ALTAIR NANOTECHNOLOGIES INC
Form 10-K
March 16, 2006

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, 2005**

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

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

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 Form 10-K or any amendment to this Form 10-K. [ ]

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

Large accelerated filer [ ] Accelerated filer [X] Non-accelerated filer [ ]

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, 2005, based upon the average bid and asked price of the common shares on the NASDAQ Capital Market of $2.96 per share on June 30, 2005, was approximately $174,009,000. 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 3, 2006, the Registrant had 59,352,519 common shares outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the Registrant’s Proxy Statement on Schedule 14A for the Registrant’s 2006 Annual Meeting of Shareholders are incorporated by reference in Part III as specified.

INDEX TO FORM 10-K

Table of Contents

PART I

*This Annual Report on Form 10-K for the year ended December 31, 2005 (this "**Form 10-K**") 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 Form 10-K 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 Form 10-K refer to Altair Nanotechnologies Inc. and all of its subsidiaries. Altair currently has one wholly-owned subsidiary, Altair US Holdings, Inc., a Nevada corporation. Altair US Holdings, Inc. directly or indirectly wholly-owns Altair Nanomaterials, Inc., a Nevada corporation, Mineral Recovery Systems, Inc., a Nevada corporation ("**MRS**"), Fine Gold Recovery Systems, Inc., a Nevada corporation ("**Fine Gold**") and Tennessee Valley Titanium, Inc., a Nevada corporation.

Item 1: Business

We are a Canadian company, with principal assets and operations in the United States, whose primary business is developing and commercializing nanomaterial and titanium dioxide pigment technologies. 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. Our research, development, production, marketing and sales efforts are currently directed toward six market applications that utilize our proprietary technologies:

- Advanced Materials
  - The marketing and licensing of titanium dioxide pigment production technology.
  - The marketing and production of nano-structured ceramic powders for thermal spray applications.
  - The development of nano-structured ceramic powders for nano-sensor applications.
  - The development of titanium dioxide electrode structures in connection with research programs aimed at developing a lower-cost process for producing titanium metals and related alloys. Development of this product is largely inactive as we seek a business partner.
- Air and Water Treatment
  - The development, production and sale of photocatalytic materials for air and water cleansing.
  - The marketing of Nanocheck products for phosphate binding to prevent or reduce algae growth in recreational and industrial water.
- Alternative Energy
  - The development, production and sale of nano-structured lithium titanate spinel, lithium cobaltate and lithium manganate spinel materials for high performance lithium ion batteries.
  - The design and development of power lithium ion battery cells, batteries and battery packs as well as related design and test services.
  - The development of materials for photovoltaics and transparent electrodes for hydrogen generation and fuel cells.

Table of Contents

- Lanthanum based Pharmaceutical Products
  - 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 testing of Renalan, a test-stage active pharmaceutical ingredient, which is designed to be useful in the treatment of elevated serum phosphate levels in companion animals suffering from chronic renal disease.
- Chemical Delivery Products
  - The development of TiNano Spheres, which are rigid, hollow, porous, high surface area ceramic micro structures that are derived from Altair's proprietary process technology for the delivery of chemicals, drugs and biocides.
- Biocompatible Materials
  - The development of nanomaterials for use in various products for dental implants, dental fillings and dental products, as well as biocompatible coatings on implants.

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. In the near term, as we continue to develop and market our products and technology, contract services will continue to be a substantial component of our operating revenues. During the years ended December 31, 2005, 2004 and 2003, contract services revenues comprised 70%, 99% and 88%, respectively, of our operating revenues.

Our Nanomaterials and Titanium Dioxide Pigment Business

Background and Description of 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 six 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 that have current or potential applications in a wide range of industries, including pharmaceuticals, titanium dioxide pigment, photocatalytic oxidation products, catalyst structures, protective thermal spray powders, algae control 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 and engineering team and our proprietary nanomaterials and titanium dioxide pigment technology.

This nanomaterials and titanium dioxide pigment technology enables our production of conventional titanium dioxide pigment products that are finely-sized powders consisting of titanium dioxide crystals. These powders approximate 170-300 nanometers in size. This technology is also capable of producing titanium dioxide and 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 titanium dioxide, lithium titanate spinel, lanthanum products and stabilized zirconia nanomaterials. The technology also enables the production of customized products for catalyst support structures, thermal barrier coating materials and porous titanium oxide electrode structures for titanium metal production.

Table of Contents

Our nanomaterials and titanium dioxide pigment technology is fundamentally different from current commercial processing techniques. Other processes are based on either a precipitation of materials from a solution or the formation of crystallites from molten droplets of titanium oxide generated in high temperature flame reactors. Our process is a dense-phase crystal growth technique which controls crystal formation using a combination of mechanical, fluid dynamics, chemical and thermal control. Our process permits exceptional control over particle size, shape, and crystalline form. Our titanium dioxide processing technology produces discrete anatase crystals in nanometer sizes and may be doped to be thermally stable up to 800 degrees centigrade. By remaining stable in high-temperature processing, nanomaterials produced by our titanium dioxide pigment processing technology retain the desired nanomaterials size and crystalline phase. In addition, our technology is designed to minimize process effluents needing environmental remediation and to accept a wide variety of low-cost, naturally occurring titanium feed stocks.

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. The following sections describe the research and development services we provide and the principal projects we are using our nanomaterials and titanium dioxide pigment technology to develop.

Contract Research Services

In addition to doing research and development work for our own benefit, we provide these services to others, principally in commercial collaboration arrangements and under government grants. During 2006, we expect to utilize our nanomaterials and titanium dioxide pigment technology under the following:

- a contract with Western Oil Sands, Inc. for the production of titanium dioxide pigment and pigment-related products from oil sands. We have constructed a pilot separation plant for Western Oil Sands, Inc. in our Reno, Nevada facility that we are using under contract to develop the process for recovering titanium dioxide from oil sands. At December 31, 2005 and 2004, we had approximately $642,000 and $200,000, respectively, of work remaining to be done on existing contracts;

- a contract with Western Michigan University to develop nanosensors for the detection of chemical, biological and radiological agents. At December 31, 2005 and 2004, we had approximately $16,000 and $500,000, respectively, of work to be done under existing contracts. We expect to continue the project under an announced federal earmark grant that is estimated to provide $1,000,000 to us over approximately one year;

- a grant awarded by the National Science Foundation to fund joint development work on next generation lithium ion power sources. At December 31, 2005 and 2004, we had approximately $349,000 and $33,000, respectively, of work remaining to be done on existing contracts. The work to be done under the contract backlog at December 31, 2005 is expected to run through June 30, 2007; and

- an agreement with the University of Nevada, Las Vegas Research Foundation to act as a subcontractor under a $3,000,000 grant awarded to them by the U.S. Department of Energy for joint research activities related to solar hydrogen production. At December 31, 2005 and 2004, we had approximately $623,000 and $400,000, respectively, of work to be done under the agreement.

We expect that contract research services will be a significant portion of our revenues in the short-term but will decline in significance if we are successful in bringing nanoparticle and other products to market and license our technologies. Total research and development expenses were $5,073,478, $2,189,150 and $1,961,744 for the years ended December 31, 2005, 2004 and 2003, respectively, while research and development costs funded by customers were $1,962,162, $1,144,389 and $64,249 for the years ended December 31, 2005, 2004 and 2003, respectively.

3

Table of Contents

During the year ended December 31, 2005, we recorded revenues from four major customers, each of which accounted for 10% or more of revenues. Revenues from Western Michigan University were $481,519; revenues from Western Oil Sands, Inc. were $616,515, and revenues from the UNLV Research Foundation were $492,818. All of these customers are in the performance materials business segment. Revenues from Spectrum Pharmaceuticals, Inc., a life sciences segment customer, were $729,271.

Trademarks

We have registered or are in the process of registering the following trademarks: Altair Nanotechnologies®, Altair Nanomaterials®, Altairnano™, TiNano®, Nanocheck™ and RenaZorb®.

The Performance Materials Division

Primary Products

The Altair Hydrochloride Pigment Process (AHPP)

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 (AHPP). This package of technologies includes four US patents, trade secrets and know-how developed over nine 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.

Key Features

The AHPP is the first new, comprehensive technology to produce titanium dioxide pigment in over fifty years and takes advantage of new technologies to enable high quality pigment production. Titanium dioxide pigment is produced in bulk and is used principally as a whitener and opacifier for paper, plastics and paint. The AHPP uses a dense-phase crystal growth technique which controls crystal formation using a combination of mechanical, fluid dynamics, chemical and thermal control. A third party engineering study suggests that cost associated with this process will be lower than costs associated with alternative processes. All hydrochloric acid waste streams can be recycled to recover acid, and the waste solids generated from the purification process are easily manageable iron oxides.

Target Markets and Marketing Plans/Efforts

We intend to benefit from the AHPP through technology license agreements with large materials companies under which we would receive royalties and other payments. We do not anticipate being a manufacturer of pigments or competing directly in the pigment market. Our market approach has been to target chemical manufacturing and mining companies who are addressing the market for high grade titanium dioxide pigment. In general, European and North American companies have substantial investment in traditional chloride- and sulfate-based methods of producing pigment and so will be slow to adopt new technology like our AHPP. However, companies and governments in the developing world have stated that they see substantial value in being self-sufficient in titanium dioxide production both from an economic as well as a political viewpoint. These geographies are also swifter to adopt new technology as they have less infrastructure and investment tied to traditional methods of pigment production.

