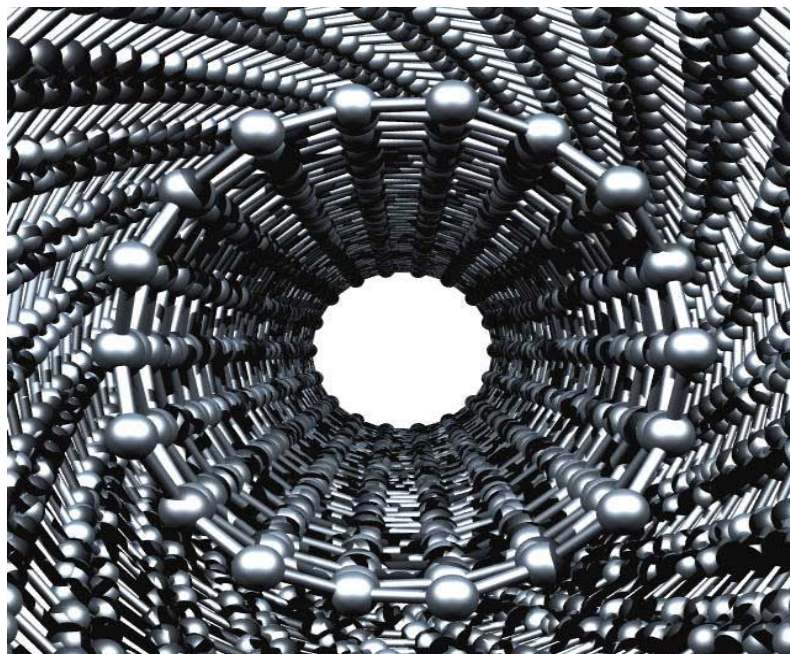


Nanotechnology



Nanotechnology is the science of the small; the very small. It is the use and manipulation of matter at a tiny scale. At this size, atoms and molecules work differently, and provide a variety of surprising and interesting uses.

The prefix of nanotechnology derives from ‘nanos’ – the Greek word for dwarf. A nanometer is a billionth of a meter, or to put it comparatively, about 1/80,000 of the diameter of a human hair.

Nanotechnology should not be viewed as a single technique that only affects specific areas. It is more of a ‘catch-all’ term for a science which is benefiting a **whole array of areas**, from the environment, to healthcare, to hundreds of commercial products.

¹ “Double Walled Nanotube”, ill. under “Ray-Traced Science Inspired Nanotechnology Images”, Dr. Chris Ewels, www.ewels.info/img/science/gallery/DWNT.jpg

Although often referred to as the 'tiny science', nanotechnology does not simply mean very small structures and products. Nanoscale features are often incorporated into bulk materials and large surfaces.²

Nanotechnology is already in many of the everyday objects around us, but this is only the start. It will allow limitations in many existing technologies to be overcome and thus has the potential to be part of every industry:

Health and medicine - With advances in diagnostic technologies, doctors will be able to give patients complete health checks quickly and routinely. If any medication is required this will be tailored specifically to the individual based on their genetic make up, thus preventing unwanted side-effects. As a result, the health system will become preventative rather than curative.

Society and the environment - Renewable energy will become the norm. For example, solar cells based on quantum dots could be as much as 85% efficient. Wind, wave, and geothermal energy will also be tapped more effectively using new materials and stored or delivered more efficiently through advances in batteries and hydrogen fuel cells. New ambient sensor systems will allow us to monitor our effect on the environment and take immediate action, rather than “waiting to see”. Nanotechnology will also help us clean up existing pollution and make better use of the resources available to us.

New materials - Nanomaterials such as quantum dots, carbon nanotubes and fullerenes will have applications in many different sectors because of their new properties. So quantum dots can be used in solar cells, but also in optoelectronics, and as imaging agents in medical diagnostics. Carbon nanotubes can be used in displays, as electronic connectors, as strengthening materials for polymer composites, and even as nanoscale drug dispensers. Fullerenes can be used in cosmetics, as “containers” for the delivery of drugs, in medical diagnostics, and even as nanoscale lubricants.³

² “What is Nanotechnology?”, [Nanoforum.org, www.nanoforum.org/educationtree/othersections/whatisnano.htm](http://www.nanoforum.org/educationtree/othersections/whatisnano.htm)

³ “The Future's Bright”, [Nanoforum.org, www.nanoforum.org/educationtree/othersections/nanofuture.htm](http://www.nanoforum.org/educationtree/othersections/nanofuture.htm)

Selected Materials Available at the Bibliotheca Alexandrina

Books

Print Books

Ali, Imran, Hassan Y. Aboul-Enein, and Vinod K. Gupta. **Nanochromatography and Nanocapillary Electrophoresis: Pharmaceutical and Environmental Analyses.** Hoboken, NJ: John Wiley, 2009.

