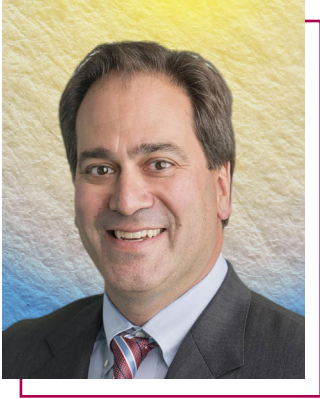


## Honorary Doctor of Science Professor Chad A. MIRKIN



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*Public Orator Professor Michael YANG Mengsu*

Mr Council Chairman:

A career in science was almost inevitable for Professor Chad A. Mirkin growing up around the world, including multiyear stints in Korea and Malaysia, but mostly in Pennsylvania. That is partly because he didn't want to follow his parents into their line of work. His father was a judge, the smartest man Professor Mirkin says he has ever known, and a passionate believer in seeking knowledge for its own sake rather than for material rewards. His mother was a physical therapist, perhaps accounting for how Professor Mirkin acquired the more practical aspect of his character.

But the pull of science was strong, and he followed his three brothers into the world of technology and innovation. One brother is a surgeon, one's a geologist and one's a physicist.

Interestingly, none of his three children opted for science as a career, but he is sure such things skip a generation, and expects his grandchildren to favour life in the lab.

Professor Mirkin says his parents gave him one of the best gifts a child can ever receive. They let their sons discover for themselves what they wanted to do in life. They gave them the freedom to take risks, explore, and believe it is better to be happy than wealthy, although he adds that his mother would have liked him to be a rich lawyer, doctor or businessman!

Believing in yourself has been fundamental to Professor Mirkin's career in higher education teaching and research. You have to be resilient, tough, thick-skinned and capable of taking criticism. He used to have posted on the door to his office a copy of a review of his work that was less than kind about Professor Mirkin's abilities as a scientist. He wanted his students to see that not everyone would support you and that you had to believe strongly in yourself if you were going to succeed.

Similarly, he feels that higher education institutions must hold onto self-belief. He is not a fan of universities copying each other because they will only ever be playing catch-up. Such universities rarely create any lasting impact because they fail to distinguish themselves.

Professor Mirkin's belief in nanoscience remains as strong as when he first began studying for his undergraduate degree at Dickinson College, his PhD from Pennsylvania State University and his postdoctoral research at MIT. He says he was fortunate that he began his career just as modern nanoscience was starting to take off. The timing was perfect for a young scientist fascinated by what could be built at the nanoscale.

Over the past 30 years, the impact of his work has been felt globally. A chemist lauded for global leadership in nanoscience, Professor Mirkin and his teams have transformed many aspects of modern life through their discoveries. He has authored over 850 papers, has been successfully granted over 400 patents out of more than 1,200 existing applications, and has founded ten companies.

He has built the most extensive nano lab in the US at Northwestern University, and possibly the world, and his research has been translated into more than 2,000 commercial products. If you enter almost any major hospital worldwide, you will likely encounter a technology that originated in his lab. He has created multifaceted tools for medical diagnostics, therapeutics, tracking and treating diseases, plus semiconductor fabrication and 3D fabrication tools.

One of his most inspirational inventions is using AI-based materials for discovery. For example, he has developed synthesis techniques involving machine learning and vast data sets obtained from mega-libraries comprising billions of nanomaterials that can be used for identifying new materials for a rich range of industries (medical pharmaceutical, clean energy, and so forth).

He is also known for dip-pen nanolithography, a nanolithographic method of patterning materials on the nanoscale that *National Geographic* considers one of the “top 100 scientific discoveries that changed the world”; and for 3D high-area rapid printing or “HARP”, which doesn’t sacrifice resolution and quality for speed. It is thought that HARP will revolutionise how we manufacture goods and products.

So, it is no wonder that he is a dedicated believer in the need for universities to translate their research from the lab to industry into devices and technologies that will genuinely impact society and improve people’s lives.

Focus on quality, he insists, not on numbers. Insist that what you publish is essential and not necessarily where you publish it. He doesn’t doubt that life as an academic is a bruising business, so you must be robust and adaptable. You must be courageous enough to pull yourself up. You have to believe in and be passionate about what you want and why.

Explore your world, and you will find where destiny lies.

Mr Council Chairman, Professor Chad A. Mirkin is one of the most dynamic scientists working today, one whose cutting-edge research has had, and will continue to have, a dramatic impact on people’s lives and in health, materials development and 3D fabrication. It is my honour to present to you Professor Chad A. Mirkin for the conferment of a Doctor of Science, *honoris causa*.