

Cornell - Industry Relationships

Task 2 - Best Practices at Peer Institutions

Start-up Companies

ActaCell

ActaCell is a US based corporation formed in 2007 by exclusively licensing Li-Ion technologies developed at the University of Texas at Austin [Material Sciences Program](#) by Professor Arumugam Manthiram. Initial venture capital investors in ActaCell include DFJ Mercury, Good Energies, Google.org and Applied Ventures. ActaCell's first cell chemistry incorporates a proprietary stabilized manganese spinel cathode material, which solves the calendar and cycle life challenges associated with Mn Spinel while maintaining the high power and safety characteristics of the Spinel native material.

The University of Texas has an office for technology commercialization that has supported about 250 start-ups. They publicize their work with glossy marketing publications that venture firms can read to determine when collaborative opportunities exist.

When the VCs discovered this battery opportunity, the key terms that made the venture successful were as follows:

1. Little up front money required by the university. All the venture resources could go into making batteries.
2. A modest royalty was negotiated, with minimum payments not required for several years.
3. The University shared the risk by taking an equity position in the company.
4. The start-up received exclusive world-wide rights to the technology.
5. University costs were controlled by requiring all continuing prosecution of the IP would be done by the company. (A US patent had been filed but office actions were pending. No foreign filings had been made. The company picked up the costs for this continuing IP activity.)

6. The key professor worked with the company about 1 day per week. He was paid appropriately by the company.

As commercialization progressed, much more was learned about the technology and there was some schedule slippage. The university was patient and allowed time for commercialization. In addition, new discoveries were made in on-going research at the university. The start-up was given right of first refusal for these technologies. The same licensing conditions were applied to this new technology. Royalties were renegotiated, but they were not additive for products using all the IP. A slightly higher rate was negotiated.

Evergreen Solar (Nasdaq ESLR)

Evergreen Solar, Inc. developed, and now manufactures and markets String Ribbon(R) solar power products using its proprietary, low-cost silicon wafer technology. The Company's patented wafer manufacturing technology uses significantly less polysilicon than conventional processes. Evergreen Solar's products provide reliable and environmentally clean electric power for residential and commercial applications globally. For more information about the Company, please visit www.evergreensolar.com. Evergreen Solar(R) and String Ribbon(R) are trademarks of Evergreen Solar, Inc.

This venture started when VCs were able to license a number of patents from MIT on photovoltaic cells based on the cost-effective manufacture of multi-crystalline wafers. In this interaction, the IP negotiation was complex and not explicitly spelled out for us. Three elements were key to the venture's success.

1. MIT took an equity position in the new company. This approach made the university a partner in the success of the company and created a sound foundation for future negotiations. Everyone needed the company to be successful if they were to get a significant return.
2. The IP arrangement was critical. Venture investors and the company worked with the University to negotiate an exclusive worldwide license that required very little up front cash and had reasonable royalty terms.
3. The key professor, Emanuel "Eli" Sachs, spent 1 day/week as a consultant for the company. His continued participation in the company has been critical to their success.

The company went public in 2000. Even after multiple venture rounds, MIT's share of the company was worth somewhere from \$200K to \$2M depending on when and if they have sold it.

American Superconductor (NASDAQ: AMSC)

American Superconductor offers an array of proprietary technologies and solutions spanning the electric power infrastructure – from generation to delivery to end use. The company is a leader in renewable energy, providing proven, megawatt-scale wind turbine designs and electrical control systems. The company also offers a host of Smart Grid technologies for power grid operators that enhance the reliability, efficiency and capacity of the grid, and seamlessly integrate renewable energy sources into the power infrastructure. These include superconductor power cable systems, grid-level surge protectors and power electronics-based voltage stabilization systems. AMSC's technologies are protected by a broad and deep intellectual property portfolio consisting of hundreds of patents and licenses worldwide.

American Superconductor started in 1987 also drew on technology developed at MIT. In this case, one of the professors involved left MIT to become CEO of the start-up, and remains CEO today. Licenses to the original inventions were obtained from MIT under very reasonable terms. The company went public in 1992, and has been a success for the university, all of the professors involved, and the investors.

Superconductivity, Inc.

Superconductivity, Inc. designs and manufactures superconducting magnetic energy storage systems for the semiconductor markets. In addition, the company manufactures low temperature superconductor products. Superconductivity was founded in 1987 and is based in Madison, Wisconsin. On April 8, 1997, Superconductivity, Inc. was acquired by American Superconductor.

This venture started during the excitement over room temperature superconductors in the 1980's. VCs looking for technology that might form the basis for a commercial product found Professor Roger W. Boom at the University of Wisconsin-Madison. Work started as a small grant (~\$25,000) to fund research in storage devices. Over time, this funding grew to more than \$200,000 annually. All of the IP was owned by the University's licensing arm, the Wisconsin Alumni Research Foundation (WARF).

When the company was formed in 1987, several factors were critical.

1. Licensing terms were fair. Royalties were modest and minimum payments were not required for several years; WARF took an equity position in the company to minimize up-front payments, thus preserving invested funds for company growth.
2. WARF remained flexible on terms over the years. They were willing to renegotiate the agreement, resulting in delayed minimum payments for the technology.
3. Support of university research by the company was an important part of the agreement with WARF, and ultimately led to valuable insights for the company's development efforts.

This partnership led to the hiring of a number of students from the University of Wisconsin. Once Superconductivity Inc. was acquired by AMSC, the University had an exit path that proved quite attractive.