included herein. All amounts are stated in U.S. dollars.

For the Year Ended December 31,	2008	2007	2006	2005	2004
STATEMENTS OF OPERATIONS					
Revenues	$ 5,726,310	$ 9,108,483	$ 4,323,960	$ 2,806,535	$ 1,151,892
Operating expenses	$ (35,852,320)	$ (42,175,957)	$ (22,005,375)	$ (13,288,388)	$ (8,056,847)
Interest expense	$ (97,091)	$ (134,254)	$ (171,500)	$ (207,189)	$ (194,180)
Interest income	$ 981,891	$ 1,101,682	$ 654,182	$ 750,306	$ 96,229
(Loss) Gain on foreign exchange	$ (9,820)	$ (1,292)	$ (1,550)	$ 1,524	$ 626
Realized loss on investment	$ (88,701)	$ -	$ -	$ -	$ -
Loss from continuing operations before minority interests' share	$ (29,339,731)	$ (32,101,338)	$ (17,200,283)	$ (9,937,212)	$ (7,002,280)
Minority interests' share	$ 271,566	$ 630,717	$ -	$ -	$ -
Net Loss	$ (29,068,165)	$ (31,470,621)	$ (17,200,283)	$ (9,937,212)	$ (7,002,280)
Basic and diluted net loss percommon share	$ (0.34)	$ (0.45)	$ (0.29)	$ (0.17)	$ (0.14)
Cash dividends declared per common share	$ -	$ -	$ -	$ -	$ -
BALANCE SHEET DATA					
Working capital	$ 26,066,847	$ 39,573,052	$ 25,928,376	$ 21,482,766	$ 7,663,264
Total assets	$ 48,071,036	$ 73,858,635	$ 43,120,573	$ 33,464,016	$ 15,547,021
Current liabilities	$ (3,646,646)	$ (14,328,781)	$ (3,499,862)	$ (2,427,543)	$ (376,773)
Long-term obligations	$ (608,299)	$ (1,200,000)	$ (1,800,000)	$ (2,400,000)	$ (2,880,311)
Minority Interest in Subsidiary	$ (1,097,717)	$ (1,369,283)	$ -	$ -	$ -
Net shareholders' equity	$ (42,718,374)	$ (56,960,571)	$ (37,820,711)	$ (28,636,473)	$ (12,289,937)

Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations.

The following discussion should be read in conjunction with the consolidated financial statements and notes thereto.

Overview

We are a Canadian corporation, with principal assets and operations in the United States, whose primary business is developing and commercializing nanomaterial and titanium dioxide pigment technologies. For nearly all of 2008, we were organized into three divisions, a Power and Energy Group (formally known as the Advanced Materials and Power Systems Division), a Performance Materials Division, and a Life Sciences Division. Our research, development, production and marketing efforts are currently directed toward three primary market applications that utilize our proprietary technologies:

32

- Power and Energy Group

- The design, development, and production of our nano lithium titanate battery cells, batteries, and battery packs as well as related design and test services.
- The development, production and sale for testing purposes of electrode materials for use in a new class of high performance lithium ion batteries called nano lithium titanate batteries.

- Performance Materials Division

- Through AlSher Titania, the development and production of high quality titanium dioxide pigment for use in paint and coatings, and nano titanium dioxide materials for use in a variety of applications including those related to removing contaminants from air and water.
- The testing, development, marketing and/or licensing of nano-structured ceramic powders for use in various application, such as advanced performance coatings, air and water purification systems, and nano-sensor applications.

- Life Sciences Division

- The co-development of RenaZorb, a test-stage active pharmaceutical ingredient, which is designed to be useful in the treatment of elevated serum phosphate levels in patients undergoing kidney dialysis.
- The development of a manufacturing process related to a test-stage active pharmaceutical ingredient, which is designed to be useful in the treatment of companion animals.

We also provide contract research services on select projects where we can utilize our resources to develop intellectual property and/or new products and technology. Although contract services revenue comprised a significant portion of our total revenues in recent years accounting for 87%, 55%, and 67%, respectively in 2008, 2007 and 2006, we do not expect this to continue. Near the end of 2008, we made the decision to focus on Power and Energy products as we believe that area contains the most promise for the Company. In the summary of our business below, we describe our various research products in connection with our description of the business segment to which each relates.

Our revenues have been, and we expect them to continue to be, generated by license fees, product sales, commercial collaborations and contracts and grants. We currently have agreements in place to (1) provide research to further develop battery electrode materials, nanosensors, and nanomaterials characterization, (2) participate in a joint venture combining the technologies of the partners in order to develop and produce titanium dioxide pigment for use in a variety of applications, (3) develop a suite of energy storage solutions for the stationary power market (4) develop battery backup power systems for Naval applications and (5) develop power and energy systems for other military applications. In addition, we have entered into a licensing agreement for RenaZorb, our pharmaceutical candidate for treatment of chronic renal failure in humans. We have made product sales consisting principally of battery packs and nano lithium titanate. Future revenues will depend on the success of our contracted projects, the results of our other research and development work, the success of the RenaZorb application licensee in obtaining regulatory approval for the drugs, or other products, and the success of our marketing efforts with respect to both product sales and technology licenses. In 2008, our development partner for a pharmaceutical candidate for the animal treatment market, Elanco Animal Health, made the decision to terminate spending on that program and our Service Agreement with Elanco was subsequently terminated. We continue to pursue another partner for the development of that product.

General Outlook

We have generated net losses in each fiscal year since incorporation. Revenues from product sales, commercial collaborations and contracts and grants decreased significantly in 2008, as did operating expenses. The revenue decrease was due almost entirely to the reduced level of product sales in the automotive sector as a result of the difficulties encountered by Phoenix MC in launching their electric vehicle. The operating expense decrease was primarily the result of several one-time events related to the November 2007 financing and the Phoenix MC battery replacement. Our gross profit margins on customer contracts for research and development work are very low, and as a result we have shifted our focus to move away from these opportunities. Our current focus is on the development of products and technologies in energy storage that we anticipate will eventually bring a substantial amount of higher-margin revenues from licensing, manufacturing, product sales and other sources. We expect our nano lithium titanate batteries and battery materials to be a source of such higher-margin revenues. Consequently, during 2008, we continued to expand the scope of our Power and Energy Group by (1) hiring additional staff and increasing temporary personnel to handle the conversion from a prototype to a commercial product, (2) adding additional sales and marketing personnel to focus on this market, and (3) acquiring test and production equipment.

As we attempt to significantly expand our revenues from licensing, manufacturing, sales and other sources, some of the key near-term events that will affect our long-term success prospects include the following:

- In May 2008, we successfully completed the trial of a 2 megawatt battery system with AES Energy Storage, LLC, a subsidiary of global power leader The AES Corporation. Under the terms of the Agreement, KEMA (an independent third party) designed and oversaw the system testing and then prepared a final report assessing the battery system's performance. The system performed well and according to KEMA the battery system "successfully demonstrated the potential of using the new battery technology for utility applications. There were no inherent design limitations identified in its application within the designed 1-MW power handling range." Based on the success of this trial we are continuing to develop our relationship with AES and have generated a substantial amount of interest in the product from other entities.

