

## SMS Fall 2023 Eyring Seminar

Thursday Nov 16 | 6pm | Marston Theater (ISTB4)

**Chad A. Mirkin, PhD**

*Professor, Northwestern University*



**Biography** Chad A. Mirkin, PhD is the Director of the International Institute for Nanotechnology and the Rathmann Professor of Chemistry and Medicine at Northwestern University. He is known for his invention and development of spherical nucleic acids and Dip-Pen Nanolithography and related cantilever-free nanopatterning and materials discovery methodologies. He has authored >850 papers and >1,200 patents worldwide (>400 issued) and founded nine companies. Prof. Mirkin has been recognized with over 240 national and international awards including the Wilhelm Exner Medal, the Dan David Prize, the National Academy of Sciences Sackler Prize in Convergence Research, and the King Faisal Prize from the Kingdom of Saudi Arabia. He served for eight years on the President's Council of Advisors on Science & Technology, and he is one of very few scientists to be elected to all three US National Academies. Mirkin has served on the Editorial Advisory Boards of over 30 scholarly journals, is the founding editor of the journal *Small*, and is a Proc. Natl. Acad. Sci. USA Editorial Board Member. He has given >870 invited lectures and educated >300 graduate students and postdocs.

*Join us for an outdoor reception on  
ISTB4 Patio 5:00pm—5:40pm*

***Foundational tools, techniques,  
and materials as outputs of the  
modern age of nanotechnology***

The tools, techniques, and materials we use in our everyday lives have evolved over time. For instance, the progression from the stone materials used by early humans to the complex, polyelemental materials used today has enabled us to live safer, healthier, and more engaging lives. However, this transition to the modern age has arguably been slow, occurring over the course of hundreds of thousands of years. Nanotechnology has emerged as an interdisciplinary, transformative field that is hastening the pace of our discovery and development of foundational tools, techniques, and materials that are driving what is possible in society. We have gained access to materials with size, shape, and composition dependent chemical and physical properties that are permitting us to revolutionize aspects of medicine, energy and the environment, advanced manufacturing, and many other areas. This presentation will highlight my group's role over the last 30 years in shifting paradigms in these areas, especially with respect to 1) immunotherapy and vaccine design and development based on spherical nucleic acids (SNAs), 2) high-throughput materials discovery through nanocombinatoric chemistry and the concept of megalibrary and AI, and 3) stereolithography and additive manufacturing based on high-area rapid printing (HARP). All these advances have increased our understanding of modern Chemistry and Materials Science and significantly impacted society through their translation and commercialization.