Table of Contents

In April 2005, we signed a memorandum of understanding with Bateman Engineering NV ("Bateman") to form a joint venture combining our hydrochloride pigment process technology with Bateman's engineering, design and construction expertise. We expect that the joint venture, Altair-Bateman Titania, Inc. ("ABT"), will offer customers an integrated resource for technology development, engineering, design and construction of pigment processing projects. We expect that the joint venture will be funded entirely by Altair and Bateman, with each having equal shareholding and Altair having voting control. We expect the joint venture to help in marketing the AHPP, particularly in developing countries which have little or no local production capacity.

In marketing the process, the first step is detailed analysis of the ore to be processed to ensure it can produce the quality of titanium dioxide required. Assuming positive results, this is followed by a process designed to demonstrate the feasibility of the overall manufacturing process with a small pilot plant, and then, if successful, a larger scale plant. This is the normal course for establishing a new chemical plant that can ultimately produce in excess of 100,000 tons of pigment per year. During each of these phases, we expect to receive consulting and engineering study fees through the ABT joint venture. If a full plant is constructed, we would expect to begin receiving royalty payments.

Research, Testing, Development and Licensing Status

The AHPP is substantially developed and, in a test environment, we are able to extract titanium from raw materials in order to produce a high quality titanium dioxide pigment. The AHPP is not, however, a one-size-fits-all technology and needs to be customized to the particular needs of any potential licensee. As described below, we have entered into a license with Western Oil Sands, Inc. ("**Western**") with respect to the AHPP. In addition to our work with Western, we have submitted phased development proposals for the testing and economic evaluation of our titanium pigment production technology to several companies. As illustrated by the description of our license with Western below, any license of the AHPP will involve various stages of testing and development tailored to the licensee's specific needs. Such licenses may involve incremental payments and development services along the way but will lead to significant revenue only if a full-scale commercial titanium pigment production facility is constructed.

In January 2004, we entered into a license agreement with Western with respect to its possible use of the AHPP 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 AHPP on heavy minerals derived from oil sands in Alberta, Canada. The agreement also contemplates a three-phase, five-year program pursuant to which the parties will work together to further evaluate, develop and commercialize the AHPP. In the first phase of the program, Western is expected to spend $650,000 ($500,000 of which is scheduled to be paid to Altair for work performed) to evaluate the AHPP and confirm that the AHPP will produce pigment from oil sands. During 2004, we received several bulk samples of oil sand material from Western, processed them in various configurations to obtain mineral concentrates, and processed the concentrates using the AHPP to recover the titanium dioxide. We have now completed in excess of 75% of the work scope included in phase one with satisfactory results.

In October 2005, we entered into a phase one extension agreement with Western that will extend phase one until December 2006 in order to complete the characterization and demonstrate mineral recovery feasibility. A pilot plant has been constructed to demonstrate mineral recovery and will be used to prepare bulk ilmenite concentrates for AHPP pilot plant trials.

Table of Contents

Assuming phase one is successful, Western may elect to commence phase two, the construction of a demonstration titanium pigment production facility using the AHPP. If phase two is successful, Western may elect to commence phase three, the construction and operation of a full-scale commercial titanium pigment production facility using the AHPP.

The scope of the license granted to Western under the agreement will vary with Western's commitment to the project. The initial license, related to use of the AHPP on heavy minerals derived from oil sands in Alberta, Canada, will terminate if Western fails to complete phase one and will convert to a non-exclusive license if Western commences phase two but fails to complete, or spend at least $25 million in an effort to complete, phase two.

If Western completes phase one and commences phase two, Western's license will be expanded to include the right to use the AHPP for the production of titanium dioxide pigment and pigment-related products from oil sands resources, primary ore resources and titanium deposits in Canada and Minnesota and for the production of titanium dioxide pigment and pigment-related products from oil sands resources world wide. This expanded license will continue on an exclusive basis if Western completes phase two and completes, or spends at least $50 million in an effort to complete, phase three. This expanded license will continue, but on a non-exclusive basis, if Western completes phase two but, after spending more than $5 million but less than $50 million on phase three, does not complete phase three. If Western does not commence, or spends less than $5 million with respect to, phase three, the expanded license terminates.

If commercialization occurs, Western is required to pay Altair royalties based on a percentage of net sales revenue from any production facility.

Proprietary Rights

We have been awarded four U.S. and several 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.

Competition

Existing chloride pigment technologies are guarded by the top tier producers that developed the technologies. Licenses are not typically granted by top tier companies to emerging nation companies because of the complexity of the process and difficulty in extracting revenues from those countries. By contrast, we are willing to license our AHPP. 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 AHPP. We believe there are no competing new technologies to produce titanium dioxide pigment.

Advanced Materials and Power Systems Initiative

Key Concepts

Rechargeable batteries are made from various materials, each of which has certain characteristics or tendencies, depending upon how 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 leakage is referred to as "self discharge" and is a natural tendency of all batteries for which the rate 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 relates to the total unit volume of materials comprising a battery that will deliver a watt hour of energy. A battery with high energy density will deliver more energy per unit volume than a battery with lower energy density.

- Cycle life: The ability of a rechargeable battery to accept a charge tends to diminish as a result of repeat 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 ability to accept a charge.

- 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 newly-built energy storage capacity.

- Recharge time: Recharge time is the minimum amount of time it takes to replenish a battery's energy.

Table of Contents

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 may be important in a cell phone battery because consumers desire to be able to use a cell phone for a long time between recharge and want to carry as little weight and volume as possible.

Background and Comparison

Prior to 1990, nickel cadmium ("NiCd") and lead acid ("PbA") technologies dominated the rechargeable battery market. During the 1990's, nickel metal hydride ("NiMH") and lithium ion rechargeable batteries emerged and currently hold high volume positions in various markets alongside NiCd and PbA.

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, but 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). On the other hand, NiCd batteries suffer from relatively low energy density and relatively high self discharge rates necessitating charge after moderate periods of storage. More seriously, NiCd batteries are exceedingly environmentally unfriendly. The metal cadmium is toxic and causes 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.

PbA batteries are used everyday by anyone who drives an automobile or operates a wheel chair, electric scooter or golf cart. They are also the battery-of-choice for uninterruptible power supplies. PbA is an inexpensive, relatively simple to manufacture, mature, reliable technology that possesses a relatively low self discharge rate, and the modern sealed versions need little or no maintenance. However, PbA batteries are quite heavy, giving them very poor weight to energy and power ratios, which limit practical use to stationary and wheeled applications. They also suffer from long recharge times and 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. As with NiCd batteries, the highly toxic metal, lead, and highly corrosive sulfuric acid render PbA batteries environmentally unfriendly.

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 PbA 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 cycleability, possessing a capability of 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 (HEV) 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 PbA. There is a relationship between power P, voltage V and current I. This relationship is best summarized by this formula: P=IV. Power is also defined as the time rate of energy transfer; thus higher voltages typically lend to larger power and / or energy densities. Lithium ion batteries are stable, charge rapidly, exhibit low self discharge, and require very little maintenance. Except as explained below, the safety, cycle life (about 300 to 400 cycles), calendar life (about 3 years), 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 are considered unsafe. In addition, current lithium ion technology is capable of about 300 to 400 cycles and a life of about 3 years. But vehicle lifetimes can be as long as 10 to 15 years and require many hundreds, even thousands, of charge/discharge cycles. In addition, conventional lithium ion batteries do not function well at extremely hot or cold temperatures.

Table of Contents

The safety problems inherent in conventional lithium ion batteries are mostly explainable in terms of their inability to delivery rapid discharge or function in extreme temperatures and stem from the use of graphite as the active material in the batteries' negative electrode. In a lithium battery environment, graphite becomes very reactive with components of the battery's electrolyte system. Upon manufacturing a lithium ion battery and subjecting the battery to its first charge/discharge cycle, the electrolyte will partially break down at the negative electrode, forming a passivating layer. This layer serves to protect the electrode from further electrolyte breakdown, but the layer is highly electrically resistant to the passage of electrolyte components (the lithium ions) needed to make the battery functional. This in turn limits the discharge rates but, more seriously, renders the battery un-chargeable at cold temperatures. If charging a cell at severely low temperatures is attempted, two dangerous conditions may result: (1) lithium plates in sharp projections called dendrites can form and contact the positive electrode, electrically shorting the cell and possibly resulting in thermal runaway, and (2) plated metallic lithium is very reactive with the electrolyte system, which can cause the battery to enter thermal runaway.

New negative electrode materials are needed to solve these problems. In addition, new positive electrode materials are needed to address the cycle life and cost issues associated with current lithium ion technology.