- In July 2008, we terminated our contractual relationship with Phoenix to provide them with lithium titanate battery packs and resolved all outstanding issues with them. The transportation market in general for lithium ion batteries has been slower to develop than we initially anticipated. As a consequence, we have shifted more of our focus to stationary power and military applications that are evolving more rapidly.

- Our efforts with the U.S. military and the British Ministry of Defense ("MoD") continue to move forward positively on a number of different projects. Initial testing phases on each project with the U.S. Army, U.S. Navy and MoD have all progressed impressively and ongoing government funding for 2009 is in place.

- Spectrum must begin the testing and application processes necessary to receive FDA approval of RenaZorb and related products. Spectrum is currently doing an in-vivo competitive study to determine the efficacy of the alternate high surface area product they requested from us compared to Fosrenol. This will take approximately two months to complete. Then, if RenaZorb performs well against Fosrenol, Spectrum has indicated that it will begin the pre-clinical work which originally was expected to take about one year to complete. Consequently, we now do not expect the application to be filed until mid 2010.

- We previously had formed the AlSher Titania joint venture with The Sherwin-Williams Company to develop and produce titanium dioxide pigment for use in paint and coatings. During 2008, the 100 ton per annum pilot plant was commissioned and operated producing pigment material for evaluation and to provide engineering data to complete a cost study relating to the anticipated scale up to a 5,000 ton per annum demonstration plant. Engineering data was produced and delivered to The Sherwin-Williams Company in the first week of

January 2009. At this time, neither Sherwin-Williams nor Altair is willing to commit the resources necessary to build the 5,000 ton per annum demonstration plant. AlSher continues to look for a third party interested in this technology.

Although it is not essential that all of these projects be successful in order to permit substantial long-term revenue growth, we believe that full commercialization of several of our technologies will be necessary in order to expand our revenues enough to create a likelihood of our becoming profitable in the long term. We remain optimistic with respect to our current key projects, as well as others we are pursuing, but recognize that, with respect to each, there are development, marketing, partnering and other risks to be overcome.

Liquidity and Capital Resources

Current and Expected Liquidity

Our cash and short-term investments decreased from $50,146,117 at December 31, 2007 to $28,088,454 at December 31, 2008. In September 2008, we entered into a Stock Purchase and Settlement Agreement with Al Yousuf LLC in which Al Yousuf purchased 5,882,353 common shares for $10,000,000 and received another 2,117,647 common shares in settlement for all potential claims resulting from its 2007 investment of $40 million. Exercises of stock options and warrants and other cash inflows, including the Al Yousuf stock purchase, increased cash by $11,001,101. These increases were offset by cash used to fund operations of $30,051,289 and to purchase fixed assets of approximately $3,007,474.

During the 12 months ended December 31, 2008, our cash used in operations was $30,051,289. This amount included $5,438,409 of significant one-time or annual payments in the first quarter of 2008 as follows: $2,384,299 of commission and expenses were paid to the placement agent in connection with our sale of common shares for an aggregate purchase price of $40,000,000 to Al Yousuf, LLC in November 2007, $1,754,110 was paid in connection with the 2007 bonus plan and $1,300,000 of raw materials purchases made in 2007 in anticipation of receipt of the next sales order from Phoenix under the 2007 purchase agreement.

We intend to use these funds for working capital, ongoing retirement of long-term debt, capital expenditures, research and development activities and the potential acquisition of other technologies. Net cash used in operations was $30,051,289 in 2008, and we expect to decrease funding of operations by approximately $5.9 million to approximately $24.2 million in 2009, net of anticipated revenues, based upon budgeted revenue growth and expansion of our production capabilities in 2009 and the non-recurrence of several large one-time costs in 2008. Over the long term, we anticipate substantially increasing revenues by entering into new contracts and increasing product sales in the stationary power market. However, this increase in revenues will be dependent on our ability to transition our stationary power products from prototypes into commercial grade products. During 2008, we continued making significant expenditures for our battery initiative, added staff and equipment for the manufacture of nanoparticle products and increased our sales and marketing efforts. In 2009, we intend to increase spending on our battery initiatives continuing the enhancement of our products and their conversion into commercial grade products. We estimate that our current cash and short-term investments balance is sufficient to support our operations through the end of 2009 based on budgeted cash flow projections.

Historically, we have financed operations primarily through the issuance of equity securities (common shares, convertible debentures, stock options and warrants) and by the issuance of debt. Depending upon the growth rate of our battery revenues, we will most likely need to raise additional capital to fund this growth during the second half of 2009. We do not have any commitments with respect to future financing and may, or may not, be able to obtain such financing on reasonable terms, or at all. We have a single note payable in the original principal amount of $3,000,000 that does not contain any restrictive covenants with respect to the issuance of additional debt or equity securities by Altair. The first four payments of $600,000 of principal plus accrued interest were due and paid on February 8, 2006, 2007, 2008 and 2009. The final payment of principal and interest is due on February 8, 2010.

Capital Commitments and Expenditures

The following table discloses aggregate information about our contractual obligations and the periods in which payments are due as of December 31, 2008:

Contractual Obligations	Total	Less Than 1 Year	1-3 Years	4-5 Years	After 5 Years
Notes Payable	$ 1,332,133	$ 732,133	$ 600,000	$ -	$ -
Interest on Notes Payable	126,000	84,000	42,000	-	-
Contractual Service Agreements	1,526,707	1,526,707	-	-	-
Facilities and Property Operating Leases	1,012,614	277,608	586,254	148,752	-
Property and Capital Leases	79,078	70,779	8,299	-	-
Unfulfilled Purchase Orders	534,299	534,299	-	-	-
Total Contractual Obligations	$ 4,610,831	$ 3,225,526	$ 1,236,553	$ 148,752	$ -

In connection with the formation of the AlSher Titania joint venture, under the first stage we committed to complete our pigment processing pilot plant and commissioned the plant by the end of February 2008. Total capital expenditures, labor and development costs associated with this effort were approximately $3.9 million. Considerable data has been generated and compiled into an engineering data package analysis and recommendation on next steps. Based on review of this package, its impact on financial projections, and input from our partner, we will consider in early 2009 whether to undertake a more detailed engineering cost study relating to the potential scale up to a significantly larger demonstration plant. At this time, neither Altair nor Sherwin-Williams has expressed a willingness to finance the construction of the development scale plant that would be required as the next major milestone. AlSher is actively seeking a partner or partners to participate in this next phase. Several companies with raw materials resources have indicated interest in the technology, but none has been willing to make any commitment up to now. Without additional capital, it is unlikely that AlSher will be able to independently fund this effort.

In July 2007, we signed a new lease agreement for 30,000 square feet of space in the Flagship Business Accelerator Building located at 3019 Enterprise Drive, Anderson, Indiana. On March 1, 2008, we signed an addendum to this lease that increased the space leased by 40,000 square feet. The move from the former office and laboratory space leased in the Flagship Enterprise Center Building to the Accelerator Building was completed by late February 2008. We have spent approximately $343,000 on build-out and leasehold improvements during 2008.

We purchased equipment for our Reno, Nevada facility for use in the development and expansion of our current advanced battery materials production capabilities. Through December 31, 2008, approximately $1.7 million was expended on production equipment.

