

## Publications and Patents (partial listing)

### Books:

Drexler, K.E. (1992) *Nanosystems: Molecular Machinery, Manufacturing, and Computation* New York: John Wiley & Sons. (Association of American Publishers “Most Outstanding Computer Science Book, 1992”)

Drexler, K.E., C. Peterson, and G. Pergamit. (1991) *Unbounding the Future: The Nanotechnology Revolution* New York: William Morrow.

Drexler, K.E. (1986) *Engines of Creation: The Coming Era of Nanotechnology* New York: Anchor Press/Doubleday.

### Other publications:

Phoenix, C, and K.E. Drexler (August 2004) “Safe Exponential Manufacturing” *Nanotechnology* **15**:869-872.

Drexler, K.E. (Feb 2004) “Nanotechnology: from Feynman to Funding” *Bulletin of Science, Technology and Society* **24**:21-27.

Drexler, K.E. (Dec 2003) “Nanotechnology: Point/Counterpoint” (a debate with Professor Richard Smalley) *Chemical & Engineering News* **81**(48): 37-42.

Drexler, K.E. (Mar 2003) “If Atomic Precision is Unfeasible, so is Life” *Nature* **422**: 257, (a commentary on *Nature*, **421**:299.)

Drexler, K.E. (1999) “Building molecular machine systems” *Trends in Biotechnology* **17**:5-7.

Drexler, K.E. (1996) “Molecular manufacturing: a future technology for cleaner production” *Clean Production: Environmental and Economic Perspective*. New York: Springer.

Drexler, K.E. (1995) “Molecular manufacturing: perspectives on the ultimate limits of fabrication” *Phil. Trans. R. Soc. London A* **353**:323-331.

Drexler, K.E. (1995) “Molecular manufacturing: perspectives on the ultimate limits of fabrication” *Ultimate Limits of Fabrication and Measurement* Dordrecht: Kluwer Academic Publishers.

Drexler, K.E. (1994) “Molecular machines: physical principles and implementation strategies” *Annual Review of Biophysics and Biomolecular Structure* **23**:337-405.

Drexler, K.E. (1993) “Molecular manufacturing: a sustainable basis for global wealth” *Leaders* (Fall 93).

Drexler, K.E. (1992) “Towards molecular manufacturing” *The World in 1992* Economist Publications.

Drexler, K.E. (1992) “Molecular Directions in Nanotechnology” *Nanotechnology* **2**:113.

Drexler, K.E. (1992) “Molecular manufacturing for space systems: an overview” *Journal of the British Interplanetary Society* **45**:401-405.

- Drexler K.E. (1991) "Molecular Machinery and Manufacturing with Applications to Computation" MIT doctoral thesis.
- Drexler, K.E. (1991) "Hypertext publishing and the evolution of knowledge" *Social Intelligence* **1**: 87-120.
- Drexler, K.E. (1991) "Molecular tip arrays for molecular imaging and nanofabrication" *Journal of Vacuum Science and Technology B* **9**:1394-1397.
- Drexler, K.E. (1991) "Exploring Future Technologies" *Doing Science* New York: Prentice Hall.
- Drexler, K.E., and J.S. Foster. (1990) "Synthetic tips" *Nature* **343**:600.
- Drexler, K.E. (1989) "Technologies of Danger and Wisdom" *Directions and Implications of Advanced Computing* Norwood, New Jersey: Ablex.
- Drexler, K.E. (1989) "Machines of Inner Space" *1990 Yearbook of Science and the Future* Chicago: Encyclopedia Britannica.
- Drexler, K.E. (1989) "Biological and Nanomechanical Systems: Contrasts in Evolutionary Capacity" *Artificial Life* Reading, Massachusetts: Addison-Wesley.
- Drexler, K.E. (1988) "Rod logic and thermal noise in the mechanical nanocomputer" *Molecular Electronic Devices* Amsterdam: North-Holland.
- Drexler, K.E. (1988) "Nanotechnology and future supercomputing" *Proceedings of the Third International Conference on Supercomputing* International Supercomputing Institute.
- Miller, M.S., and K.E. Drexler. (1988) "Comparative Ecology: A Computational Perspective" *The Ecology of Computation* Amsterdam: Elsevier Science Publishers, B. V.
- Miller, M.S., and K.E. Drexler. (1988) "Markets and Computation: Agoric Open Systems" *The Ecology of Computation* Amsterdam: Elsevier Science Publishers, B. V.
- Drexler, K.E., and M.S. Miller. (1988) "Incentive Engineering for Computational Resource Management" *The Ecology of Computation* Amsterdam: Elsevier Science Publishers, B. V.
- Henson, H.K., and K.E. Drexler. (1988) "Heterodensity heat transfer apparatus and method" U.S. Patent Office: #4,759,404
- Drexler, K.E. (1987) "Nanomachinery: Atomically precise gears and bearings" *IEEE Micro Robots and Teleoperators Workshop* Hyannis, Massachusetts: IEEE.
- Drexler, K.E. (1987) "Molecular Machinery and Molecular Electronic Devices" *Molecular Electronic Devices II* New York: Marcel Dekker.
- Drexler, K.E. (1987) "Hypertext publishing and the evolution of knowledge" Foresight Institute: OP-87-1
- Drexler, K.E. (1986) "Solar sail" U.S. Patent Office: #4,614,319
- Drexler, K.E. (1986) "Molecular engineering: Assemblers and Future Space Hardware" American Astronautical Society: AAS-86-415
- Henson, H.K., and K.E. Drexler. (1984) "Method for processing and fabricating metals in space" U.S. Patent Office: #4,480,677
- Drexler, K.E. (1982) "Mightier machines from tiny atoms may someday grow" *Smithsonian*, **13**(8):145-154 (Nov 1982).