Altair Developments

The principal advance we have made is in the optimization of nano-structured lithium titanate spinel oxide ("LTO") electrode materials that replace graphite electrode materials used in the negative electrode of current lithium ion batteries. When used with a positive electrode from a common lithium ion battery, battery cells operate at very high charge and discharge rates. Our current non-optimized cells are capable of recharge times of 10 minutes to 90% of capacity and 10 minute discharges with 90% capacity utilizations.

Nano-structured LTO is non-reactive with the electrolytes used in common lithium ion systems. This greatly reduces the negative electrode resistance, and thus, passage of lithium ions to the electrode surface. 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 battery 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 battery cells to deliver more power, and recharge much faster than, other types of batteries described above.

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 battery materials suffer from this mechanical stress and strain (this particle fracturing reduces the life of the battery), battery calendar life and cycle life is greatly enhanced using Altair's LTO.

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 LTO cells. In contrast, common lithium ion technology possesses virtually no charging capabilities at this low temperature, and the other battery types discussed take 10 to 20 times longer to charge.

Table of Contents

Safety testing has just been initiated on our lithium ion technology. Initial tests, including short circuit tests on large format cells, demonstrate the inherent safety of the Altair technology. Graphite negative electrode materials are known to suffer from thermal runaway issues at temperatures above 130°C, while lithium titanium spinel oxides are known to be safe for an additional 120°C or up to temperatures of 250°C. Our nano structured LTO cells have been heated to 235°C and exhibit no dangerous behavior. In addition, our batteries have been subjected to forced discharge, over charge, over discharge, nail penetration, crush and drop tests and have exhibited no dangerous behavior. Our batteries have passed every safety and abuse condition that they have been subjected to. Especially under the conditions of forced discharge, over charge, over discharge, and high temperature abuse testing, conventional lithium ion batteries typically fail in a violent mode that includes fire and explosion.

All rechargeable batteries present a threat to the environment. When recycled properly, however, batteries made with nano-structure LTO are expected to have a lower impact on the environment than existing rechargeable battery types.

On the negative side, the current generation of batteries made with our nano-structured LTO exhibit low energy density. If density is measured by weight, our batteries made with our nano-structured LTO have energy densities that are better than PbA and NiCd batteries and approximately 70% of those of NiMH. Energy densities of batteries made with our nano-structured LTO are lower than those of traditional lithium ion batteries.

The next steps in the development program call for the optimization of the positive electrode materials to complement the work that has been completed on the negative electrode. This will result in a matched negative electrode/positive electrode pair. In parallel with the next phase of development, work is being conducted with other organizations to provide an electrolyte that will deliver a conducting layer consistent with the matched electrodes. This work will consist of optimizing the electrolyte for conductivity as well as other physical properties such as heat dissipation.

Target Markets and Marketing Plans/Efforts

According to information supplied by Telcordia (subsidiary of Science Applications International) the market for rechargeable batteries is approximately $6 billion, $3 billion of which is taken by lithium ion batteries. These lithium ion 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 in automobiles, electric vehicles, and hybrid automobiles where direct electrical energy for starting and passing will assist the gasoline engines. Also, the development of fuel cells and solar generation systems will require enhanced battery capabilities.

Our technology provides a fundamental building block for a new generation of rechargeable batteries. Our marketing efforts are focused on developing relationships with high volume battery manufacturers who will integrate our materials into new battery designs. Early stage discussions have taken place with several manufacturers with a view to developing a joint development program that will use the Altair electrode materials as the basis for a new generation of batteries. These discussions could lead to commercial relationships that will be characterized by a revenue stream consisting of one of more of development funding, materials manufacturing and royalties.

We are focusing our marketing and development efforts on markets presently dominated by NiCd or NiMH batteries, such as power tools and automobiles, in which rapid charging, long cycle life and the additional power from the rapid discharge should prove advantageous. Secondarily, we intend to pursue markets, such as cell phone batteries, presently dominated by lithium ion batteries, which are characterized by slow charge and discharge rates and high specific energy. Because of the lower specific energy of the current generation of batteries made with our nano-structured LTO, we believe that initial acceptance of our batteries in the small electronics market will be limited, unless and until we can improve the specific energy of our batteries or persuade producers that the benefits of extremely rapid recharge exceed the benefits of slow discharge.

9

Table of Contents

Research, Testing and Development

In December 2004, we completed work under Phase I of a National Science Foundation ("NSF") grant for development of electrode nanomaterials for next generation lithium ion power sources. The results of the research, announced on February 10, 2005, indicated that lithium ion batteries prepared with nano-structured LTO negative electrode materials exhibit rapid charge and discharge rates, improved cycle life performance and a decrease in specific energy density when compared to conventional lithium ion, NiCd and NiMH battery materials. In June 2005, we were awarded a grant of $476,850 from the NSF for Phase II. Phase I work was designed to optimize the negative electrode materials and Phase II is designed to develop positive electrode materials, thus resulting in matched negative electrode-positive electrode materials for optimum electrochemical performance.

In addition to our work under the NSF grants, we have been conducting our own internal research and development work on advanced battery materials. In October 2005, we significantly expanded our battery initiative projects by adding thirteen highly qualified, advanced battery scientists, engineers, manufacturing and marketing specialists, several of whom are located at a new facility in central Indiana. At both this and our Reno facility, we are installing manufacturing equipment for the production of prototype lithium ion cells, batteries and battery packs in sufficient quantities to demonstrate end-user products in power tools, automobiles, trucks and buses. In January 2006, our battery research and development team successfully completed a testing program for lithium ion battery cells containing our nano-structured lithium titanate electrode materials. The test results demonstrated that the performance of the lithium ion battery cells exceeded the system-level power requirements set forth by the U.S. Council for Automotive Research FreedomCAR Energy Storage System Performance Goals for hybrid electric vehicles (HEVs), as well as the system-level power requirements published by major U.S. automakers. The battery cells using our nano-structured LTO materials in battery cell tests developed for HEV applications demonstrated a useable state-of-charge range twice that of conventional NiMH batteries presently used in hybrid electric vehicles. Nano-structured LTO offers a near-term promise of lithium ion batteries that exhibit rapid charge and discharge, longer cycle life and more inherently safe performance than either currently available NiMH or lithium ion batteries. These results support the feasibility of a power lithium ion battery pack half the size of those currently being tested for HEV applications.

In April 2005, we signed a partnering agreement with Advanced Battery Technologies, Inc. ("Advanced Battery"), a U.S. and Chinese-owned company, for the development of lithium polymer batteries in China. The agreement covers the incorporation of our nano-structured LTO electrode materials into Advanced Battery's existing polymer battery product lines on a testing and development basis. It specifically focuses on development of high power, lithium polymer batteries for use in electric vehicles where long life cycles and fast charge times are desirable. We have provided Advanced Battery with sample nano-structured LTO for their use in design and development of the batteries. Advanced Battery's phase I testing of batteries using our battery electrodes showed that the nano-structured LTO electrode materials are performing as anticipated and have significantly improved recharging capability. We received an order for and have shipped 2,200 pounds of lithium titanate spinel electrode nanomaterials to Advanced Battery for use in their development program for polymer lithium ion batteries for electric vehicles. These materials are intended for use in the construction of developmental polymer lithium ion batteries designated to power one electric bus and one electric sedan. We expect road testing of the batteries in these vehicles in 2006.

Table of Contents

Proprietary Rights

We have been issued four U.S. patents: (1) “Process for making lithium titanate”, which expires in 2022, (2) “Process for making nano-sized and sub-micron sized lithium-transition metal oxides”, which expires in 2023, (3) “Method for producing mixed metal oxides and metal oxide compounds”, which expires in 2022, and (4) “Process for making nano-sized stabilized zirconia”, which expires in 2022. We have also filed a patent application titled “High Performance Lithium Titanium Spinel for Electrode Material” with Ntera. In October 2004, we were awarded a European patent for our “Process for Making Lithium Titanate”, a product used in the development of lithium ion batteries and super capacitors.

Competition

Competing technologies are discussed in the “Background and Comparison” subsection above. There are presently no commercial products available with the same characteristics as our lithium titanate spinel, but others are conducting research on similar materials. Based solely on our review of published information, it appears that our development work is at a more advanced stage than others being reported.

Nanocheck™

We have developed a compound that has an affinity for certain oxy anions, including phosphate and arsenate. We believe the best near-term potential application for this material is the removal of phosphate from recreational waters, industrial waters used for cooling and aquariums to arrest the growth of algae.

Key Feature

Nanocheck is a lanthanum-based compound that can be used to treat water for the removal of phosphates. It has no reported human health hazards and works effectively in existing filtration units without the need of purchasing additional equipment.

The management of swimming pool water is a difficult and time-consuming task. The chemical balance of the water must be carefully monitored to ensure that it does not become fouled with algae, or grow too much bacteria. Either of these will make the water smell and look unpleasant, and can be a health hazard. Nanocheck is designed to safely deprive algae of the phosphate nutrients required for them to grow and reproduce; and therefore, in conjunction with a commercial sanitizer, Nanocheck reduces or minimizes algae formation.