Depending upon the speed of our revenue growth in 2009, we plan to spend approximately $24.7 million on production and tooling equipment associated with our Power and Energy Systems Group capacity expansion.

In 2008, after becoming aware of a module configuration problem in the first-generation Phoenix battery packs manufactured in 2007, we agreed to replace 47 of the packs by means of a credit against re-designed second-generation battery packs and related engineering services and recorded a warranty liability of $2,856,902 in the December 31, 2007 financial statements. In July, 2008 Phoenix agreed to take back the original 47 battery packs and to install an additional safety feature with them in the vehicles they planned to manufacture. In return, we forgave the $1.7 million in notes owed us by Phoenix, reversed the warranty liability and settled all outstanding claims between Phoenix and Altair. We do not anticipate further development or product sales with Phoenix in 2009.

Critical Accounting Policies and Estimates

Management based the following discussion and analysis of our financial condition and results of operations on our consolidated financial statements. The preparation of these financial statements requires us to make estimates and judgments that affect the reported amounts of assets, liabilities, revenue and expenses, and related disclosure of contingent assets and liabilities. On an on-going basis, we evaluate our critical accounting policies and estimates, including those related to long-lived assets, share-based compensation, revenue recognition, overhead allocation, allowance for doubtful accounts, inventory, and deferred income tax. We base our estimates on historical experience and on various other assumptions that we believe to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates under different assumptions or conditions.

We believe the following critical accounting policies affect the more significant judgments and estimates used in the preparation of our consolidated financial statements. These judgments and estimates affect the reported amounts of assets and liabilities and the reported amounts of revenues and expenses during the reporting periods. Changes to these judgments and estimates could adversely affect the Company’s future results of operations and cash flows.

- Long-Lived Assets. Our long-lived assets consist principally of the nanomaterials and titanium dioxide pigment assets, the intellectual property (patents and patent applications) associated with them, and a building. Included in these long-lived assets are those that relate to our research and development process. These assets are initially evaluated for capitalization based on Statement of Financial Accounting Standards (“SFAS”) No. 2, Accounting for Research and Development Costs. If the assets have alternative future uses (in research and development projects or otherwise), they are capitalized when acquired or constructed; if they do not have alternative future uses, they are expensed as incurred. At December 31, 2008, the carrying value of these assets was $14,649,822, or 30% of total assets. We evaluate the carrying value of long-lived assets when events or circumstances indicate that impairment may exist. In our evaluation, we estimate the net undiscounted cash flows expected to be generated by the assets, and recognize impairment when such cash flows will be less than the carrying values. Events or circumstances that could indicate the existence of a possible impairment include obsolescence of the technology, an absence of market demand for the product, and/or the partial or complete lapse of technology rights protection.

- Share-Based Compensation. We have a stock incentive plan that provides for the issuance of stock options, restricted stock and other awards to employees and service providers. We calculate compensation expense under SFAS 123R using a Black-Scholes Merton option pricing model. In so doing, we estimate certain key assumptions used in the model. We believe the estimates we use, which are presented in Note 11 of Notes to the Consolidated Financial Statements, are appropriate and reasonable.

- Revenue Recognition. We recognize revenue when persuasive evidence of an arrangement exists, delivery has occurred or service has been performed, the fee is fixed and determinable, and collectability is probable. During 2008, our revenues were derived from three sources: product sales, commercial collaborations, and contract research and development. License fees are recognized when the agreement is signed, we have performed all material obligations related to the particular milestone payment or other revenue component and the earnings process is complete. Revenue for product sales is recognized upon delivery of the product, unless specific contractual terms dictate otherwise. Based on the specific terms and conditions of each contract/grant, revenues are recognized on a time and materials basis, a percentage of completion basis and/or a completed contract basis. Revenue under contracts based on time and materials is recognized at contractually billable rates as labor hours and expenses are incurred. Revenue under contracts based on a fixed fee arrangement is recognized based on various performance measures, such as stipulated milestones. As these milestones are achieved, revenue is recognized. From time to time, facts develop that may require us to revise our estimated total costs or revenues expected. The cumulative effect of revised estimates is recorded in the period in which the facts requiring revisions become known. The full amount of anticipated losses on any type of contract is recognized in the period in which it becomes known. Payments received in advance relating to future performance of services or delivery of products are deferred until the performance of the service is complete or the product is shipped. Upfront payments received in connection with certain rights granted in contractual arrangements are deferred and amortized over the related time period over which the benefits are received. Based on specific customer bill and hold agreements, revenue is recognized when the inventory is shipped to a third party storage warehouse, the inventory is segregated and marked as sold, the customer takes the full rights of ownership and title to the inventory upon shipment to the warehouse per the bill and hold agreement. When contract terms include multiple components that are considered separate units of accounting, the revenue is attributed to each component and revenue recognition may occur at different points in time for product shipment, installation, and service contracts based on substantial completion of the earnings process.

- Accrued Warranty. We provide a limited warranty for battery packs and energy storage systems. A liability is recorded for estimated warranty obligations at the date products are sold. Since these are new products, the estimated cost of warranty coverage is based on cell and module life cycle testing and compared for reasonableness to warranty rates on competing battery products. As sufficient actual historical data is collected on the new product, the estimated cost of warranty coverage will be adjusted accordingly. The liability for estimated warranty obligations may also be adjusted based on specific warranty issues identified.

- Overhead Allocation. Facilities overheads, which are comprised primarily of occupancy and related expenses, and fringe benefit expenses, are initially recorded in general and administrative expenses and then allocated monthly to research and development expense based on labor costs. Facilities overheads and fringe benefits allocated to research and development projects may be chargeable when invoicing customers under certain research and development contracts.

- Allowance for Doubtful Accounts. The allowance for doubtful accounts is based on our assessment of the collectability of specific customer accounts and the aging of accounts receivable. We analyze historical bad debts, the aging of customer accounts, customer concentrations, customer credit-worthiness, current economic trends and changes in our customer payment patterns when evaluating the adequacy of the allowance for doubtful accounts. From period to period, differences in judgments or estimates utilized may result in material differences in the amount and timing of our bad debt expenses.

- Inventory. The Company values its inventories generally at the lower of cost (first-in, first-out method) or market. We employ a full absorption procedure using standard cost techniques. The standards are customarily reviewed and adjusted annually. Overhead rates are recorded to inventory based on normal capacity. Any idle facility costs or excessive spoilage are recorded as current period charges.

- Deferred Income Tax. Income taxes are accounted for using the asset and liability method. Deferred income tax assets and liabilities are recognized for the future tax consequences attributable to differences between the financial statement carrying amounts of existing assets and liabilities and their respective tax bases and operating loss and tax credit carry forwards. Deferred income tax assets and liabilities are measured using enacted tax rates expected to apply to taxable income in the years in which those temporary differences are expected to be recovered or settled. The effect on deferred income tax assets and liabilities of a change in tax rates is recognized in income in the period that includes the enactment date. Future tax benefits are subject to a valuation allowance when management is unable to conclude that its deferred income tax assets will more likely than not be realized from the results of operations. We have recorded a valuation allowance to reflect the estimated amount of deferred income tax assets that may not be realized. The ultimate realization of deferred income tax assets is dependent upon generation of future taxable income during the periods in which those temporary differences become deductible. Management considers projected future taxable income and tax planning strategies in making this assessment. Based on the historical taxable income and projections for future taxable income over the periods in which the deferred income tax assets become deductible, management believes it more likely than not that the Company will not realize benefits of these deductible differences as of December 31, 2008. Management has, therefore, established a full valuation allowance against its net deferred income tax assets as of December 31, 2008. Due to the significant increase in common shares issued and outstanding from 2005 through 2008, Section 382 of the Internal Revenue Code may provide significant limitations on the utilization of our net operating loss carry forwards. As a result of these limitations, a portion of these loss and credit carryovers may expire without being utilized.