BA Call Number: 543.8 A3981 (B1)

Amiji, Mansoor M., ed. **Nanotechnology for Cancer Therapy.** Boca Raton: CRC/Taylor & Francis, 2007.

BA Call Number: 616.994061 N186 (B1)

Anwar, Sohail, et al. **Nanotechnology for Telecommunications.** Boca Raton: Taylor & Francis, 2010.

BA Call Number: 621.382 N186 (B1)

Borisenko, Victor E., and Stefano Ossicini. **What is What in the Nanoworld: A Handbook on Nanoscience and Nanotechnology.** Weinheim: Wiley-VCH, 2005.

BA Call Number: 620.5 B7345 (B1)

Bosso, Christopher J., ed. **Governing Uncertainty: Environmental Regulation in the Age of Nanotechnology.** Washington, DC: RFF Press, 2010.

BA Call Number: 620.5 G7212

Broz, Pavel, ed. **Polymer-Based Nanostructures: Medical Applications.** Cambridge, UK: Royal Society of Chemistry, 2010.

BA Call Number: 610.28 P783 (B1)

Fritz, Sandy, ed. **Understanding Nanotechnology.** New York, NY: Warner, 2002.

BA Call Number: 620.5 U554 (B1)

Heiz, Ulrich, and Uzi Landman, eds. **Nanocatalysis.** Nanoscience and Technology. Berlin: Springer, 2007.

BA Call Number: 541.395 N186 (B1)

Jackson, Mark J. **Micro and Nanomanufacturing.** New York, NY: Springer, 2007.

BA Call Number: 620.5 J124 (B1)

Kumar, Challa S. S. R., Josef Hormes, and Carola Leuschner, eds. **Nanofabrication towards Biomedical Applications: Techniques, Tools, Applications, and Impact**. Weinheim: Wiley-VCH, 2005.

BA Call Number: 660.6 N186 (B1)

Laurencin, Cato T., and Lakshmi S. Nair, eds. **Nanotechnology and Tissue Engineering: The Scaffold**. Boca Raton: CRC Press, 2008.

BA Call Number: 610.284 N186 (B1)

Lead, Jamie R., and Emma Smith, eds. **Environmental and Human Health Impacts of Nanotechnology**. Chichester, UK: Wiley, 2009.

BA Call Number: 620.5 E6148h (B1)

Liu, Jian-Qin, and Katsunori Shimohara. **Biomolecular Computation for Bionanotechnology**. Boston: Artech House, 2007.

BA Call Number: 620.5 L7831 (B1)

Mahalik, Nitaigour Premchand, ed. **Micromanufacturing and Nanotechnology**. Berlin: Springer, 2006.

BA Call Number: 620.5 M6265 (B1)

McCleverty, Jon A., and Thomas J. Meyer, eds. **Comprehensive Coordination Chemistry II: From Biology to Nanotechnology**. Amsterdam: Elsevier Pergamon, 2004.

BA Call Number: 541.2242 C73784 (B1)

Meier, Torsten, Peter Thomas, and Stephan W. Koch. **Coherent Semiconductor Optics: From Basic Concepts to Nanostructure Applications**. Berlin: Springer, 2007.

BA Call Number: 537.6226 M5111 (B1)

Michler, Georg Hannes, and F. J. Baltá-Calleja, eds. **Mechanical Properties of Polymers Based on Nanostructure and Morphology**. Boca Raton, FL: Taylor & Francis, 2005.

BA Call Number: 620.11 M4863 (B1)

Nalwa, Hari Singh, ed. **Handbook of Nanostructured Materials and Nanotechnology**. San Diego: Academic Press, 2000.

BA Call Number: 620.5 (B1)

O'Connell, Michael J., ed. **Carbon Nanotubes: Properties and Applications**. Boca Raton, FL: CRC Taylor & Francis, 2006.

BA Call Number: 620.193 C2642 (B1)

Ozine, Geoffrey A., and André C. Arsenault. **Nanochemistry: A Chemical Approach to Nanomaterials**. Cambridge, UK: Royal Society of Chemistry, 2005.