Target Markets and Marketing Plans/Efforts

We are in the process of marketing Nanocheck products to companies that already sell products into the recreational water treatment market including pool and spa chemical companies. The marketing effort so far has been focused on the major suppliers of chemicals to the recreational water market - swimming pools and spas, both private and public. These suppliers provide a distribution channel that has the potential for rapid market entry. When our potential customers complete the necessary testing, and if we are able to enter into a long-term relationship with one or more such suppliers, we expect to generate revenue in the form of royalties and in connection with our supply of key ingredients. The business relations with these companies will result in revenue to Altair from royalties and the supply of manufactured Nanocheck. Nanocheck’s ability to bind with the phosphate in water and effectively “starve” the algae makes it an ideal adjunct to algaecide-based water treatment. As such it is seen as line extension for the pool chemical suppliers.

Table of Contents

We are in discussion with the top three recreational water chemical suppliers. These discussions are at various stages of maturity and two of the suppliers are actively testing Nanocheck.

Research, Testing and Development

We have conducted in-house tests for phosphate removal in swimming pool simulations and recreational water companies have performed materials and pool testing that shows effective phosphate removal, pool water turbidity reduction and good phosphate binding kinetics. Larger scale swimming pool tests being performed by a recreational water company began in mid-August 2004 and are continuing. Delays occurred, first due to internal issues within the recreational water company and then due to the effects of hurricanes in the locale where tests were to be conducted. As a result, tests are now scheduled through the summer of 2006. Negotiations with major pool chemical companies are underway and if testing is successful and sales agreements are entered into, significant sales of products incorporating Nanocheck, if any, may begin in 2006.

Proprietary Rights

We have filed two U.S. patent applications for the application of this product entitled “Rare Earth Compositions and Structures for Removing Phosphates from Water” and “Ceramic structure for removing toxic elements from water.”

Competition

Pool chemicals are a commodity market with price, merchandising and small functional advances providing differentiation. There are already a few other phosphate binding products on the market. These products are high maintenance, usually requiring weekly service. We believe that Nanocheck offers high phosphate binding capacity with a longer service life. Although field trials of Nanocheck are still under way, early indications are that it can be added to a swimming pool and then left for a month or two without requiring attention.

Secondary Products and Research and Development Projects in Progress

Thermal Spray Grade Powders (TSGP)

We have developed thermal spray grade nanomaterial powders that can be applied on the surface of metals by standard thermal “gunning” techniques. We have sold approximately one ton of our powders to F.W. Gartner Thermal Spraying Company for thermal application onto heavy-duty ball valves. Ball valves made of solid titanium alloys have been introduced to control the flow and containment of hot acidic slurry solutions in high pressure acid leach technologies applied to metal extraction of nickel/cobalt ores. To extend the life of these critical components, a ceramic coating is applied via a thermal spray process. These coatings must be impervious to the acidic solution and provide protection against wear from the abrasive solid particles.

Table of Contents

Our nanomaterials coatings possess enhanced toughness and increased hardness; these features contribute to superior abrasive wear resistance over the conventional coating of the same material. The nanomaterial coatings also demonstrate improved porosity over standard thermal spray powders making them more resistant to corrosive attack. We believe that improvements will enable longer periods between maintenance, repairs and examinations of these critical components, therefore improving the economics of the industrial application. Such thermal spray products could be used in a variety of harsh environment applications such as aerospace propulsion systems, blades and vanes, medical applications, textile and paper machinery, boilers for power plants, waste incinerators, oil and gas industry, etc.

In November 2003, we contracted the National Research Council of Canada to demonstrate, test and evaluate our powders and prepare specification sheets of standard thermal spray gunning instructions to advise specialty thermal spray shops how to apply our material. The goal of the project was to produce titania coatings by thermal spraying using nano-structured titania powders developed by Altair and compare and contrast to conventional titania powders. The coatings were characterized and evaluated to determine various characteristics, including porosity and abrasion resistance. The report, completed in the first quarter of 2004, concluded that our powders were more abrasion resistant than conventional powders. Since that time, we have prepared sample packages of our thermal spray grade powders for customer testing.

F.W. Gartner Thermal Spraying Company, Mogas Industries, Inc. and Perpetual Technologies researchers have reported on the use of our nanomaterial powders in tests to determine the bond strength, corrosion and abrasion resistance and the porosity after applying ours and competitors' materials on metal using Vacuum Plasma Spray and Atmosphere Plasma Spray. The results of these researchers' tests indicate that our novel coatings possess enhanced toughness and increased hardness; these features contribute to its superior abrasive wear resistance over the conventional coating of the same material. Ball valves with the new coatings have been introduced into different high pressure acid leach autoclave installations over the past two years.

We are currently in discussions with a potential distributor that has the capability to test and qualify our thermal spray products, fund the development of new products and market the same. The distributor is currently testing two of our products. We believe the market for each TSGP 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.

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.

Nanosensors Program

In September 2003, we entered into an agreement with Western Michigan University ("WMU") to provide research services and materials to support research involving a technology used in the detection of chemical, biological and radiological agents. The teaming/research agreement with WMU, funded by the Department of Energy ("DOE"), provided for total payments to Altair of $356,500 over a two-year period. In September 2004, the DOE awarded a stage 2 contract for the project under which we will continue joint development work for the design, synthesis and characterization of nanosensors for chemical, biological and radiological agents. Altair will receive an additional $672,000 over the two-year term of the stage 2 contract. WMU and Altair have a teaming agreement partnership for seeking Federal support for nanotechnology research and development and will utilize the new grant funding equally.

Table of Contents

In the fiscal year 2006 congressional direction, Altair was awarded $2.5 million for DOE research grants using our nanoparticle technology. Of this amount, $1 million will be committed to the continuance of the nanosensor project with WMU and most of the remainder will be utilized in the development and testing of battery materials. We expect that contracts for the nanosensor project will be in place by mid-2006 and we anticipate that prototype hand-held sensors will enter the development and demonstration phase in the second quarter of 2006.

Hydrogen Generation using Solar Energy and Water

In November 2004, we entered into an agreement with the University of Nevada, Las Vegas Research Foundation to act as a subcontractor under a $3,000,000 grant awarded to them by the DOE for joint research activities related to solar hydrogen production at a refilling station under development in Las Vegas. The agreement, which was effective through December 31, 2005, provided for payments to Altair of $400,000 for research and development work utilizing nanotechnology processes for the production and commercialization of solar-based hydrogen technologies. In November 2005, we were notified that we will receive $750,000 under a grant award from the DOE for collaborative research and development work beginning October 1, 2005 and continuing through December 2006.

The development work is expected to involve, among other tasks, enhancement of the solar cell to be used at the proposed refilling station. The solar cell device converts light and water directly into hydrogen fuel in a highly efficient, renewable and carbon-free process using photo-catalytic nano-crystalline thin films to gather photons of incident light and convert them into electrons to directly split water into its constituent elements. We expect to be able to use our nanomaterials synthesis technology to develop low cost processing for, and further improve the performance of, the thin film electrodes in these solar cells. Our efforts will focus on iron oxide-based materials and include development of film deposition methods and synthesis routes for the optimized metal oxide nanomaterials.

Catalyst Support and Electrode Structures for Titanium Metals

In January 2004, we entered into a contract with Titanium Metals Corporation (“TIMET”) to provide custom oxide feedstocks for a novel, four-year, titanium metal research program funded by the Department of Defense, Defense Advanced Research Projects Agency (“DARPA”). We became a subcontractor for the DARPA program with responsibility to design and develop a titanium oxide electrode structure and supply TIMET optimized titanium oxide feedstock to produce 50 pounds of titanium metal per day in batch production demonstrations. The DARPA program sought to lower the cost of titanium metal and titanium metal alloys through the use of a new process for making titanium metal (the “FFC Cambridge Process”) and thereby enable a broader market use and lower the cost of military applications. During the course of the contract, which has now expired, we provided TIMET with specified quantities of feedstock materials as their preferred supplier. We currently are seeking alternative sponsors and partners.

According to the AMPTIAC Quarterly, a Department of Defense-sponsored publication, current global production of titanium metal is approximately 50,000 tons per year at a market value of $600 million. AMPTIAC estimates that, due to the current state of manufacturing, titanium is produced at only about 1/20th of its current potential world volume. It is widely believed that a reduction of cost in the manufacturing process will expand the use of titanium metal in a wider range of applications that include lightweight armored military vehicles, the manufacture of automotive components and components for utility plants, oil and gas drilling, and lightweight and durable consumer goods. Our intent is to develop a suitable process for making the titanium dioxide electrodes used by the FFC Cambridge Process but not ultimately to manufacture the electrodes. We would most likely license the technology for manufacture of the titanium dioxide electrodes to producers of metal using the FFC Cambridge Process or their suppliers.

Table of Contents

We have been awarded one US patent protecting the catalyst and electrode structure technologies entitled “Method for producing catalyst structures”, which expires in 2021.

Photocatalytic Materials

Our proprietary high-photocatalytic nano titanium dioxide product, irradiated by ultraviolet light, accelerates eradication of most airborne bacteria, viruses, mold, spores and fungi. Ultraviolet light has long been used in hospitals and other critical environments to kill bacteria, viruses and other contaminants and its benefits are proven and well-known. The oxidizing effect produced by ultraviolet light and Altair’s nano titanium dioxide converts chemical and biological contaminants into benign elements - carbon dioxide, water vapor and other materials.

