



Navigating Complexity in Science



Ashutosh Sharma, PhD '88
Secretary, Department of
Science and Technology,
Government of India;
Chair Professor, Indian
Institute of Technology at
Kanpur

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Abstract

This talk will first examine the compelling processes of performing science and translating it to useful applications via the example of nano-thin films, an area I started working on with Eli Ruckenstein at UB back in 1984! Such processes include the power of lateral thinking and scientific commonsense, connecting the dots, being interdisciplinary, portability of tools and concepts across silos of knowledge, developing new and useful applications, relating a narrow domain of research to the larger concerns of science and, while doing all this, putting some fun back in research! I will also present some major oncoming challenges, opportunities and directions in scientific research such as Sustainable Development, Rise of Intelligent Machines & Industry 4.0/Society 5.0, Science Communication and Popularization, Connecting Science to Innovation and Society, Future of Scientific Funding and Publishing, and Nurturing Diversity. A few selected approaches to address the above challenges are presented. The idea is to encourage awareness and debate on some of the issues that concern the practice of science.

Biography

The secretary of the Department of Science and Technology for the Government of India, Ashutosh Sharma, PhD, is among the most distinguished scientists in his country. He has conducted groundbreaking interdisciplinary research that has changed our understanding of thin film instabilities and self-organized micro- and nano-patterning. His work has broadly impacted fundamental and applied science and engineering, particularly in the area of nanoscience. He also helped initiate more than 20 new national programs in frontier areas of science and technology. A professor of chemical engineering at the Indian Institute of Technology Kanpur, Sharma has returned to Buffalo to lecture at UB on several occasions, and his department also enabled a new doctoral fellowship program for Indian students abroad in which UB has been a participant. In appreciation of his association with, and his impact on, our university, and in recognition of his distinguished career achievements, the University at Buffalo is proud to confer upon him a 2019 State University of New York Honorary Doctorate in Science.