Results of Operations

Fiscal Year 2008 vs. 2007

Revenues decreased by $3,382,173 from $9,108,483 in 2007 to $5,726,310 in 2008, while operating expenses decreased by $6,323,637, from $42,175,957 in 2007 to $35,852,320 in 2008. As a result, our loss from operations decreased by $2,941,464, from $33,067,474 in 2007 to $30,126,010 in 2008.

Product sales decreased from $4,058,281 in 2007 to $756,949 in 2008. The volume of battery packs sold to Phoenix dropped from 50 in 2007 to zero in 2008 resulting in a $3,047,687 decrease in product sales. The sales cycle associated with sales of our stationary power batteries for use in providing ancillary services over the grid has turned out to be longer than originally anticipated resulting in the slower ramp-up of revenue from that source.

Commercial collaborations revenues decreased $902,579, from $2,909,650 in 2007 to $2,007,072 in 2008. This decrease is primarily due to the discontinuance of the Western Oil Sands project in May 2008.

Contract and grant revenues increased from $2,140,552 in 2007 to $2,962,289 in 2008, principally in connection with a new grant received in January 2008 from the Office of Naval Research. This increase was offset by decreased revenues from several other grants as the grants concluded during the second and third quarters of 2008.

Cost of sales - product decreased by $4,981,380, from $5,163,987 in 2007 to $182,607 in 2008. This decrease is driven by the decrease in battery pack sales and other changes in product sales discussed above. Positive margins have not yet been achieved associated with the sale of battery packs due to scaling issues, and we expect that situation to continue well into 2009. As higher production volumes and cost reduction efforts are achieved, the margin on battery pack sales is expected to become positive.

Cost of sales - warranty and inventory reserves decreased by $9,708,180 in 2008, from $6,843,343 in 2007 to a credit of $2,864,837 in 2008. 2007 costs were high due to several one-time events including $3,927,353 for the write-off of all inventory balances on hand at December 31, 2007 of $2,529,938 relating to battery cells and modules, and $1,397,415 for cells ordered in 2007 for delivery in 2008. An additional decrease in reserves by $2,864,837 resulted from a letter of agreement effective July 2008 with Phoenix, whereby the 2007 purchase and supply agreement was terminated and the parties resolved all outstanding issues with respect to the warranty associated with the 47 battery packs sold in 2007.

Research and development expense increased by $1,464,744, from $15,443,703 in 2007 to $16,908,447 in 2008. Research and development payroll costs increased by $1,529,661 including fringe benefits expenses due to an increase in headcount of 27 from the start of 2007 through April of 2008, however, headcount has decreased by 21 from April 2008 through the conclusion of December 2008 to align personnel with required resources. Temporary labor costs decreased by $79,391 primarily due to the decrease in battery pack production and construction/testing of the pigment pilot plant. Excluding labor, research and development expenses in the Power and Energy Systems Group increased by $1,390,349 primarily due to: 1) materials relating to 2008 customer purchase orders and development agreements and 2) engineering and other research and development activities. Excluding labor, research and development expenses decreased by $961,633 in the Performance Materials Division primarily due to $304,374 as the Department of Energy Grant concluded in December 2007, $330,198 due to the relocation of Western Oil Sands to another facility in May 2008, and $389,589 from 2007 construction and testing of the pigment pilot plant. The remaining increase relates to other internal research and development.

Interest income decreased by $119,791 from $1,101,682 in 2007 to $981,891 in 2008. On average, a higher average level of cash during 2008 than in 2007 was more than offset by lower interest rates in 2008 than in 2007.

Fiscal Year 2007 vs. 2006

Revenues increased by $4,784,523, from $4,323,960 in 2006 to $9,108,483 in 2007, while operating expenses increased by $20,170,582, from $22,005,375 in 2006 to $42,175,957 in 2007. As a result, our loss from operations increased by $15,067,474, from $17,681,415 in 2006 to $33,067,474 in 2007.

Product sales increased from $961,380 in 2006 to $4,058,281 in 2007. The volume of battery packs sold to Phoenix grew from 11 in 2006 to 50 in 2007 resulting in a $2,293,329 increase in product sales. The remaining increase of $803,572 reflects a higher level of sales volume for prototype battery cells, battery modules, nano lithium titanate, and other nanomaterial products.

License fees decreased by $464,720 from 2006 to 2007. In 2006, license fees of $464,720 associated with the Spectrum Pharmaceutical and Elanco Animal Health contracts was recorded. In 2007, no additional milestones were achieved under these contracts.

Commercial collaborations revenues increased from $1,420,151 in 2006 to $2,909,650 in 2007 primarily due to $1,662,033 of increased billings associated with new contacts signed in 2007 with AES, the second phase of Elanco Animal Health development contract, and PPG. This increase was offset by $172,534 of non-recurring collaborations that were finalized in 2006.

Contract and grant revenues increased from $1,477,709 in 2006 to $2,140,552 in 2007, principally as a result of billings of $649,725 under the $2.5 million Department of Energy Earmark relating to the momentum gained in the project that was originally effective in September 2006, billings of $121,916 under our subcontract with PPG signed in July 2007 and billings of $140,731 under the University of Reno Nanosensors subcontract effective in January 2007. This increase was partially offset by a reduction in revenues of $249,528 primarily relating to the subcontract with the University of Nevada, Las Vegas Research Foundation and the National Science Foundation grant that were coming to completion in 2007.

Cost of sales - product increased by $4,129,556, from $1,034,431 in 2006 to $12,007,330 in 2007. This increase was driven by the increase in battery pack sales and other changes in product sales discussed above. Positive margins associated with the sale of battery packs were not achieved due to scaling issues, and a portion of the revenues relating to the battery packs was dependent upon the receipt of Zero Emission Credits. Through December 31, 2007, no ZEV credits were sold by Phoenix Motorcars, Inc.

Cost of sales – warranty and inventory reserves increased by $6,843,343 in 2007, as there was no warranty expense for 2006. $3,927,353 of this increase relates to a write-off of all inventory balances on hand at December 31, 2007 of $2,529,938 relating to battery cells and modules, and a $1,397,415 write-off of cells ordered in 2007 for delivery in 2008. The remaining increase of $2,915,990 relates to warranty reserves of $59,088 and $2,856,902 recorded based upon 2007 battery product sales to AES and Phoenix, respectively. The write off of inventory associated with the Phoenix battery packs and the warranty recorded in connection with Phoenix resulted from our decision to replace 47 of the Phoenix packs manufactured in 2007 under warranty provisions.