Altair has sold its high-photocatalytic nano titanium dioxide product for use in air cleaning devices manufactured and distributed by Genesis Air, Inc. (“Genesis Air”). The Genesis Air device is being tested in dozens of poor air quality environments including casinos, meat packing plants, military quarters, bowling alleys and the like and is designed to simply fit into existing heating, ventilation and air conditioning systems.

Our Life Sciences Business

Primary Products

RenaZorb® Products

In the second quarter of 2002, we initiated research and development efforts directed toward the utilization of nanomaterials in the pharmaceuticals industry. In July 2002, we announced the development of a new active pharmaceutical ingredient (“API”) for the treatment of hyperphosphatemia (elevated serum phosphate levels) in patients undergoing kidney dialysis, as well as a new drug delivery system using inorganic ceramic nanomaterials. This API, given the name RenaZorb, showed excellent capacity for phosphate removal in laboratory tests using standard in-vitro (laboratory) procedures.

In January 2005, we signed a license agreement with Spectrum Pharmaceuticals, Inc. (“Spectrum”) 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. Additional payments by Spectrum are contingent upon the achievement of various milestones in the testing, regulatory approval and sale of RenaZorb.

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

- purchases of a specified dollar amount of common stock 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 to market RenaZorb from the FDA and similar regulatory agencies in Europe and Japan;

- 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.

Assuming the testing, development and regulatory approvals of RenaZorb proceed at the rate reasonably expected by the Company, the aggregate value of all the first year payments and all potential stock premiums, milestone payments and other payments to the Company over the first 5-7 years of the license agreement could reasonably range between $9 million and $14 million. Assuming a drug containing Renazorb receives timely regulatory approval, the market for phosphate controlling drugs continues to grow at projected rates, and the product becomes a leader in the market place, the total revenues to the Company over the life of the license agreement could exceed $100 million.

Key Features

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, but 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

Table of Contents

Target Markets

Our pharmaceutical product RenaZorb was developed to treat elevated phosphate levels in patients with chronic kidney disease, especially in patients with end stage renal disease. According to information published by AnorMED, the worldwide market for phosphate binders for chronic renal failure patients is approximately $400 million to $600 million annually.

Research, Testing and Development

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. 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. We believe, however, that the FDA's approval of Fosrenol, a chemically related drug, by the FDA and other regulatory bodies may accelerate the approval process for RenaZorb but note that 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.

We have supplied Spectrum with test quantities of RenaZorb in order to conduct in-vivo animal testing. The tests were completed in September 2005 and, although we have been informed that the results were positive and we have received a copy of the test results, Altair has not received the milestone payment of 100,000 shares of Spectrum Pharmaceuticals, Inc. stock called for in the agreement. Spectrum asserts that the milestone has not been met. In order to resolve this disagreement and the damage claims of both Altair and Spectrum, Altair and Spectrum entered the early stages of a dispute resolution process as required by our license agreement.

In November 2005, the respective chief executive officers of the two companies participated in a meeting at which a total settlement of all issues in dispute was reached. The settlement included the agreement by Spectrum to pay Altair 100,000 shares of Spectrum Pharmaceuticals, Inc. stock and an additional 40,000 shares of Spectrum Pharmaceutical, Inc. stock for payment of certain Altair claims and rights to certain improvements made by Altair in the preparation and performance of lanthanum carbonate chemistries.

In January 2006, Spectrum notified us that it would not honor the settlement agreement reached at the November 2005 meeting. Altair and Spectrum re-initiated the dispute resolution process as required by our license agreement. This process may delay the product development process and our receipt of our next milestone payment and could lead to the payment or receipt of monetary damages.

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, and also aluminum hydroxide-based products such as Gaviscon manufactured by Glaxo Smith Kline, both of which are available over the counter, as well as Renagel manufactured by Genzyme, which is available only by prescription. In addition, Fosrenol,

another lanthanum based active pharmaceutical agent developed by Shire Pharmaceuticals of the UK, received approval from the United States FDA in October 2004.

Table of Contents

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 is 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.

The prescription phosphate binder Renagel is relatively expensive (approximately $2,800 per patient per year), has a high dosage requirement (2 x 800 mg or 4 x 400 mg capsules/tablets or more three times per day) and water intake is required. The most common side effects related to the use of Renagel include nausea (7% of patients), constipation (2% of patients), diarrhea (4% of patients), gas or bloating (4% of patients) and heartburn or indigestion (5% patients).

Fosrenol is marketed as large chewable tablets with a proposed dosage of 1.5 to 3.0 grams active drug per day. As with all medicines, Fosrenol has some side effects, primarily associated with the gastrointestinal system including bloating, GI upset and vomiting. It has been reported that the use of Fosrenol increases serum lanthanum levels compared with levels in patients taking a placebo. 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 (“LCTH”), 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. 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.

Both RenaZorb and Fosrenol involve the binding of phosphate by lanthanum compounds. In fact, the end product of the binding mechanism is identical; lanthanum phosphate is the product formed. Based on laboratory tests conducted by Altair comparing RenaZorb with LCTH, the API in Fosrenol, RenaZorb RZB 012, one of the two drug candidates, required 30% less drug to bind the same amount of phosphate and shows less lanthanum going into solution in simulated stomach fluid at various pH values. In addition, in Altair’s testing, using methods published by AnorMed, RenaZorb reacts with phosphate more rapidly. In 20 minute simulated stomach acid tests conducted by Altair, RenaZorb absorbed approximately 140 mg of phosphate and LCTH absorbed approximately 60 mg of phosphate.

Renalan

During 2004, we recognized that companion animals (cats and dogs), like humans, also suffer from hyperphosphatemia during chronic renal failure. We determined that this condition could be treated with similar chemistry to RenaZorb, so we initiated a project to develop a similar product. We have named this potential product Renalan. The RenaZorb licensing agreement with Spectrum applies only to the human market, thus leaving us free to license the chemistry into the animal health market. We are actively pursuing a partner to license the product and supply this to the companion animal market. The product could be sold either as a drug candidate requiring regulatory approval, or it could be marketed as a food supplement which potentially would provide a faster route to market. There is no currently established product on the market to specifically address hyperphosphatemia in animals; however a new over-the-counter product called Epakitin has just been released in the United States which appears to target the complaint.

Table of Contents

Key Features

Renalan is a highly-active, lanthanum-based nanomaterial with low intestinal solubility and excellent in-vitro phosphate binding. Animal testing of RenaZorb/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 hyperphosphatemia in companion animals
- Palatable with manageable 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 (CKD). According to information published in the Textbook of Veterinary Internal Medicine by Stephen J. Ettinger, DVM and Edward C. Feldman, DVM, the dog CKD population is variously estimated at between 0.5% and 7% of population, resulting in a worldwide CKD population of between 0.75 million and 10.5 million dogs. They go on to state that the cat CKD population is estimated at between 1.6% and 20% of total population, resulting in a worldwide CKD 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 CKD population of approximately 4.2 million and a dog CKD population of about 1.2 million.

Research, Testing and Development

Renalan could be marketed either as a drug or as a food supplement. As a drug, the product would enter an FDA approval process that would be expected to take two years to complete; however timing for FDA and other regulatory approval of drug candidates is unpredictable. As a food supplement the product requires no regulatory approval, and so has the potential to be in the market more rapidly than as a drug; however, we would be unable to make certain effectiveness claims if it were marketed as a food product. Any future animal health company partner would determine the marketing strategy for the product, and therefore the level of additional testing required before the product can enter the market. We are in discussions with various animal health companies regarding future development of Renalan.

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

There are no well established products on the market that specifically target hyperphosphatemia in companion animals. 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.

Table of Contents

Secondary Products and Research and Development Projects in Progress

TiNano® Spheres

Our proposed chemical delivery system involves depositing active chemicals on or inside hollow spheres made of titanium dioxide and other metal oxide materials, including nanomaterials.

Because of the early stage of development of this chemical delivery system, we are unable to state with any certainty how (or if) such a delivery system would be used and, if used, what the uses for such system would be and what the comparative advantages, side effects and other aspects of such a delivery system would be. Nevertheless, we believe that the following uses of a nanomaterials-based chemical delivery system are feasible:

- New delivery forms for existing drugs;
- Delivery methods for new drugs;
- Enhanced delivery of hard to dissolve drugs;
- Delivery of sustained release drugs; and
- Delivery of dual action drugs

Altair's hollow sphere structures may be able to deliver active chemicals or drugs in a sustained release fashion because the active component could be "mounted" on both the outside surface and inside the hollow ball structure. The dissolution and availability of the surface-mounted active component would likely be different than the active component inside the hollow spheres. Material inside the hollow structure will possibly be released more slowly compared to surface-mounted material**.** An additional feature of Altair's nanomaterials-based hollow structures is that two different active substances could be mounted, one inside the hollow spheres and another on the surface. This allows the possibility for dual action pharmaceuticals to be developed using this technology.