Drexler, K.E. (1981) “Molecular engineering: An approach to the development of general capabilities for molecular manipulation” *Proceedings of the National Academy of Sciences USA* **78**:5275-5278.

Henson, H.K., and K.E. Drexler. (1979) “Gas Entrained Solids: A Heat Transfer Fluid for Use in Space” *Space Manufacturing* New York: American Institute of Aeronautics and Astronautics.

Drexler, K.E. (1979) “High Performance Solar Sails and Related Reflecting Devices” *Space Manufacturing* New York: American Institute of Aeronautics and Astronautics.

Drexler, K.E., and B.R. Sperber. (1978) “An Aperture-Augmented Prototype Power Satellite” *J. Energy* **2**:318-319.

Drexler, K.E., and T.A. Heppenheimer. (1977) “On the Feasibility of Small Power Satellites” *J. Energy* **1**:200.

Phinney, W. C., D. Criswell, E. Drexler, and J. Garmirian. (1977) “Lunar Resources and their Utilization” *Space-Based Manufacturing from Nonterrestrial Materials* New York: American Institute of Aeronautics and Astronautics.

## Select recent and upcoming lectures

**13-14 June 2004:** Keynote address at the Millennium Technology Conference, Finnish Technology Award Foundation (Helsinki, Finland).

**27 April 2004:** “Breakthrough Technologies to Address the World’s Biggest Problems”, a lecture at the Arlington Institute Conference (Arlington, VA).

**10 March 2004:** “Strategic Goals in Nanotechnology”, a keynote address at the AccelerysWorld 2004 conference (San Diego, CA).

**3 March 2004:** “Nanotechnology: A World Divided”, the keynote address at “Imaging and Imagining Nanoscience & Engineering”, a conference sponsored by the NSF (Charleston, SC).

**25 February 2004:** “Nanotechnology: Policy for the pending revolution”, the Hogan & Hartson Jurimetrics Lecture, Arizona State University (Tempe, AZ).

**27 February 2004:** “From Nano to Zetta”, keynote address, Silicon Valley Engineers Association Hall of Fame induction for Ted Hoss, Chang Lien Tien, and Steve Wozniak (Santa Clara, CA).

**11 December 2003:** Panelist in “Nanotechnology: The Money, Science, and Politics of the Next Big Thing”, a forum sponsored jointly by Cato Institute and *The Economist* magazine (Palo Alto, CA).

**8 October 2003:** “Nanotechnology: Toward the Feynman Vision”, a keynote address at the 3rd Nikkei Nanotech International Symposium (Tokyo, Japan).

**22 September 2003:** Workshop, Environmental Grantmakers Association retreat (Ottawa, Ontario, Canada).

**8 August 2003:** “Nanotechnology and Policy”, a lecture at the American Bar Association’s Section of Science & Technology Law annual meeting (San Francisco, CA).

**7 August 2003:** “Nanotechnology: Toward the Feynman Vision”, a lecture at Intel headquarters (Redwood City, CA).

**25 April 2003:** “Nanotechnology: Bringing Digital Control to Matter”, a keynote address at the O’Reilly Emerging Technology Conference (Santa Clara, CA).

## University courses using works by Eric Drexler

The following is a partial current and past listing of university courses using works by Eric Drexler. (To add a listing or request more information, please contact rosa at [spamfree] geographicengine dot com.)

**Courses using *Nanosystems: Molecular Machinery, Manufacturing, and Computation*** by K. Eric Drexler, NY: John-Wiley and Sons, 1992 (recipient of the AAP award for Best Computer Science Book of 1992):

Engineering – “ME125AH: Micro Engineering Systems” University of California, Santa Barbara.

Mechanical Engineering – “ME 597: Introduction to Nanotechnology (graduate course)” Indiana University - Purdue University, Indianapolis (IUPUI).

Computer Science – “CS590C: Computational Nanotechnology” Purdue University.