Research and development, or R&D, expense increased by $5,366,472, from $10,077,231 in 2006 to $15,443,703 in 2007. Research and development payroll costs increased by $2,602,663 including fringe benefits expenses due to an increase in headcount of 24. Temporary labor costs also increased by $572,597 primarily due to the growth in battery pack production and construction/testing of the pigment pilot plant. Excluding labor, research and development expenses in the Power and Energy Systems Group increased by $1,474,013 primarily due to the AES development agreement signed in 2007 and an increased focus on developing potential new battery products. Excluding labor, research and development expenses in the Life Sciences Division increased by $394,160 primarily due to work billed to us under our subcontract with the University of California Santa Barbara relating to the Department of Energy grant and signing of the second phase of the development contract with Elanco Animal Health in 2007. Excluding labor, research and development expenses increased by $298,758 in the Performance Materials Division primarily due to the construction and testing of the pigment pilot plant (increase of $353,947), increased spending on existing and new billable contracts (increase of $209,260), offset by non-recurring collaborations and subcontracts completed in 2006 (decrease of $264,449). The remaining increase relates to other internal research and development.

General and administrative expenses increased by $3,275,069, from $7,495,180 in 2006 to $10,770,249 in 2007. Stock based compensation expense, a non-cash item, increased by $1,876,880 due to a higher level of new employees eligible for and receiving option grants, as well as an overall higher level of employees who received retention grants in January 2007; payroll costs including fringe expense increased by $669,130 due to expansion of the executive team as well as other related increases in recruiting, relocation, and travel of $511,219; fringe benefit expenses allocable to all general and administrative personnel increased by $479,949 primarily due to a higher level of bonus earned in 2007; and accounting fees increased by $227,824 primarily due to tax reviews and re-filing of tax returns undertaken in 2007 in response to new accounting pronouncements. These increases were partially offset by $401,484 of expenses associated with a flood at our headquarters in Reno, Nevada in January 2006 and a decrease of $88,449 in other general and administrative expenses.

Interest income increased by $447,500, from $654,182 in 2006 to $1,101,682 in 2007. On average a higher level of cash was available for investment in 2007, $16 million in 2007 versus $10 million in 2006.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk.

None.

Item 8. Financial Statements and Supplementary Data.

Supplementary Data

The following Supplementary Financial Information for the fiscal quarters ended March 31, June 30, September 30 and December 31 in each of the years 2008 and 2007 was derived from our unaudited quarterly consolidated financial statements filed by us with the SEC in our Quarterly Reports on Form 10-Q with respect to such periods (except for 4th quarter data).

Supplementary Financial Information by Quarter, 2008 and 2007
(Unaudited)

	Quarter Ended March 31	Quarter Ended June 30	Quarter Ended September 30	Quarter Ended December 31
Year Ended December 31, 2008:				
Revenues	$ 1,069,337	$ 1,902,659	$ 1,801,615	$ 952,699
Operating Expenses	$ 9,818,532	$ 7,838,878	$ 11,124,480	$ 7,070,430
Net Loss	$ (8,288,436)	$ (5,660,322)	$ (9,110,966)	$ (6,008,441)
Loss per Common Share: (1)				
Basic and Diluted	$ (0.10)	$ (0.07)	$ (0.11)	$ (0.08)
Year Ended December 31, 2007:				
Revenues	$ 1,140,932	$ 3,065,868	$ 3,370,134	$ 1,531,549
Operating Expenses	$ 6,630,398	$ 8,915,384	$ 9,619,193	$ 16,710,982
Net Loss	$ (5,181,467)	$ (5,430,583)	$ (6,130,210)	$ (14,728,362)
Loss per Common Share: (1)				
Basic and Diluted	$ (0.07)	$ (0.08)	$ (0.09)	$ (0.20)

(1) Loss per common share is computed independently for each of the quarters presented. Therefore, the sum of the quarterly loss per common share amounts does not necessarily equal the total for the year.

Financial Statements

The financial statements required by this Item appear on pages F-4 through F-30 of this Report.

Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure.

None.

Item 9A. Controls and Procedures

Disclosure Controls and Procedures. Under the supervision and with the participation of our management, including our principal executive officer and principal financial officer, we conducted an evaluation of our disclosure controls and procedures, as such term is defined under Rule 13a-15(e) promulgated under the Securities Exchange Act of 1934, as amended (the "Exchange Act"), as of December 31, 2008. Based upon this evaluation, our chief executive officer and our chief financial officer have concluded that, as of December 31, 2008, our disclosure controls and procedures were effective in ensuring that information required to be disclosed by the Company in reports that it files under the Exchange Act is recorded, processed, summarized and reported within the time periods required by governing rules and forms.

Internal Control Over Financial Reporting. Our management is responsible for establishing and maintaining adequate internal control over financial reporting as defined in Rules 13a-15(f) under the Securities Exchange Act of 1934, as amended. Our internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with accounting principles generally accepted in the United States of America. Internal control over financial reporting includes those written policies and procedures that:

- pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of our assets;
- provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with accounting principles generally accepted in the United States of America;
- provide reasonable assurance that our receipts and expenditures are being made only in accordance with authorization of our management; and
- provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of assets that could have a material effect on our consolidated financial statements.

Internal control over financial reporting includes the controls themselves, monitoring and internal auditing practices and actions taken to correct deficiencies as identified.

Our management assessed the effectiveness our internal control over financial reporting as of December 31, 2008. Our management's assessment was based on criteria for effective internal control over financial reporting described in "Internal Control – Integrated Framework" issued by the Committee of Sponsoring Organizations of the Treadway Commission. Our management's assessment included an evaluation of the design of our internal control over financial reporting and testing of the operational effectiveness of our internal control over financial reporting. Our management reviewed the results of its assessment with the Audit Committee of our Board of Directors. Based on this assessment, our management determined that, as of December 31, 2008, we maintained effective internal control over financial reporting.

Perry-Smith LLP, independent registered public accounting firm, who audited and reported on our consolidated financial statements included in this report, has issued an attestation report on management's assessment of internal control over financial reporting. This attestation report appears on pages F-2 and F-3 of this report.

Changes In Internal Control Over Financial Reporting. There were no significant changes (including corrective actions with regard to significant deficiencies or material weaknesses) in our internal controls over financial reporting that occurred during the fourth quarter of fiscal 2008 that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

Item 9B. Other Information

None.

PART III

Item 10. Directors and Executive Officers of the Registrant

The information required by this Item is incorporated by reference to the section entitled "Election of Directors" in the Company's definitive proxy statement to be filed with the SEC.

Item 11. Executive Compensation

The information required by this Item is incorporated by reference to the section entitled "Executive Compensation" in the Company's definitive proxy statement to be filed with the SEC.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters

The information required by this Item is incorporated by reference to the section entitled "Security Ownership of Certain Beneficial Owners and Management" in the Company's definitive proxy statement to be filed with the SEC.

Item 13. Certain Relationships and Related Transactions

The information required by this Item is incorporated by reference to the section entitled "Certain Relationships and Related Transactions" in the Company's definitive proxy statement to be filed with the SEC.