BA Call Number: 620.5 O997 (B1)

Rao, Chintamani Nagesa Ramachandra, and A. Govindaraj. **Nanotubes and Nanowires.** Nanoscience & Nanotechnology. Cambridge: Royal Society of Chemistry, 2005.
BA Call Number: 621.3815 R2151 (B1)

Ratner, Mark A., and Daniel Ratner. **Nanotechnology: A Gentle Introduction to the Next Big Idea.** Upper Saddle River, NJ: Prentice Hall, 2003.
BA Call Number: 620.5 R2368 (B1)

Reisner, David Evans, ed. **Bionanotechnology: Global Prospects.** Boca Raton, FL: CRC Press, 2009.
BA Call Number: 660.6 B6159 (B1)

Sahu, Saura C., and Daniel Casciano, eds. **Nanotoxicity: From *In Vivo* and *In Vitro* Models to Health Risks.** Chichester, West Sussex, UK: John Wiley, 2010.
BA Call Number: 338.476205 N186 (B2)

Schmid, Günter, et al. **Nanotechnology: Assessment and Perspectives.** Berlin: Springer, 2006.
BA Call Number: 620.5 N186a (B1)

Schulte, Jurgen, ed. **Nanotechnology: Global Strategies, Industry Trends and Applications.** Weinheim: Wiley-VCH, 2005.
BA Call Number: 620.5 N186g (B1)

Sellers, Kathleen, et al. **Nanotechnology and the Environment.** Boca Raton: CRC Press, 2009.
BA Call Number: 620.5 N186e (B1)

Sigmund, Wolfgang, et al., eds. **Particulate Systems in Nano- and Biotechnologies.** Boca Raton, FL: CRC Press, 2009.
BA Call Number: 660.6 P2735 (B1)

Smith, Geoffrey B. **Green Nanotechnology: Solutions for Sustainability and Energy in the Built Environment.** Boca Raton, FL: CRC Press, 2011.
BA Call Number: 690.0286 S6421 (B1)

Staikov, Georgi, ed. **Electrocrystallization in Nanotechnology.** Weinheim: Wiley-VCH, 2007.
BA Call Number: 548.5 E385 (B1)

Tolfree, David, and Mark J. Jackson, eds. **Commercializing Micro-Nanotechnology Products.** Boca Raton, FL: CRC Press, 2008.
BA Call Number: 620.50688 C73426 (B1)

Višňovský, Štefan. **Optics in Magnetic Multilayers and Nanostructures**. Boca Raton, FL: CRC/Taylor & Francis, 2006.

BA Call Number: 538.4 V832 (B1)

Vo-Dinh, Tuan, ed. **Protein Nanotechnology: Protocols, Instrumentation, and Applications**. Methods in Molecular Biology 300. Totowa, NJ: Humana Press, 2005.

BA Call Number: 572.6 P9674p (B1)

Waser, Rainer. **Nanoelectronics and Information Technology: Advanced Electronic Materials and Novel Devices**. Weinheim: Wiley-VCH, 2003.

BA Call Number: 620.5 Was N (B1)

Wong, C. P., Kyoung-Sik (Jack) Moon, and Yi Li, eds. **Nano-Bio-Electronic, Photonic and MEMS Packaging**. New York, NY: Springer, 2010.

BA Call Number: 621.381046 N186 (B1)

Yao, Nan, and Zhong Lin Wang, eds. **Handbook of Microscopy for Nanotechnology**. Boston: Kluwer Academic, 2005.

BA Call Number: 620.5 H23617 (B1)

Zhang, Lide, Xiaosheng Fang, and Changhui Ye. **Controlled Growth of Nanomaterials**. Singapore: World Scientific, 2007.

BA Call Number: 620.5 Z632 (B1)

Zhou, Weilie, and Zhong Lin Wang, eds. **Scanning Microscopy for Nanotechnology: Techniques and Applications**. New York, NY: Springer, 2007.

BA Call Number: 502.825 S2838 (B1)

الخرزجي، قحطان خلف. **التقنية النانوية**. عمان: دار دجلة، ٢٠١٠.

BA Call Number: 620.5 K456 (B1)

بسيونى، عبد الحميد. **مفاهيم تكنولوجيا النانو**. القاهرة: دار الكتب العلمية، ٢٠٠٨.

BA Call Number: 620.5 B327 (B1)

فoster، لين. **تقنية النانو: علم وإبداع وفرص واعدة**. ترجمة مصطفى مصطفى موسى. الرياض: دار المريخ، ٢٠٠٩.