Computer Science – “CS549: Nanorobotics” Graduate program of the Programmable Automation Laboratory, University of Southern California.

Physics /Chemistry – “Physics 801/Chem 801: Nanostructures: Materials and Interfaces” University of Wisconsin, Madison.

**Courses using *Engines of Creation: the Coming Era of Nanotechnology [full text online]*** by K. Eric Drexler, NY: Anchor Press, 1986.

Law and Justice Studies – “JUS 200: Technological Change and Social Justice” Arizona State University School of Justice Studies.

General Studies – “Core 105: Nanotechnology” Colgate University.

Earth and Ocean Sciences – “EOS 122: The Earth and Planets Today” Duke University.

Environmental Engineering – “EOS 125: The Future” Duke University.

Education – “EME 6051: Models of Learning and Instruction” Florida Atlantic University Department of Educational Technology and Research.

Computer Science – “C322: Exercises in Cultural Simulation” Hamilton College (NY).

Education – “CIE 480: Technology and Multimedia in Schools” University of Illinois, Chicago.

Engineering – “CEE371: Philosophy of Engineering” Johns Hopkins University.

Education and Psychology – “EDPE 660: Artificial Intelligence in Education” McGill University, Canada.

Biology – BIO 3000: Topics in Advances in Biology” Metro State College, Denver.

Physics – “ID1: Nanotechnology in Science and Fiction” Pomona College, Department of Physics and Astronomy.

English – “ENG350:379:1: Computers and Literature” Rutgers University.

Law School – “LS 644: Legal Issues of the 21st Century” Santa Clara University School of Law.

Law School – “288-0-01: Ideas vs. Matter: The Code in Tiny Spaces” Stanford University (taught by Lawrence Lessig and Steve Jurvetson).

Engineering – “Nanoelectronics and Photonics” University of Durham (United Kingdom).

School of Information – “SI 621: Ethics, Values, and Information Dilemmas” University of Michigan, School of Information.

Physics – “Physics 381: Directed Readings in Nanoelectronics Science and Technology” and “Physics 308: Transmission Electron Microscopy” University of Missouri, St. Louis.

Physics – “Physics 006D: Handcrafting in the Nano World: Building Models and Manipulating Molecules” University of North Carolina.

Chemical Engineering and Materials Science, – “ChE5480: Integration of High-Performance Computing in Nanotechnology” University of Oklahoma.

English – “SPCH512: Arguments in Science and Technology” University of South Carolina (*Engines of Creation*, and *Chemical & Engineering News* “Point/Counterpoint”, 1 Dec 2003 cover story, Drexler-Smalley debate).

Chemistry – “Chem 171: Chemical Nanotechnology” Wabash College (*Engines of Creation*, and *Chemical & Engineering News* “Point/Counterpoint”).

### **Courses using other works by Eric Drexler:**

Computer Science – “CNS/CS/BI 288:DNA and Molecular Computation” California Institute of Technology (Drexler, K. E. *Molecular engineering: An approach to the development of general capabilities for molecular manipulation. Proceedings of the National Academy of Sciences USA* **78**:5275-5278, 1981).

Nanobiotechnology – “AEP663/BIOG663/MSE563: Nanobiotechnology” Nanobiotechnology Center of Cornell University and other participating institutions

including: SUNY-Albany, Oregon Health Sciences University, University of Tennessee, Clark Atlanta University, North Dakota State (*Chemical & Engineering News* “[Point/Counterpoint](#)”).

Interdisciplinary Studies – “O4S 10A: Nanotechnology and Nanoscience: Exploring the Difference between Science and Engineering” Dartmouth College. Various monographs.

Computer Science – “CS 103: History of Computing” George Mason University (web essays and lecture tape, “[Hypertext Publishing and the Evolution of Knowledge](#)”, by K Eric Drexler in *Social Intelligence* 1: 87-120, (1991).

MBA – “15.575: Research Seminar on Information, Technology and Organizations: Economic Perspectives” The Sloan School of Management, Massachusetts Institute of Technology (Agoric Open System Papers [1, 2, 3], Mark S. Miller and K E Drexler in *The Ecology of Computation*, B. Huberman, editor, Amsterdam: Elsevier, 1988).

Public Policy – “SPP744: Information Networks Policy” University of Michigan, School of Public Policy (Agoric Open System Papers).

Management, MBA program – “MAN385/MIS381: Strategic Analysis for High-Technology Industries”, McCombs School of Business, UT Austin (*Unbounding the Future* by K. Eric Drexler, Chris Peterson, and Gayle Pergamit, NY: William Morrow and Co. 1991).

English – “ENSP482: Theory and Practice of Hypertext, University of Virginia (“[Hypertext Publishing and the Evolution of Knowledge](#)”).

Computer Science – “CS603: Introduction to Nanotechnology” University of Western Michigan. (*Unbounding the Future*).