# Ravi Viswanathan combines science and business to seek new ventures

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Caroline Multari

For many scientists, it is a dream to bring new technology to market and to head a successful start-up company. As a research scientist-turned-venture capitalist, Ravi Viswanathan helps some of materials research's best and brightest to do just that.

As a partner at the international venture capital firm New Enterprise Associates (NEA) in California, Viswanathan funds ventures in clean technology. With a doctorate degree in chemical engineering from the University of California–Santa Barbara (UCSB), Viswanathan brings his research experience with him. However, his was not a direct journey. After graduating in 1994, Viswanathan began working on electronic materials at Raychem Corp. in the research and development laboratory. While he loved the science he was doing, he found himself fascinated by the commercialization and business sides of the technology. This led him to seek an MBA degree.

Despite his already impressive credentials, upon applying to business school after his doctorate, Viswanathan had to convince MBA program recruiters that he could make the switch from purely technical work to business. He said that the differences between science and business are largely in the types of data used to make decisions and how much judgment is necessary. Scientists are used to being "in the weeds," he said, and dealing with technical data, while decisions in business often rely on "imperfect or amorphous" data where judgment becomes more important.

In 1998, he received his MBA degree from the Wharton School of Business. Two jobs during his business training helped further direct his career path. After business school, Viswanathan joined the consulting firm McKinsey & Company, which he refers to as a "post-doc for business." In 2000, he joined the investment banking firm Goldman, Sachs & Co., where he was co-head of the technology practice in their Private Equity Group, a broad-based investing group, dealing with early stage ventures and buyouts. While there, he decided he wanted to work with entrepreneurs and build companies. To this end, Viswanathan moved to NEA, where he has been working for over eight years.

The main goal of venture capital firms like NEA is to make money for investors, which provides impetus to find and invest in great entrepreneurs and companies. NEA raises funds in 3–4-year cycles from endowments, corporations, and institutional investors. New ventures are found and funded by the partners at NEA, who then work with the companies to grow and build them. NEA is usually involved with a company for five to 10 years, with NEA's partners serving on the board of directors to support its growth during that time.

In his current position as General Partner, Viswanathan said he uses his chemical engineering doctorate a fair amount, depending on the company. However, one of the most universally helpful things he learned from his time at UCSB was a life lesson: the intangible quality of knowing how to solve problems.

During the search for new projects, each partner in Viswanathan's team looks for a potential venture to present to the team. If the team is interested in the company, due diligence is done on the company before it is presented to the partners who make the final decision to move forward with funding. When Viswanathan is vetting a candidate company, he uses both his scientific training and his business training to determine if it is worthy of investment.

"This is why I like venture capital, because you can use both," he said. In assessing the venture, he looks at the technology and markets with a scientific lens, whereas his experience in the business world helps him to understand and critique the business model. For example, when dealing with a late-stage equity venture, his business training is most helpful, but for scientifically based ventures, he will make sure that the data scales from the lab bench to large-scale production or if the cost profile of the product being proposed is appropriate to the target market. Knowing the key scientific questions to ask helps Viswanathan to determine the merit of a company and assess its potential for success in the market. "The best is when [the product] scales up and is cost-effective at scale," Viswanathan said.


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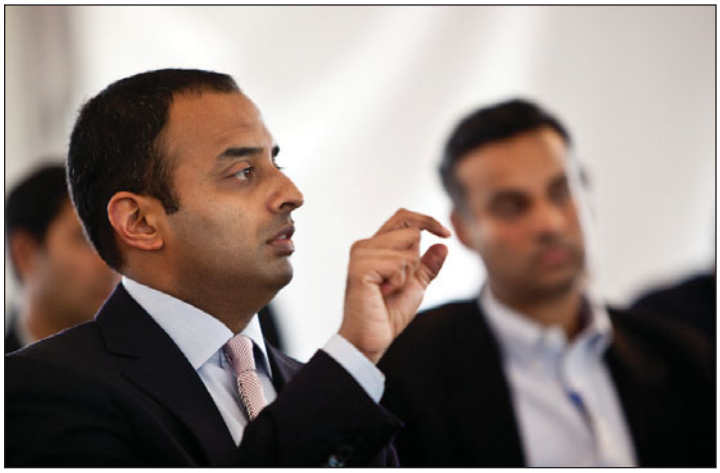

Viswanathan's scientific training is also useful when looking at early stage companies, such as those based on new technology from a university. One such example of Viswanathan's work in this area is the Santa Barbara-based company Soraa. The company produces light-emitting diodes (LEDs) using "totally different architecture to produce best-in-class light quality and performance," he said. Soraa was started by three materials science professors out of UCSB. Viswanathan had known of Shuji Nakamura, Steven DenBaars, and James Speck, "some of the best LED researchers in the world," while he was at UCSB and was able to approach them to show how working with his firm could add value to their work and ideas.

The ventures that Viswanathan works with are at various stages of their growth. The early stage ventures can be as small as "young entrepreneurs with a great idea," as Viswanathan puts it. On the other end of the spectrum, a later-stage venture can be a private company with a large amount of revenue and up to several hundred employees. What he looks for in particular are "great CEOs and great teams" and whether there is a large enough market for the proposed product. The origins of ventures are mostly from industry—both existing and newly created companies. However, in the last five years, 12–15 of the ventures funded by NEA originated from universities or national laboratories. "One of the best things about this country is that so much innovation takes place at universities," Viswanathan said, and that "more and more professors are willing to take the plunge into entrepreneurship."

When evaluating a company's potential, Viswanathan does not have a defined preference for whether a venture's team is interdisciplinary or not, but notes that it depends on the application, whether it is in physics, chemistry, or electronics. "Materials itself is interdisciplinary," he said. For example, projects based on semiconductors typically do not require a team from different fields, whereas projects in energy or biomaterials may depend on this diversity. The invention is in how a product is made from a given material. Since materials science and engineering is based on the control of materials at the molecular scale, materials and technologies do not always perform the same at the large scale as they do in the laboratory due to factors, for example, like durability, performance, and lifetime. Additionally, the product must scale cost-effectively from the bench to production to market.

While NEA has a great deal of experience with a vast array of materials-related sectors and emerging markets in India and China, Viswanathan specializes in US-based information technology and energy technology. Within these fields, two sectors related to the work he performed as a researcher in electronics are energy technology and semiconductors. In the United States, these two areas have gone through tough times and are facing competition from Asia. However, they are large markets with a supply/demand imbalance, which is promising for new ventures.

In energy, there is flexibility in that a company can focus on energy generation or energy conservation. In semiconductors, there are emerging technologies, such as smartphones, mobile phones, tablets, software, hardware, and video for devices, which all require materials solutions to further innovation.

When asked if there are any misconceptions regarding venture capital and startups that he has noticed among scientists, Viswanathan provided a positive outlook on the teamwork that occurs between the people with the ideas and the people with the means for funding ventures. "It's a really deep partnership when done properly," he said, stressing the importance of the long-term partnership between the groups. "Our goal is to invest in people and businesses."

Based on his experience, researchers looking to start a materials-related start-up should focus on scaling and cost. This means looking at the relationship between how the technology looks on the bench top versus how it will perform out of the laboratory.

He said, "The same technology can look great in the lab, but as a scientist you need to see how that translates to a product. The scientists who look at tech with the lens of how it's applied in the world tend to make the best entrepreneurs."

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