BA Call Number: 620.5 F7541 (B1)

ويليامز، ليندا، و إد آدمز. **تكنولوجيا النانو بوضوح: دليلك للتعلم الذاتي**. إشراف على الترجمة خالد العامري. مكتبة

الأسرة. سلسلة العلوم و التكنولوجيا. القاهرة: الهيئة المصرية العامة للكتاب، ٢٠٠٨.

BA Call Number: 620.5 W7211 (B1)

e-Books:

Baleanu, Dumitru, Ziya B. Güvenç, and J. A. Tenreiro Machado, eds. **New Trends in Nanotechnology and Fractional Calculus Applications**. Dordrecht: Springer, 2010. e-book. SpringerLink (database).

Bhushan, Bharat. **Springer Handbook of Nanotechnology**. Dordrecht: Springer, 2010. e-book. SpringerLink (database).

Bucknall, David G., ed. **Nanolithography and Patterning Techniques in Microelectronics**. Cambridge: Woodhead; Maney; Boca Raton, FL: CRC Press, 2005. e-book. ebrary (database).

Cherkaoui, Mohammed, and Laurent Capolungo. **Atomistic and Continuum Modeling of Nanocrystalline Materials: Deformation Mechanisms and Scale Transition**. Springer Series in Materials Science 112. New York, NY: Springer, 2009. e-book. SpringerLink (database).

Clévy, Cédric, Micky Rakotondrabe, and Nicolas Chaillet, eds. **Signal Measurement and Estimation Techniques for Micro and Nanotechnology**. Dordrecht: Springer, 2011. e-book. SpringerLink (database).

Coa, Guozhong. **Nanostructures and Nanomaterials: Synthesis, Properties and Applications**. London: Imperial College Press, 2004. e-book. ebrary (database).

Cozzens, Susan E., and Jameson Wetmore, eds. **Nanotechnology and the Challenges of Equity, Equality and Development**. Vol. 2. Year Book of Nanotechnology in Society. New York: Springer, 2011. e-book. SpringerLink (database).

Eliasz, Noam, ed. **Applications of Electrochemistry and Nanotechnology in Biology and Medicine I**. Modern Aspects of Electrochemistry 52. New York: Springer, 2011. e-book. SpringerLink (database).

Gasman, Lawrence. **Nanotechnology Applications and Markets**. Boston: Artech, 2006. e-book. ebrary (database).

Ghatak, Kamakhya Prasad, Debashis De, and Sitangshu Bhattacharya. **Photoemission from Optoelectronic Materials and their Nanostructures**. Nanostructure Science and Technology. Dordrecht: Springer, 2009. e-book. SpringerLink (database).

Gopalakrishnan, Kasthurirangan, et al., eds. **Nanotechnology in Civil Infrastructure: A Paradigm Shift**. Heidelberg: Springer, 2011. e-book. SpringerLink (database).

Grimes, Craig A., and Gopal K. Mor. **TiO₂ Nanotube Arrays: Synthesis, Properties, and Applications**. Dordrecht: Springer, 2009. e-book. SpringerLink (database).

Grobmyer, Stephen R., and Brij M. Moudgil, eds. **Cancer Nanotechnology: Methods and Protocols**. Methods in Molecular Biology 624. New York: Springer, 2010. e-book. SpringerLink (database).

Guimarães, Alberto P. **Principles of Nanomagnetism**. Heidelberg: Springer, 2009. e-book. SpringerLink (database).

Hirose, Kikuji, et al. **First-Principles Calculations in Real-Space Formalism: Electronic Configurations and Transport Properties of Nanostructures**. London: Imperial College Press, 2005. e-book. ebrary (database).

Korkin, Anatoli, Predrag S. Krstić, and Jack C. Wells, eds. **Nanotechnology for Electronics, Photonics, and Renewable Energy**. Nanostructure Science and Technology. Heidelberg: Springer, 2010. e-book. SpringerLink (database).

Kosal, Margaret E. **Nanotechnology for Chemical and Biological Defense**. Dordrecht: Springer, 2009. e-book. SpringerLink (database).

Kumar Bajpai, Sunil, and Murali Mohan Yallapu. **Recent Advances in Nanoscience and Technology**. Sharjah: Bentham Science, 2010. e-book. ebrary (database).

Li, Yi, Daniel Lu, and C. P. Wong. **Electrical Conductive Adhesives with Nanotechnologies**. Dordrecht: Springer, 2009. e-book. SpringerLink (database).