Item 14. Principal Accountant Fees and Services

The information required by this Item is incorporated by reference to the section entitled “Principal Accounting Fees and Services” in the Company’s definitive proxy statement to be filed with the SEC.

PART IV

Item 15. Exhibits, Financial Statement Schedules and Reports on Form 8–K

(a) Documents Filed

1. Financial Statements. The following Consolidated Financial Statements of the Company and Auditors’ Report are filed as part of this Annual Report on Form 10-K:

- Report of Independent Registered Public Accounting Firm
- Report of Independent Registered Public Accounting Firm on Internal Control over Financial Reporting
- Consolidated Balance Sheets, December 31, 2008 and 2007
- Consolidated Statements of Operations for Each of the Three Years in the Period Ended December 31, 2008
- Consolidated Statements of Shareholders’ Equity and Comprehensive Loss for Each of the Three Years in the Period Ended December 31, 2008
- Consolidated Statements of Cash Flows for Each of the Three Years in the Period Ended December 31, 2008
- Notes to Consolidated Financial Statements

2. Financial Statement Schedule. Not applicable.

Exhibit List.

See the Exhibit Index following the signature page hereof.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the Registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized, on March 16, 2009.

ALTAIR NANOTECHNOLOGIES INC.

By: /s/ Terry Copeland
Terry Copeland,
President and Chief Executive Officer

Date: March 16, 2009

POWER OF ATTORNEY AND ADDITIONAL SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the following persons in the capacities and on the dates indicated have signed this Report. Each person whose signature to this Report appears below hereby constitutes and appoints Terry Copeland and John Fallini, and each of them, as his true and lawful attorney-in-fact and agent, with full power of substitution, to sign on his behalf individually and in the capacity stated below and to perform any acts necessary to be done in order to file all amendments and post-effective amendments to this Report, and any and all instruments or documents filed as part of or in connection with this Form Report or the amendments thereto and each of the undersigned does hereby ratify and confirm all that said attorney-in-fact and agent, or his substitutes, shall do or cause to be done by virtue hereof.

Signature	Title	Date
/s/ Terry Copeland Terry Copeland	President and Chief Executive Officer (Principal Executive Officer)	March 16, 2009
/s/ John Fallini John Fallini	Chief Financial Officer and Corporate Secretary (Principal Financial and Accounting Officer)	March 16, 2009
/s/ Terry Copeland Terry Copeland	Director	March 16, 2009
/s/ Michel Bazinet Michel Bazinet	Director	March 16, 2009
/s/ Jon N. Bengtson Jon N. Bengtson	Director	March 16, 2009
/s/ George E. Hartman	Director	March 16, 2009

George E. Hartman		
/s/ Robert F. Hemphill, Jr.	Director	March 16, 2009
Robert F. Hemphill, Jr.		
/s/ Pierre Lortie	Director	March 16, 2009
Pierre Lortie		
/s/ Robert G. van Schoonenberg	Director	March 16, 2009
Robert G. van Schoonenberg		
/s/ Eqbal Al Yousuf	Director	March 16, 2009
Eqbal Al Yousuf		

Exhibit Index

Exhibit No.	Description	Incorporated by Reference/ Filed Herewith (and Sequential Page #)
3.1	Articles of Continuance	Incorporated by reference to the Current Report on Form 8-K filed with the SEC on July 18, 2002.**
3.2	Bylaws	Incorporated by reference to the Amendment No. 1 to Annual Report on Form 10-K/A filed with the SEC on March 10, 2005. **
4.1	Form of Common Stock Certificate	Incorporated by reference to Registration Statement on Form 10–SB filed with the SEC on November 25, 1996. **
4.2	Amended and Restated Shareholder Rights Plan dated October 15, 1999, with Equity Transfer Services, Inc.	Incorporated by reference to the Company’s Current Report on Form 8-K filed with the SEC on November 19, 1999. **
10.1	Altair International Inc. Stock Option Plan (1996)	Incorporated by reference to the Company's Registration Statement on Form S-8, File No. 333-33481 filed with the SEC on July 11, 1997.
10.2	1998 Altair International Inc. Stock Option Plan	Incorporated by reference to the Company’s Definitive Proxy Statement on Form 14A filed with the SEC on May 12, 1998. **
10.3	Altair Nanotechnologies Inc. 2005 Stock Incentive Plan (Amended and Restated)	Incorporated by reference to the Company’s Annual Report on Form 10-K filed with the SEC on March 13, 2007.**
10.4	Standard Form of Stock Option Agreement under 2005 Stock Incentive Plan	Incorporated by reference to the Company’s Annual Report on Form 10-K filed with the SEC on March 13, 2007.**
10.5	Standard Form of Restricted Stock Agreement under 2005 Stock Incentive Plan	Incorporated by reference to the Company’s Annual Report on Form 10-K filed with the SEC on March 13, 2007.**
10.6	Installment Note dated August 8, 2002 (re Edison Way property) in favor of BHP Minerals International, Inc.	Incorporated by reference to the Company’s Amendment No. 1 to Registration Statement on Form S-2, File No. 333-102592, filed with the SEC on February 7, 2003.

10.7	Trust Deed dated August 8, 2002 (re Edison Way property) with BHP Minerals International, Inc.	Incorporated by reference to the Company's Amendment No. 1 to Registration Statement on Form S-2, File No. 333-102592, filed with the SEC on February 7, 2003.
10.8	Flagship Business Accelerator Tenant Lease dated July 1, 2007 with the Flagship Enterprise Center, Inc.	Incorporated by reference to the Company's Quarterly Report on Form 10-Q filed with the SEC August 9, 2007. **

Exhibit No.	Description	Incorporated by Reference/ Filed Herewith (and Sequential Page #)
10.9	Amendment to the Flagship Business Accelerator Tenant Lease dated March 1, 2008 with the Flagship Enterprise Center, Inc.	Incorporated by reference to the Company's Quarterly Report on Form 10-Q filed with the SEC on May 8, 2008.**
10.10	License Agreement dated January 28, 2005 with Spectrum Pharmaceuticals, Inc.*	Incorporated by reference from the Company's Current Report on Form 8-K filed with the SEC on February 4, 2005.**
10.11	Purchase and Supply Agreement dated January 8, 2007 with Phoenix Motorcars, Inc.*	Incorporated by reference to the Company's Current Report on Form 8-K filed with the SEC on January 12, 2007. **
10.12	Letter agreement dated July 20, 2008 with Phoenix Motorcars, Inc.	Incorporated by reference to the Company's Current Report on Form 8-K filed with the SEC on July 24, 2008. **
10.13	Department of Energy Grant Agreement dated September 9, 2006 with the U.S. Department of Energy	Incorporated by reference to the Annual Report on Form 10-K filed with the SEC on March 13, 2007.**
10.14	Subcontract dated March 6, 2007 with U.N.L.V.	Incorporated by reference to the Company's Quarterly Report on Form 10-Q filed with the SEC May 10, 2007. **
10.15	Contribution Agreement dated April 24, 2007 with the Sherwin-Williams Company and AlSher Titania*	Incorporated by reference to the Current Report on Form 8-K filed with the SEC on April 30, 2007. **
10.16	License Agreement dated April 24, 2007 with the Sherwin-Williams Company and AlSher Titania	Incorporated by reference to the Current Report on Form 8-K filed with the SEC on April 30, 2007. **
10.17	Development Services Agreement executed on September 25, 2007 between the Company and Elanco Animal Health*	Incorporated by reference to the Current Report on Form 8-K filed with the SEC on September 27, 2007, File No. 001-12497
10.18	Letter agreement dated April 21, 2006 with JP Morgan Securities, Inc.	Incorporated by reference to the Company's Current Report on Form 8-K filed with the SEC on November 30, 2007.**

