

# SOLVING COMPLEX SOCIETAL CHALLENGES



At NuMat Technologies, CEO and entrepreneur **Benjamin Hernandez** uses high-performance computing to design and build sophisticated nanomaterials to create solutions for critical issues.

When Benjamin Hernandez ('06, JD-MBA '13) received a letter about a summer program at Northwestern, the 17-year-old Maryland high school student had no idea that it would change the course of his life.

"The intent of the program, sponsored by the Kellogg School of Management, was to give students of color exposure to a top-tier business education, with the goal to increase the future pipeline of diverse executive leadership," remembers the CEO and cofounder of NuMat Technologies. "It was transformational for me—I was able to get access to a program that my family would not have been able to afford."

When the time came to attend college, Hernandez was set on returning to Northwestern. He knew he'd like to pursue a joint JD-MBA degree one day, but industrial engineering quickly captured his attention as an undergrad. "What spoke to me was that the program applied the engineer's toolkit to solving business challenges," he says.

After graduating from Northwestern Engineering, Hernandez used that toolkit as a management consultant with Booz & Company in its Chicago operations strategy practice, where his work included commercial aerospace, advanced manufacturing, and healthcare projects. Next, he became an operations professional at Arcapita, a global private equity and venture capital firm, working on board-level management initiatives across portfolio companies.

"I was fortunate to be around very talented people," he says. "That gave me the confidence to take risks on what came next in my own career."

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His biggest risk came after he decided to return to Northwestern to earn the joint JD-MBA degree. There, he met Christopher Wilmer (PhD '12), a PhD student in chemical engineering, and Omar Farha, professor of chemistry and, by courtesy, chemical and biological engineering.

The two were researching how to apply high-performance computing to design metal-organic frameworks, an emerging class of nanoporous materials that could solve complex societal challenges, such as carbon capture or energy storage. Hernandez bought into their shared vision of creating a better future by using the new technology to reduce the time it took to commercialize material technologies from decades to years.

Today, he leads the Skokie, Illinois-based company born out of that vision, NuMat Technologies, a leader in the field of molecular manufacturing. NuMat, which has raised more than \$20 million in venture funding since its 2013 launch, designs and builds material-enabled systems that uniquely store, harvest, and produce high-value resources. Farha serves as chief science officer, while Wilmer still collaborates on computational initiatives.

"We use high-performance computing to design nanomaterials to selectively soak up gasses or liquids like a sponge soaks up water," Hernandez says. One project for the US Department of Defense involves developing next-generation gas masks that use nanomaterials to remove chemical and biological agents and toxic industrial chemicals from the air.

As CEO, Hernandez draws particularly from the lessons he learned at the McCormick School of Engineering about the importance of teamwork, communication skills, and applying one's self wholeheartedly to a task. "The education I received at Northwestern about design thinking and asking the right questions has served me well. It's the difference between an okay engineer or leader and an outstanding one."

SARA LANGEN