The newly-opened $12 million Biomedical Building on the campus of Louisiana Tech University.

The Institute for Micromanufacturing (IM), a state-of-the-art high technology research and development facility at Tech.

The Enterprise Center provides cost-effective office space and administrative services to emerging technology businesses.
Welcome to the first Annual Report from the Office of Intellectual Property and Commercialization. As this report shows, Louisiana Tech’s researchers continue to innovate at an unparalleled rate, with their discoveries and new inventions attracting the interest of industry. To highlight just a few major achievements, Tech was awarded five new U.S. patents in fiscal year 2007, signed five new license agreements (three of which included equity and are part of the consideration for the license), and received 32 new Reports of Invention.

As universities are being called upon to be important players in economic development, we are pleased to report that one of the license agreements was with the Louisiana-based firm Avoyelles Renewable Fuels, Inc. The company’s business is to convert biomass to bio-diesel. Currently, it is in the process of constructing a refinery in Pointe Coupee and has chosen to establish an office in our incubator to develop a closer relationship with Tech. In addition, the company is considering locating its catalyst manufacturing plant near Ruston because of the know-how we bring to the table. This is just one example of how our intellectual property is not only helping to grow a new business here in Louisiana, but is also benefiting the public by helping the country reduce its dependence on foreign oil.

Tech’s intellectual property is also helping develop strong ties with industry and grow our research base. To cite just a few examples, in 2007 a major Fortune 500 corporation awarded Tech a three-year, $600,000 grant to help us further develop one of our technologies for use in their heavy equipment. Another company, a military contractor, was able to win two $800,000 Phase II SBIR grants for proposals that were based largely on our technologies. We will receive a significant portion of the Phase II SBIR grant money under subcontracts. This company has also just recently opened an office in our incubator to be near our faculty.

As we look back, we are impressed by how far we have come in such a short time...Tech’s faculty scientists are some of the most innovative researchers in the world, which bodes well for our program and our region in the future.

Richard Kordal
Director, Office of Intellectual Property and Commercialization
1.0 Reports of Invention

During the twelve-month period ending June 30, 2007, a total of 32 Reports of Invention were disclosed to the OIPC. Normalized for research expenditures (based on historical levels since final fiscal year 2007 results are not in yet), this averages out to about 20 ROIs per $10 million Research and Development expenditures. This is approximately five times above the national average of four ROIs per $10 million R&D expenditures. The graph below shows that our faculty has been able to sustain this high level for several years running.

2.0 Recently Issued Patents

A U.S. patent is a form of intellectual property protection granted by the government that gives the owner the right to exclude others from making, using, selling, or importing for sale the patented invention during the life of the patent.

Five new patents were issued to Louisiana Tech this fiscal year. Including the patents that were donated to us by Innerseal, Tech now holds a total of 19 patents. One of the newly issued patents was licensed to a company, Aster Bio Aqua, while another was featured in the World's Best Technology Showcase. Listed below are the patents and the names of the respective inventors.


U.S. Patent No. 7,094,622, entitled “Polymer Based Tunneling Sensor,” issued August 22, 2006; inventors Tianhong Cui, Jing Wang and Yongjun Zhao.


3.0 Patent Applications

It can take upwards of three to five years from the time a patent application is filed until it issues. Since one cannot enforce a patent until it issues, it is very common for a university to license a pending patent.

In fiscal year 2007 we filed a total of 17 new patent applications. Of those 17 applications, eight were provisional applications and nine were regular applications. The ratio of patent filings to ROIs received was roughly 50%, which is typical for a university technology transfer office. The graph below shows the general upward trend in our patent filings. (It should be noted that the surge in patent filings in 2006 was an anomaly. One of our optionees decided to greatly expand the patent coverage on the technologies optioned to them by filing on our behalf a large number of new patent applications. This benefited both us and the company.)

4.0 Licensing and Related Activity

A license is an agreement that grants a company rights to an invention in exchange for some consideration (royalty payments, stock, milestone payments, etc.) and the company’s commitment to further develop and commercialize the invention. A license may include rights to more than one invention if they are closely related. The specific terms and conditions of the license are determined through a complex negotiation process. Often before committing to a license agreement, a company will enter into an option agreement. During the option period (which often runs from three to six months) we agree to discontinue marketing the technology to others while the company evaluates the technology in-house. In exchange for this exclusive look we generally will receive a payment.

In fiscal year 2007, we signed five new license agreements covering 18 ROIs. By several measures (ratio of ROIs licensed to ROIs received, or percentage license/options executed to ROIs received), we are doing a very effective job transferring our technologies to industry for commercial development. For example, in fiscal year 2007 we signed five new license/option agreements and received a total of 32 new ROIs for a percentage of 16%. According to the AUTM 2004 survey data for institutions of similar size (in terms of research expenditures), the percentage was 11%. More impressive was the ratio of ROIs licensed to ROIs received. In fiscal year 2007 this ratio was 18/32 or 56%. It also shows that we are effective at moving our technologies to the commercial sector. The graph below shows the upward trend in our licensing activity.