10.19	Letter agreement dated September 24, 2007 with JPMorgan Securities, Inc.	Incorporated by reference to the Company's Current Report on Form 8-K filed with the SEC on November 30, 2007.**
10.20	Subcontract dated January 29, 2008 with the Office of Naval Research	Incorporated by reference to the Company's Annual Report on Form 10-K filed with the SEC on March 13, 2007.**

Exhibit No.	Description	Incorporated by Reference/ Filed Herewith (and Sequential Page #)
10.21	Service Agreement dated February 11, 2008 with Melpar BVBP	Incorporated by reference to the Company's Annual Report on Form 10-K filed with the SEC on March 13, 2007.**
10.22	Mandate & Contractorship Agreement dated February 11, 2008 with Rik Dobbelaere	Incorporated by reference to the Company's Annual Report on Form 10-K filed with the SEC on March 13, 2007.**
10.23	Employment Agreement dated December 17, 2006 with Alan J. Gotcher, Ph.D.	Incorporated by reference to the Company's Current Report on Form 8-K filed with the SEC on February 21, 2006.**
10.24	Amendment dated August 17, 2007 to Altair Executive Employment Agreement between the Company and Alan Gotcher	Incorporated by reference to the Current Report on Form 8-K filed with the SEC on August 17, 2007, File No. 001-12497
10.25	Separation Agreement and Release of All Claims dated April 18, 2008 with Alan Gotcher**	Incorporated by reference to the Company's Current Report on Form 8-K filed with the SEC on April 27, 2008.**
10.26	Employment Agreement dated December 17, 2006 with Edward Dickinson	Incorporated by reference to the Company's Current Report on Form 8-K filed with the SEC on February 21, 2006. **
10.27	Amendment dated August 17, 2007 to Altair Executive Employment Agreement between the Company and Edward Dickinson	Incorporated by reference to the Current Report on Form 8-K filed with the SEC on August 17, 2007, File No. 001-12497
10.28	Employment Agreement dated December 7, 2007 with Bruce Sabacky	Incorporated by reference to the Company's Current Report on Form 8-K filed with the SEC on December 7, 2007.**
10.29	Amendment dated August 17, 2007 to Altair Executive Employment Agreement between the Company and Bruce Sabacky	Incorporated by reference to the Current Report on Form 8-K filed with the SEC on August 17, 2007, File No. 001-12497
10.30	Employment Agreement dated June 26, 2008 with Terry Copeland	Incorporated by reference to the Company's Current Report on Form 8-K filed with the SEC on July 1, 2008.**
10.31		

	Employment Agreement dated March 10, 2008 with Jeffrey A. McKinney	Incorporated by reference to the Company's Annual Report on Form 10-K filed with the SEC on March 13, 2007.**
10.32	Separation Agreement and Release of All Claims dated September 5, 2008 with Jeffrey McKinney	Incorporated by reference to the Company's Annual Report on Form 10-K filed with the SEC on September 5, 2008.**
10.33	Employment Agreement dated March 10, 2008 with Stephen Balogh	Incorporated by reference to the Company's Annual Report on Form 10-K filed with the SEC on March 13, 2007.**

Exhibit No.	Description	Incorporated by Reference/ Filed Herewith (and Sequential Page #)
10.34	Employment Agreement dated April 7, 2008 with John Fallini	Incorporated by reference to the Company's Current Report on Form 8-K filed with the SEC on April 9, 2008.**
10.35	Employment Agreement dated June 16, 2008 with C. Robert Pedraza	Incorporated by reference to the Company's Current Report on Form 8-K filed with the SEC on June 20, 2008.**
10.36	Employment Agreement dated November 24, 2008 with Dan Voelker	Incorporated by reference to the Current Report on Form 8-K filed with the SEC on November 24, 2008, File No. 001-12497**
10.37	2007 Annual Executive Incentive Bonus Plan*	Incorporated by reference to the Annual Report on Form 10-K filed with the SEC on March 13, 2007. **
10.38	2008 Annual Incentive Bonus Plan*	Incorporated by reference to the Company's Current Report on Form 8-K filed with the SEC on July 2, 2008.**
10.39	Registration Rights Agreement dated November 29, 2007 with Al Yousuf LLC	Incorporated by reference to the Company's Current Report on Form 8-K filed with the SEC on November 30, 2007.**
10.40	Stock Purchase and Settlement Agreement with Al Yousuf, LLC dated October 6, 2008	Incorporated by reference to the Company's Current Report on Form 8-K filed with the SEC on October 6, 2008.**
21	List of Subsidiaries	Incorporated by reference from Item 1 of this report.
23.1	Consent of Perry-Smith LLP	Filed herewith.
24	Powers of Attorney	Included in the Signature Page hereof.
31.1	Rule 13-14(a)/15d-14a Certification of Chief Executive Officer	Filed herewith
31.2	Rule 13-14(a)/15d-15a Certification of Chief Financial Officer	Filed herewith
32.1	Section 1350 Certification of Chief Executive Officer	Filed herewith

32.2	Section 1350 Certification of Chief Financial Officer	Filed herewith

*Portions of this Exhibit have been omitted pursuant to Rule 24b-2, are filed separately with the SEC and are subject to a confidential treatment request.

** SEC File No. 1-12497.

Altair Nanotechnologies Inc.
and Subsidiaries

Consolidated Financial Statements as of December 31, 2008 and 2007 and for Each of the Three Years in the Period Ended December 31, 2008 and Reports of the Independent Registered Public Accounting Firm

ALTAIR NANOTECHNOLOGIES INC. AND SUBSIDIARIES

TABLE OF CONTENTS

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

The Shareholders and Board of Directors
Altair Nanotechnologies, Inc. and Subsidiaries

We have audited the consolidated balance sheets of Altair Nanotechnologies, Inc. and subsidiaries (the "Company") as of December 31, 2008 and 2007, and the related consolidated statements of operations, changes in stockholders' equity and comprehensive loss and cash flows for each of the three years in the period ended December 31, 2008. These consolidated financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these consolidated financial statements based on our audits.

We conducted our audits in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the consolidated financial position of the Company as of December 31, 2008 and 2007, and the consolidated results of their operations and their cash flows for each of the three years in the period ended December 31, 2008, in conformity with U.S. generally accepted accounting principles.

We have also audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States), Altair Nanotechnologies, Inc. and subsidiaries' internal control over financial reporting as of December 31, 2008, based on criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission and our report dated March 10, 2009 expressed an unqualified opinion on the effectiveness of the Company's internal control over financial reporting.

