

Engineering from the bottom up: Productive nanosystems and the future of technology

Speaker: K. Eric Drexler, Ph.D.
Venue: Engineering Auditorium (Blk EA. 9, Engineering Drive 1.
Singapore 117576)
Date: 12 January 2006 (Thursday)
Time: 3.00pm to 4.00pm



Abstract:

Nature demonstrates that molecular machine systems can convert common materials into intricate, atomically precise structures. Further, nature demonstrates that these productive nanosystems can work cleanly and inexpensively, outputting billions of tons of products per year. Progress in molecular and nanoscale technologies has provided components and techniques that enable the engineering of artificial molecular machine systems, including early-generation productive nanosystems. These early-generation productive nanosystems will have a wide range of applications, and they can be used to build more advanced productive nanosystems. Exploratory design and analysis shows that this development path can lead to large-scale productive nanosystems that can make macroscopic products with atomic precision, and shows that the productivity of these systems can greatly exceed the productivity of conventional manufacturing. The recently launched Technology Roadmap for Productive Nanosystems (an industry/government/university project) will describe the next steps and longer-term opportunities at this frontier of engineering.

Biography:

Dr. K. Eric Drexler is often described as the 'father of nanotechnology'. His theoretical research in this field has been the basis for numerous journal articles and books including *Engines of Creation* and *Nanosystems: Molecular Machinery, Manufacturing, and Computation*. In 1981, Dr. Drexler described an approach to implementing productive nanosystems in a paper published in the *Proceedings of the National Academy of Sciences*. This paper established fundamental principles of protein engineering. Dr. Drexler founded the Foresight Institute, a non-profit organization focused on nanotechnology, and currently serves as Chief Technical Advisor to Nanorex, a company developing software for molecular engineering. He was awarded a PhD from MIT in Molecular Nanotechnology (the first degree of its kind).

All are welcome. Refreshments will served after the seminar.