During 2005, we started early investigation of the potential of TiNano Spheres by engaging in collaborative research projects with other companies. This research is at an early stage, and it is premature to determine the market potential for this technology.

We have filed two patent applications regarding this field including: (1) "Pharmaceutical composition and structure containing rare earth porous particles" and (2) "Pharmaceutical composition with controlled surface area."

Dental Materials

During 2005, we engaged a potential commercial partner to determine market suitability for dental materials utilizing our nano-sized zirconia. We expect the results from this research during 2006 and at that time we will be able to determine market potential.

Table of Contents

Government Regulation and Environmental Concerns

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. 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, and reclaim exploration, mining and processing sites.

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 ("Hazardous Substances"). 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 and life sciences segments is presented in Note 14, Business Segment Information, of Notes to Consolidated Financial Statements in Part IV.

Information with respect to foreign and domestic sales and related information is presented in Note 14, Business Segment Information, of Notes to Consolidated Financial Statements in Part IV.

Table of Contents

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 Altair Nanomaterials, Inc. were direct wholly-owned subsidiaries of Altair US Holdings, Inc., while Tennessee Valley Titanium, Inc. remained a wholly-owned subsidiary of MRS.

Fine Gold was acquired by Altair in April 1994. Fine Gold has earned no operating revenues to date. Fine Gold acquired the intellectual property associated with the Altair jig, a fine particle separation device for use in minerals processing, in 1996. Altair intends that Fine Gold will hold and maintain jig technology rights, including patents.

MRS was incorporated by Altair 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. All mining claims have now been abandoned. MRS currently holds, directly or indirectly, all of Altair's interest in the Tennessee mineral property, where we formerly held mineral leases on approximately 14,000 acres. We have terminated the mineral leases on all but approximately 1,300 acres as of December 31, 2005 and will terminate these remaining leases as soon as possible. The wholly-owned subsidiary of MRS, Tennessee Valley Titanium, does not have any assets or operations.

Altair Nanomaterials, Inc. was incorporated in 1998 as a wholly-owned subsidiary of MRS and holds all of the Company's interest in our nanomaterials and titanium dioxide pigment technology and related assets.

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 which 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.

Since 1996, we have leased mineral property near Camden, Tennessee and owned the rights to the Altair jig. However, we are disposing of the Tennessee mineral properties and limiting our expenditures on our centrifugal jig to patent maintenance expenses.

In November 1999, we acquired all the rights of BHP Minerals International, Inc. ("**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.

21

Table of Contents

We have experienced an operating loss in every year of operation. In the fiscal year ended December 31, 2005, we experienced a net loss of $9,937,212.

Employees

The business of Altair is currently managed by Dr. Alan J. Gotcher, President and Chief Executive Officer of the Company, Mr. Edward Dickinson, Chief Financial Officer, Mr. Douglas Ellsworth, Senior Vice President, Dr. Bruce Sabacky, Vice President of Research and Engineering and Mr. Roy Graham, Senior Vice President. We have 56 additional regular employees and one full-time temporary employee in research and development. We have employment agreements with Messrs. Gotcher, Dickinson, Ellsworth, Sabacky and Graham.

During 2006, we may hire up to 25 additional employees, primarily in research and development and operations. Such additional hiring, if it occurs, will be dependent upon business conditions.

Available Information

The Company files 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.

The Company makes available, free of charge on its Internet website located at www.altairnano.com, its most recent Annual Report on Form 10-K, its most recent Quarterly Report on Form 10-Q, any current reports on Form 8-K filed since the Company's 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, the Company provides electronic or paper copies of its filings free of charge upon request.

Forward-looking Statements

This Form 10-K 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. These 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 Form 10-K and our other filings with the Commission. 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 Form 10-K 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.

Table of Contents

Item 1A. Risk Factors

We may continue to experience significant losses from operations.

We have experienced a loss from operations in every fiscal year since our inception. Our losses from operations were $10,481,853 in 2005 and $6,904,955 in 2004. We will continue to experience a net operating loss until, and if, the applications of our nanomaterials and titanium dioxide pigment technology begin generating revenues in excess of our operating expenses. Even if any or all applications of the nanomaterials and titanium dioxide pigment technology begin generating significant revenues, the revenues may not exceed our costs of production and operating expenses. We may not ever realize a profit from operations.

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 and titanium dioxide pigment technology, as critical to our success. We have received various patents, and filed other patent applications, for various applications and aspects of our nanomaterials and titanium dioxide pigment 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 similar patents or defects in the 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 stock 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 have a material adverse effect on our business.

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.

Table of Contents

Our competitors have more resources than we do, which may give them a competitive advantage.

We have limited financial 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. Because of their size, resources, reputation, history and other factors, 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 may not be able to generate substantial revenues from the licensing of RenaZorb.

On January 28, 2005, we entered into a license agreement with Spectrum Pharmaceuticals, Inc. under which we granted Spectrum the exclusive worldwide rights to develop, market and sell RenaZorb, a potential drug candidate for patients with kidney disease, for human therapeutic and diagnostic applications. Under the terms of the license, we will not generate substantial recurring revenues unless and until Spectrum completes clinical testing of RenaZorb and applies for and receives marketing approval from the FDA and similar regulatory agencies worldwide, begins marketing products containing RenaZorb and experiences substantial, sustained market penetration with such products. There are substantial risks associated with that process, including the following:

- further testing conducted by Spectrum may indicate that RenaZorb is less effective than existing products, is unsafe, has significant side effects or is otherwise not viable;
- Spectrum may be unable to obtain FDA or other regulatory approval of RenaZorb for technical, political or other reasons or, even if it obtains such approval, may not obtain such approval on a timely basis;
- products containing RenaZorb may not be accepted in the market for various reasons, including questions about its efficacy, safety and side effects or because of poor marketing by Spectrum;
- Spectrum may terminate the license agreement, experience financial or other problems or otherwise fail to effectively test, seek approval for and market RenaZorb;
- the arbitration currently ongoing (see Item 3, Legal Proceedings) could seriously delay commercialization of RenaZorb: and
- prior to or following regulatory approval, superior products may be developed and introduced into the market.

If any of the foregoing risks, or other risks associated with developing pharmaceutical products were to occur, we would not receive substantial, recurring revenue from our license with Spectrum.

Our lithium titanate spinel, with potential application in the rechargeable battery market, has not been commercialized and may not generate significant revenue.

We are still testing and developing our lithium titanate spinel nanomaterial technology, which has potential applications in rechargeable batteries. Although we have entered a partnering agreement with Advanced Battery Technologies, Inc. for the development of lithium polymer batteries in China and have supplied them with nanomaterials for their use in design and development of the batteries, the project is in the early stages and substantial design, development and testing work remains to be done. We have not entered into written partnering or development agreements with any other battery manufacturers or end users. Even if Advanced Battery or other potential partners are successful in producing battery products with our nanomaterial technology:

Table of Contents

- batteries utilizing the technology may not exhibit expected charge rates, discharge rates or durability run time or other features when used in real world applications;
- batteries incorporating the technology may not meet the distinct needs of potential customers, applications or industries or otherwise prove competitive with existing technologies or technologies under development on account of technical limitations, such as a short run time between charges;
- marketing and branding efforts by us, a potential strategic partner or others may be insufficient to attract a sufficient number of customers; and
- competitors may have developed, or be in the process of developing, batteries or materials that are better suited to our target markets than batteries using our materials.

We may not benefit from licenses to use our technology for titanium dioxide pigment production.

Because of our relatively small size and limited resources, we do not plan to use our titanium processing technology for large-scale production of titanium dioxide pigments. We have entered into discussions with various minerals and materials companies about licensing our technology to such entities for large-scale production of titanium dioxide pigments. To date, we have entered into a license agreement with only one such entity, Western Oil Sands, Inc. Under our license agreement with Western Oil Sands, we expect to receive a limited amount of revenue during the early testing and development phase of the agreement but will receive significant royalties only if Western Oil Sands and licensees of Western Oil Sands determine in their discretion, after testing at a demonstration plant, to construct or license the construction of a full-scale titanium pigment production facility. If we enter into other license agreements, we expect that, as with the Western Oil Sands agreement, we would not receive significant revenues from such licenses unless and until feasibility testing yielded positive results and the licensee determined, in its discretion, to construct and operate a titanium pigment production facility.

We may not be able to sell nanoparticles produced using our nanomaterials and titanium dioxide pigment technology.

We plan to use the nanomaterials and titanium dioxide pigment technology to produce titanium dioxide nanoparticles for various applications. Titanium dioxide nanoparticles and other products we intend to initially produce with the nanomaterials and titanium dioxide pigment technology generally must be customized for a specific application working in cooperation with the end-user. We are still testing and customizing our titanium dioxide nanoparticle products for various applications and have no long-term agreements with end-users to purchase any of our titanium dioxide nanoparticle products. We may be unable to recoup our investment in the nanomaterials and titanium dioxide pigment technology and nanomaterials and titanium dioxide pigment equipment for various reasons, including the following:

- products utilizing our titanium dioxide nanoparticle products, most of which are in the research or development stage, may not be completed or, if completed, may not be readily accepted by expected end-users;
- we may be unable to customize our titanium dioxide nanoparticle products to meet the distinct needs of potential customers;
- potential customers may purchase from competitors because of perceived or actual quality or compatibility differences;
- our marketing and branding efforts may be insufficient to attract a sufficient number of customers; and
- because of our limited funding, we may be unable to continue our development efforts until a strong market for nanoparticles develops.