/s/ Perry-Smith LLP

Sacramento, California
March 10, 2009

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM ON INTERNAL CONTROL OVER FINANCIAL REPORTING

The Shareholders and Board of Directors
Altair Nanotechnologies, Inc. and Subsidiaries

We have audited Altair Nanotechnologies, Inc. and subsidiaries' (the "Company") internal control over financial reporting as of December 31, 2008, based on criteria established in Internal Control—Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (the "COSO criteria"). The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting. Our responsibility is to express an opinion on management's assessment and an opinion on the effectiveness of the Company's internal control over financial reporting based on our audit.

We conducted our audit in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audit also included performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with accounting principles generally accepted in the United States of America. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with accounting principles generally accepted in the United States of America, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM
ON INTERNAL CONTROL OVER FINANCIAL REPORTING

(Continued)

In our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2008, based on the COSO criteria.

We have also audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States), the consolidated balance sheets of the Company as of December 31, 2008 and 2007, and the related consolidated statements of operations, changes in stockholders' equity and comprehensive loss and cash flows for each of the three years in the period ended December 31, 2008 and our report dated March 10, 2009 expressed an unqualified opinion.

/s/ Perry-Smith LLP

Sacramento, California
March 10, 2009

PART I - FINANCIAL INFORMATION

Item 1. Financial Statements

ALTAIR NANOTECHNOLOGIES INC. AND SUBSIDIARIES
CONSOLIDATED BALANCE SHEETS
(Expressed in United States Dollars)

	December 31, 2008	December 31, 2007
ASSETS		
Current Assets		
Cash and cash equivalents	$ 28,088,454	$ 50,146,117
Accounts receivable, net	954,881	1,317,819
Notes receivable from related party, current portion	-	1,638,510
Product inventories	98,112	-
Prepaid expenses and other current assets	572,046	799,387
Total current assets	29,713,494	53,901,833
Investment in available for sale securities	3,173,703	4,564,814
Property, plant and equipment, net held and used	11,636,732	14,548,837
Property, plant and equipment, net held and not used	2,377,472	-
Patents, net	635,618	720,433
Other assets	534,018	122,718
Total Assets	$ 48,071,036	$ 73,858,635
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current Liabilities		
Trade accounts payable	$ 749,063	$ 7,814,037
Accrued salaries and benefits	1,360,828	2,239,110
Accrued warranty	36,470	2,915,990
Accrued liabilities	764,545	759,664
Current portion of long-term debt	735,740	600,000
Total current liabilities	3,646,646	14,328,781
Long-term debt, less current portion	608,299	1,200,000
Minority interest in subsidiary	1,097,717	1,369,283
Total Liabilities	5,352,662	16,898,064
Commitments and Contingencies		
Stockholders' Equity		

Common stock, no par value, unlimited shares authorized; 93,143,271 and 84,068,377 shares issued and outstanding at December 31, 2008 and December 31, 2007	180,105,301	163,780,176
Additional paid in capital	5,377,647	5,489,604
Accumulated deficit	(140,891,974)	(111,823,809)
Accumulated other comprehensive loss	(1,872,600)	(485,400)
Total Stockholders' equity	42,718,374	56,960,571
Total Liabilities and Stockholders' Equity	$ 48,071,036	$ 73,858,635

See notes to the consolidated financial statements.

ALTAIR NANOTECHNOLOGIES INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF OPERATIONS
(Expressed in United States Dollars)

	Year Ended December 31,		
	2008	2007	2006
Revenues			
Product sales	$ 756,949	$ 4,058,281	$ 961,380
License fees	-	-	464,720
Commercial collaborations	2,007,072	2,909,650	1,420,151
Contracts and grants	2,962,289	2,140,552	1,477,709
Total revenues	5,726,310	9,108,483	4,323,960
Operating Expenses			
Cost of sales – product	182,607	5,163,987	1,034,431
Cost of sales – warranty and inventory reserves	(2,864,837)	6,843,343	-
Research and development	16,908,447	15,443,703	10,077,231
Sales and marketing	2,950,371	2,000,799	1,878,783
Notes receivable extinguishment	1,721,919	-	-
Settlement and release	3,605,294	-	-
General and administrative	10,589,816	10,770,249	7,495,180
Depreciation and amortization	2,758,703	1,953,876	1,519,750
Total operating expenses	35,852,320	42,175,957	22,005,375
Loss from Operations	(30,126,010)	(33,067,474)	(17,681,415)
Other Income (Expense)			
Interest expense	(97,091)	(134,254)	(171,500)
Interest income	981,891	1,101,682	654,182
Loss on foreign exchange	(9,820)	(1,292)	(1,550)
Total other income, net	874,980	966,136	481,132
Impairment of Investment	(88,701)	-	-
Loss from continuing operations before minority interests' share	(29,339,731)	(32,101,338)	(17,200,283)
Less: Minority interests' share	271,566	630,717	-
Net Loss	$ (29,068,165)	$ (31,470,621)	$ (17,200,283)
Loss per common share - Basic and diluted	$ (0.34)	$ (0.45)	$ (0.29)
Weighted average shares - Basic and diluted	85,903,712	71,008,505	59,709,487

See notes to the consolidated financial statements.

ALTAIR NANOTECHNOLOGIES INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY AND COMPREHENSIVE LOSS
(Expressed in United States Dollars)

	Common Stock		Additional Paid In	Accumulated	Deferred Compen-sation	Accumulated Other Compre-hensive Gain	
	Shares	Amount	Capital	Deficit	Expense	(Loss)	Total
Balance at December 31, 2005	59,316,519	$ 92,126,714	$ -	$ (63,152,905)	$ (165,336)	$ (172,000)	$ 28,636,473
Comprehensive loss:							
Net loss	-	-	-	(17,200,283)	-	-	(17,200,283)
Other comprehensive income, net of taxes of $0	-	-	-	-	-	353,800	353,800
Comprehensive loss							(16,846,483)
Share-based compensation	-	281,514	2,002,220	-	-	-	2,283,734
Exercise of stock options	189,449	347,653	-	-	-	-	347,653
Exercise of warrants	236,168	455,670	-	-	-	-	455,670
Issuance of restricted stock	77,875	-	-	-	-	-	-
Elimination of deferred compensation expense (upon adoption of new accounting standard)	-	(165,336)	-	-	165,336	-	-
Common stock issued, net of issuance costs of $2,056,336	9,259,259	22,943,664	-	-	-	-	22,943,664
Balance at December 31, 2006	69,079,270	115,989,879	2,002,220	(80,353,188)	-	181,800	37,820,711
Comprehensive loss:							
Net loss	-	-	-	(31,470,621)	-	-	(31,470,621)
Other comprehensive income, net of taxes of $0	-	-	-	-	-	(667,200)	(667,200)
Comprehensive loss							(32,137,821)
	-	397,767	3,487,384	-	-	-	3,885,151

Share-based compensation							
Exercise of stock options	280,914	625,603	-	-	-	-	625,603
Exercise of warrants	2,314,189	6,248,314	-	-	-	-	6,248,314
Issuance of restricted stock	69,909	-	-	-	-	-	-
Common stock issued, net of issuance costs of $2,504,558	12,324,095	40,518,612	-	-	-	-	40,518,612
Balance at December 31, 2007	84,068,377	163,780,176	5,489,604	(111,823,809)	-	(485,400)	56,960,571