Currently, Tech is prosecuting a total of 47 patent applications (provisional, regular, and foreign counterparts). Of those 47 applications, 28 (or more than half) have been licensed to companies, which is an extremely high ratio for any academic institution.

“In fiscal year 2007, we signed five new license agreements covering 18 ROIs. By several measures, we are doing a very effective job transferring our technologies to industry.”
COMPANIES WITH TECHNOLOGIES LICENSED FROM LOUISIANA TECH UNIVERSITY

BIOPASSWORD, INC. signed a license agreement with Tech in 2005, representing Tech’s first commercial license agreement. It covered a joint invention with researchers from Penn State University for computer security software technology. Subsequent to that agreement, the Tech inventor, Dr. Vir Phoha, made another related discovery again with his Penn State collaborators. We negotiated a first amendment to the original license agreement to include this new technology in exchange for additional consideration. Then in fiscal year 2006 we negotiated a second amendment which granted us stock. The BioPassword product upon which our technology is based won the federal government’s FOSE 2007 award in the category of security software.

OSMOTECH, LLC signed an exclusive license with Tech to develop concrete restoration products and services based on Dr. Henry Cardenas’ electrokinetic nanoparticle technology. This technology enables the rehabilitation of poured concrete after it has been cured. The process has wide applications from mitigation of corrosion of embedded steel to concrete strengthening and sealing.

The U.S. market for concrete restoration is mature, growing at a rate of 10 - 12% annually, and is valued at approximately $34 billion. OsmoTech’s core business is the field of concrete durability. Through a long-standing Cooperative Research and Development Agreement with the U.S. Army Corps of Engineers, they have become the exclusive provider of a highly-advanced electrochemical process to de-water below-ground concrete structures, such as basements. With years of hands-on electrochemical experience, OsmoTech is an ideal partner to commercialize Dr. Cardenas’ technology.

ARTIFICIAL CELL TECHNOLOGIES, INC., founded in 2002, is a seed-stage biotechnology company that acquired an exclusive license from Tech to Dr. Don Haynie’s designed-polypeptide technology. Dr. Haynie’s technology combines novel designed polypeptides with layer-by-layer methodology to engineer and manufacture nanocoatings, capsules, and artificial cells for specific applications. One lead application that ACT is pursuing is the development of artificial red blood cells formed by encapsulating hemoglobin in a polypeptide multilayer capsule.

AVOYELLES RENEWABLE FUELS, INC. is a new Louisiana-based energy company that is in the process of building a refinery in Pointe Coupee for converting biomass waste, such as wood chips, to high-grade diesel fuel via the Fischer-Tropsch process. The company is headed by a CEO who has vast experience in the energy business and whose most recent project involved taking a biodiesel company public that he helped to found. The conversion of biomass to fuel is a two-step process. First, the organic material is converted to syngas (a form of natural gas) via a gasification process. Next, the syngas is catalytically converted to diesel fuel.

It is this latter step where our technology comes into play. Dr. Chester Wilson and Joshua Brown (Tech and the nation’s first graduate in nanosystem engineering), developed a nanoengineered catalyst that is more efficient than traditional catalyst. The company has announced that it plans to establish its catalyst manufacturing plant in or near Ruston to be close to Tech. It is estimated that in two to three years, when the refinery hits full production, the catalyst plant will be the largest producer of nanoengineered materials in the U.S.

ASTER BIO AQUA is in the business of developing environmentally friendly products for a variety of industries and applications, including wastewater treatment and aquaculture. They acquired a license to Drs. Harrell “Lynn” Walker and Lawrence Higginbotham’s environmentally friendly microbial algicide for use in aquaculture and ornamental ponds.

Blue-green algae growth can be a large problem for catfish farmers. Over 95% of the domestic catfish production is located in Mississippi, Arkansas, Louisiana, and Texas. At any given time, approximately 50% of the 170,000 acres of catfish ponds suffer from off-flavors caused by two chemicals, geosmin and 2-methylisoborneol, produced by indigenous blue-green algae growth. Off-flavor prevents harvesting and causes loss of stock. Of the two currently available algicides, copper sulfate and diuron, neither are particularly safe and effective.

Using our proprietary technology, which has been issued three U.S. patents, Aster Bio Aqua is developing an effective blue-green algae control treatment. Unlike the chemical agents, this new technology relies on a natural biological control method that has the potential for lower costs while also being less toxic and harmful to non-target organisms.

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