Our costs of production may be too high to permit profitability.

We have not produced any pigments, nanoparticles or other products using our nanomaterials and titanium dioxide pigment technology and equipment on a sustained commercial basis. Our actual costs of production, or those of our licensees, may exceed those of competitors. Even if our costs of production are lower, competitors may be able to sell titanium dioxide and other products at a lower price than is economical for us or our licensees.

Table of Contents

We have issued a $3,000,000 note to secure the purchase of the land and the building where our nanomaterials and titanium dioxide pigment assets are located.

In August 2002, we entered into a purchase and sale agreement with BHP Minerals International Inc. to purchase the land, building and fixtures in Reno, Nevada where our nanomaterials and titanium dioxide pigment assets are located. In connection with this transaction, we issued to BHP a note in the amount of $3,000,000, at an interest rate of 7%, secured by the property we acquired. The first payment of $600,000 of principal plus accrued interest was due and paid February 8, 2006. Additional payments of $600,000 plus accrued interest are due annually on February 8, 2007 through 2010. If we fail to make the required payments on the note, BHP has the right to foreclose and take the property. If this should occur, we would be required to relocate our primary operating assets and offices, causing a significant disruption in our business.

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

As of March 3, 2006, we had approximately $19.5 million in cash, an amount sufficient to fund our ongoing operations for approximately 2-3 years at current working capital expenditure levels. However, we may use our existing capital sooner than projected in connection with capital expenditures, transactions, litigation or other events that are not currently reflected in our projections. We may also use more capital than projected as we expand our research, development and marketing efforts. Unless we experience a significant increase in revenue, we will need to raise additional capital in the future in order to sustain our ongoing operations, continue unfinished testing and additional development work and, if certain of our products have been commercialized, produce and market such 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;
- the price, volatility and trading volume of our shares of common stock;
- our financial results, particularly the amount of revenue we are generating from operations;
- the amount of our capital needs;
- the market's perception of nanotechnology and/or chemical stocks;
- the economics of projects being pursued; and
- the market's perception of our ability to generate revenue through the licensing or use of our nanoparticle technology for pharmaceutical, pigment production, nanoparticle production and other uses.

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, and may be forced to discontinue operations.

Operations using the nanomaterials and titanium dioxide pigment technology or our Tennessee mineral property may lead to substantial environmental liability.

Virtually any prior or future use of the nanomaterials and titanium dioxide pigment technology is subject to federal, state and local environmental laws. In addition, we have constructed a pilot plant on, and are in the process of reclaiming mineral property that we leased in Tennessee. Under such 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.

Table of Contents

Certain of our experts and directors reside in Canada 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. 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 would (i) 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 (ii) 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 Dr. Alan J. Gotcher, our Chief Executive Officer and President, Edward Dickinson, our Chief Financial Officer, Douglas Ellsworth and Roy Graham, our Senior Vice Presidents and Dr. Bruce Sabacky, our Vice President of Research and Engineering. The loss or unavailability of any or all of these individuals could have a material adverse effect on our business and the market price of our shares of common stock. We have key man insurance on the lives of Dr. Gotcher and Dr. Sabacky. We do not have agreements requiring any of our key personnel to remain with our company.

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

Our articles of incorporation authorize the issuance of an unlimited number of shares of common stock 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 shares of common stock would further dilute the percentage ownership of our company held by existing stockholders.

We have a substantial number of warrants and options outstanding and may issue a significant number of additional shares upon exercise thereof.

As of March 3, 2006, there were outstanding warrants to purchase up to 1,318,556 shares of common stock and options to purchase up to 2,541,200 shares of common stock. The existence of such warrants and options, and any additional warrants and options we issue in the future, may hinder future equity offerings, and the exercise of such warrants and options may further dilute the interests of all shareholders. The shares of common stock issuable upon the exercise of many of our outstanding warrants are subject to resale registration statements, and all of our options are subject to a registration statement on Form S-8. Accordingly, future resale of the shares of common stock issuable on the exercise of such warrants and options in most cases occurs immediately after exercise and may have an adverse effect on the prevailing market price of the shares of common stock.

The market price of our common stock may increase or decrease dramatically at any time for any or no reason.

The market price of our common stock, like that of the securities of other early stage companies, may be 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 the nanomaterials and titanium dioxide pigment technology, 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. In addition, the market price for our common stock may be affected by various factors not directly related to our business or future prospects, including the following:

Table of Contents

- 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 indicators or investor distrust.

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 stock. 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 stock in the foreseeable future.

We are subject to various regulatory regimes, and may be adversely affected by 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 our execution of our business plan. In addition, through such audits, inquiries and investigations, we or a regulator have from time to time determined, and may in the future determine, that we are out of compliance with one or more governing rules or laws. Remedying such non-compliance may divert 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. Any charge, and particularly any determination, that we had materially violated a governing law would likely have a material adverse effect on the market price of our stock, our ability to execute our business plan and our ability to retain and attract qualified management.

Item 1B. Unresolved Staff Comments

None

Table of Contents

Item 2. Properties

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 80,000 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 first payment of $600,000 of principal plus accrued interest on such promissory note was due and paid February 8, 2006.

In addition, we lease 4,744 square feet of office and laboratory space in the Flagship Enterprise Center Building located at 2701 Enterprise Drive in Anderson, Indiana. The space is used for the production of prototype batteries and battery cells. The lease was entered into in October 2005 for an initial term of three years with the option for subsequent one-year renewals. Total rent for the leased premises, including normal utilities, real estate taxes and common area fees is scheduled to be $7,907 per month during the first year (increasing to $8,302 per month during the second year and $8,697 per month during the third year). This rent is net of a 20% rent subsidy offered by local government entities. In exchange for that rent subsidy, the Company has agreed that operations conducted at the leased premises will remain in Madison County, Indiana for at least three years after the expiration of the three-year subsidy period. In addition to the government rent subsidy, Landlord has authorized a $100,000 rental credit, the net effect of which is to giving the Company free rent during the first year of the Lease.

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 believe that the existing offices and test facilities of Altair and its subsidiaries are adequate for our current needs. In the event that alternative or additional office space is required, we believe we could obtain additional space on commercially acceptable terms.

As mentioned above in *Subsidiaries*, we have terminated the mineral leases on all but approximately 1,300 acres of our Tennessee mineral property and intend to terminate the remaining leases as soon as possible. Remediation work on the properties has been substantially completed. Certain re-vegetation measures, the planting of small trees, cannot be completed until late winter 2006. Once completed, the applicable regulatory authorities will review and, if acceptable, approve completion of remediation work and a multi-year monitoring plan. Future remediation costs are not expected to be significant.

Item 3. Legal Proceedings

In June 2005, the Company filed a Complaint against Rudi E. Moerck, former President and a director of the Company, alleging breach of his Employee Confidential Information and Inventions Agreement (the “Information Agreement”) and seeking declaratory relief, injunctive relief and damages. Specifically, the Company requested that Mr. Moerck be ordered to assign his rights in certain patent applications to the Company, return all Company proprietary information in his possession to the Company and to delete/destroy Mr. Moerck’s copies of all such information. Mr. Moerck filed a timely Answer to the Complaint. Subsequently, Mr. Moerck executed and delivered the requested patent application assignments. The Company executed a settlement agreement with Mr. Moerck, which the Company believes will fully preserve and protect the Company’s interests in its proprietary information. Prior to the execution of the Settlement Agreement, Mr. Moerck provided the Company with several Offers of Judgment against him in this case. The Company accepted an Offer of Judgment against Mr. Moerck, where he agreed that he breached his Employee Confidential Information and Inventions Agreement and he has complied with all terms of the Offer of Judgment, including the return of all Company Confidential Information. This suit has now officially been concluded.

29

Table of Contents

On July 29, 2005, the Company was served with a complaint in the matter of Louis Schnur v. Al Moore, Altair Nanotechnologies, Inc. and Does 1 through 10, filed in the U.S. District court, Central District of California. On October 13, 2005 the Company filed a counterclaim (the "Company's Counterclaim) against Mr. Schnur for declaratory relief, asking the Court to issue a declaration that: (1) Altair did not improperly disclose material, non-public information in violation of any statute; (2) Altair did not breach its fiduciary duties to its shareholders; and (3) Altair had no duty or ability to prevent an individual from purchasing Altair common stock from an individual shareholder. Mr. Schnur timely filed an Answer to the Company's Counterclaim on November 2, 2005. On February 23, 2006, The Company announced that the lawsuit titled Louis Schnur v. Al Moore, Altair Nanotechnologies Inc. and Does 1 through 10 filed on or about July 26, 2005, has been dropped by Mr. Schnur with prejudice and without any monetary remuneration to Mr. Schnur. Also, Mr. Schnur, Mr. Moore and Altair Nanotechnologies Inc. have signed a Mutual Agreement that there will be no additional lawsuits pertaining to the allegations made in the Louis Schnur v. Al Moore, Altair Nanotechnologies, and Does 1 through 10 suit. Additionally the Mutual Agreement prevents any lawsuit or claim over anything that has occurred or any allegations made prior to the signing of the Mutual Agreement. The Company reiterates that Altairnano management had not breached its fiduciary duties to its shareholders and that the lawsuit was completely without merit. This suit has now officially been concluded without any finding of wrongdoing by Altair and with no monetary award or settlement made to Mr. Schnur.

The Company and Spectrum Pharmaceuticals, Inc. (“Spectrum”) are parties to an arbitration arising out of a License Agreement between the parties. After Altair notified Spectrum of several claims it had for compensation under the Agreement, Spectrum formally initiated the arbitration by filing its claims for unspecified breach of contract damages on September 30, 2005. The Company answered by denying all of Spectrum’s claims for relief and bringing counterclaims of its own, including specific performance of a milestone payment for 100,000 shares of Spectrum common stock. On November 28, 2005, the chief executive officers of the parties and their counsel met and reached an oral settlement agreement that, despite Spectrum's claims for $2,000,000 in unspecified damages, resolved all issues in the arbitration without any payment of funds by either company and a payment to Altair of 40,000 shares of Spectrum stock. The oral agreement was reduced to writing by the parties’ legal counsel, but Spectrum has refused to sign the written agreement. Spectrum now continues to seek monetary damages based upon alleged breaches of the License Agreement. The Company is requesting that the arbitration panel enforce the parties’ oral settlement agreement, or, in the alternative, dismiss all of Spectrum’s claims and award the Company damages in its counterclaims.

The arbitration is occurring under the auspices of the American Arbitration Association (“AAA”). The AAA has appointed a three-person panel of arbitrators, and has stated that the arbitration will take place in Irvine, California. No proceedings have yet occurred in front of the AAA panel. Because the arbitration is in its early stages, the likelihood of an unfavorable outcome and an estimate of the amount or range of potential loss is not known.

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 2005 fiscal year.

Table of Contents

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, for 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, 2004	Low	High
1st Quarter	$2.20	$4.40
2nd Quarter	$2.05	$3.58
3rd Quarter	$0.95	$2.37
4th Quarter	$1.50	$3.17
Fiscal Year Ended December 31, 2005	**Low**	**High**
1st Quarter	$1.93	$6.52
2nd Quarter	$2.53	$4.38
3rd Quarter	$2.40	$3.40
4th Quarter	$1.93	$2.82

The last sale price of our common shares, as reported on the Nasdaq Capital Market on March 3, 2006, was $3.65 per share.

Outstanding Shares and Number of Shareholders

As of March 3, 2006, the number of common shares outstanding was 59,352,519 held by approximately 500 holders of record. In addition, as of the same date, we have reserved 3,606,000 common shares for issuance upon exercise of options that have been, or may be, granted under our employee stock option plans and 1,318,556 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.

Table of Contents

Securities Authorized for Issuance under Equity Compensation Plans

We have stock option plans administered by the Board of Directors that provide for the granting of options to employees, officers, directors and other service providers of the Company. All option plans have been approved by security holders. The following table sets forth certain information with respect to compensation plans under which equity securities are authorized for issuance at December 31, 2005:

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	2,533,200	$2.69	3,568,000
Equity compensation plans not approved by security holders	None	N/A	None
Total	2,533,200	$2.69	3,568,000

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, 2005.

Transfer Agent and Registrar

The Transfer Agent and Registrar for our common shares is Equity Transfer Services, Inc., Suite 420, 120 Adelaide Street West, Toronto, Ontario, M5H 4C3.

Canadian Taxation Considerations

Dividends paid on common shares owned by non-residents of Canada are subject to Canadian withholding tax. The rate of withholding tax on dividends under the Income Tax Act (Canada) (the "**Act**") is 25%. However, Article X of the reciprocal tax treaty between Canada and the United States of America (the "**Treaty**") generally limits the rate of withholding tax on dividends paid to United States residents to 15%. The Treaty further generally limits the rate of withholding tax to 5% if the beneficial owner of the dividends is a U.S. corporation which owns at least 10% of the voting shares of the Company.

If the beneficial owner of the dividend carries on business in Canada through a permanent establishment in Canada, or performs in Canada independent personal services from a fixed base in Canada, and the shares of stock with respect to

which the dividends are paid is effectively connected with such permanent establishment or fixed base, the dividends are taxable in Canada as business profits at rates which may exceed the 5% or 15% rates applicable to dividends that are not so connected with a Canadian permanent establishment or fixed base. Under the provisions of the Treaty, Canada is permitted to apply its domestic law rules for differentiating dividends from interest and other disbursements.

Table of Contents

A capital gain realized on the disposition of common shares by a person resident in the United States ("**a non-resident**") will be subject to tax under the Act if the shares held by the non-resident are "taxable Canadian property." In general, common shares will be taxable Canadian property if the particular non-resident used (or in the case of a non-resident insurer, used or held) the Common Stock in carrying on business in Canada or where at any time during the five-year period immediately preceding the realization of the gain, not less than 25% of the issued and outstanding shares of any class or series of shares of the Company, which were listed on a prescribed stock exchange, were owned by the particular non-resident, by persons with whom the particular non-resident did not deal at arms' length, or by any combination thereof. If common shares constitute taxable Canadian property, relief nevertheless may be available under the Treaty. Under the Treaty, gains from the alienation of common shares owned by a non-resident who has never been resident in Canada generally will be exempt from Canadian capital gains tax if the shares do not relate to a permanent establishment or fixed base which the non-resident has or had in Canada, and if not more than 50% of the value of the shares was derived from real property (which includes rights to explore for or to exploit mineral deposits) situated in Canada.

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 ("**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,	2005	2004	2003	2002	2001
STATEMENTS OF OPERATIONS					
Revenues	$ 2,806,535	$ 1,151,892	$ 72,851	$ 253,495	$ 42,816
Operating expenses	$ (13,288,388)	$ (8,056,847)	$ (5,858,061)	$ (8,110,206)	$ (6,064,348)
Interest expense	$ (207,189)	$ (194,180)	$ (454,415)	$ (1,151,388)	$ (1,881,077)
Interest income	$ 750,306	$ 96,229	$ 1,879	$ 2,105	$ 148,980
Gain (Loss) on foreign exchange	$ 1,524	$ 626	$ (193)	$ (835)	$ (402)
Loss on extinguishment of debt	$ -	$ -	$ -	$ (914,667)	$ -
Net Loss	$ (9,937,212)	$ (7,002,280)	$ (6,237,939)	$ (9,921,496)	$ (7,754,031)
Basic and diluted net loss per common share	$ (0.17)	$ (0.14)	$ (0.19)	$ (0.40)	$ (0.39)
Cash dividends declared per common share	$ -	$ -	$ -	$ -	$ -
BALANCE SHEET DATA					
Working capital	$ 21,482,766	$ 7,663,264	$ 3,565,039	$ (204,365)	$ (81,154)
Total assets	$ 33,464,016	$ 15,547,021	$ 11,659,754	$ 8,914,405	$ 10,853,243
Current liabilities	$ (2,427,543)	$ (376,773)	$ (397,141)	$ (604,503)	$ (714,689)
Long-term obligations	$ (2,400,000)	$ (2,880,311)	$ (2,686,130)	$ (3,905,040)	$ (1,462,060)
Net shareholders' equity	$ (28,636,473)	$ (12,289,937)	$ (8,576,483)	$ (4,404,862)	$ (8,676,494)

33

Table of Contents

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 company, with principal assets and operations in the United States, whose primary business is developing and commercializing nanomaterial and titanium dioxide pigment technologies. We are organized into two divisions, a Performance Materials Division and a Life Sciences Division. Our research, development, production and marketing efforts are currently directed toward six market applications that utilize our proprietary technologies:

- Advanced Materials
  - The marketing and licensing of titanium dioxide pigment production technology.
  - The marketing and production of nano-structured ceramic powders for thermal spray applications.
  - The development of nano-structured ceramic powders for nano-sensor applications.
  - The development of titanium dioxide electrode structures in connection with research programs aimed at developing a lower-cost process for producing titanium metals and related alloys. Development of this product is largely inactive as we seek a business partner.
- Air and Water Treatment
  - The development, production and sale of photocatalytic materials for air and water cleansing.
  - The marketing of Nanocheck products for phosphate binding to prevent or reduce algae growth in recreational and industrial water.
- Alternative Energy
  - The development, production and sale of nano-structured lithium titanate spinel, lithium cobaltate and lithium manganate spinel materials for high performance lithium ion batteries.
  - The design and development of power lithium ion battery cells, batteries and battery packs as well as related design and test services.
  - The development of materials for photovoltaics and transparent electrodes for hydrogen generation and fuel cells.
- Lanthanum based Pharmaceutical Products
  - 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 testing of Renalan, a test-stage active pharmaceutical ingredient, which is designed to be useful in the treatment of elevated serum phosphate levels in companion animals suffering from chronic renal disease.
- Chemical Delivery Products