Manasreh, Omar. **Semiconductor Heterojunctions and Nanostructures**. McGraw-Hill Nanoscience and Technology Series. New York: McGraw-Hill Professional, 2005. e-book. ebrary (database).

Mansoori, G. Ali. **Principles of Nanotechnology: Molecular-Based Study of Condensed Matter in Small Systems**. New Jersey: World Scientific, 2005. e-book. ebrary (database).

Murashov, Vladimir, and John Howard, eds. **Nanotechnology Standards**. Nanostructure Science and Technology. Dordrecht: Springer, 2011. e-book. SpringerLink (database).

Navarro, Melba, and Planell, Josep A., eds. **Nanotechnology in Regenerative Medicine: Methods and Protocols**. Methods in Molecular Biology 811. New York: Springer, 2011. e-book. SpringerLink (database).

Niederberger, Markus, and Nicola Pinna. **Metal Oxide Nanoparticles in Organic Solvents: Synthesis, Formation, Assembly and Application**. Engineering Materials and Processes. Dordrecht: Springer, 2009. e-book. SpringerLink (database).

Osaka, Tetsuya, Madhav Datta, and Yosi Shacham-Diamand. **Electrochemical Nanotechnologies**. Nanostructure Science and Technology. Heidelberg: Springer, 2010. e-book. SpringerLink (database).

Osawa, Eiji, ed. **Perspective of Fullerene Nanotechnology**. New York: Kluwer Academic, 2002. e-book. ebrary (database).

Pradeep, T. **Nano: The Essentials: Understanding Nanoscience and Nanotechnology**. New Delhi: Tata McGraw-Hill, 2008. e-book. ebrary (database).

Roco, Mihail C., Mark C. Hersam, and Chad A. Mirkin. **Nanotechnology Research Directions for Societal Needs in 2020: Retrospective and Outlook**. Science Policy Reports. New York: Springer, 2011. e-book. SpringerLink (database).

Ryzhii, Maxim, and Victor Ryzhii, eds. **Physics and Modeling of Tera- and Nano-Devices**. Selected Topics in Electronics and Systems. New Jersey: World Scientific, 2008. e-book. ebrary (database).

Sasses, Jennifer. **Nanotechnology's Invisible Threat: Small Science, Big Consequences**. NRDC Issue Paper. New York: Natural Resources Defense Council, 2007. Online e-book. www.nrdc.org/health/science/nano/nano.pdf [accessed 21 Feb. 2012]

Shastri, Venkatram Prasad, George Altankov, and Andreas Lendlein. **Advances in Regenerative Medicine: Role of Nanotechnology, and Engineering Principles**. NATO Science for Peace and Security Series A: Chemistry and Biology. Netherlands: Springer, 2010. e-book. SpringerLink (database).

Villiers, Melgardt M. de, Pornanong Aramwit, and Glen S. Kwon. **Nanotechnology in Drug Delivery**. Madison: University of Wisconsin, 2009. e-book. SpringerLink (database).

Webster, Thomas J. **Nanotechnology Enabled In Situ Sensors for Monitoring Health**. New York: Springer, 2011. e-book. SpringerLink (database).

Wiesner, Mark R., and Jean-Yves Bottero. **Environmental Nanotechnology: Applications and Impacts of Nanomaterials**. New York: McGraw-Hill, 2007. e-book. ebrary (database).

Zang, Ling, ed. **Energy Efficiency and Renewable Energy through Nanotechnology**. Green Energy and Technology. Dordrecht: Springer, 2011. e-book. SpringerLink (database).

Zuccheri, Giampaolo, and Bruno Samorì, eds. **DNA Nanotechnology: Methods and Protocols**. Methods in Molecular Biology 749. Dordrecht: Springer, 2011. e-book. SpringerLink (database).

Reference Works:

George, Thomas, ed. **Dictionary of Nanotechnology**. New Delhi: Anmol, 2006.
BA Call Number: Ref 620.503 D5544 2006 (B4 -- References)

Conference Proceedings

Print

FAO/WHO Expert Meeting on the Application of Nanotechnologies in the Food and Agriculture Sectors: Potential Food Safety Implications: Meeting Report. Rome: Food and Agriculture Organization of the United Nations; Geneva: World Health Organization, 2010.

BA Call Number: FAO 363.192 F2181 (F2)

Nanotechnology Conference and Trade Show. **Nanotech 2003: Feb 23-27: The Nanotechnology Conference and Trade Show**. Boston: Computational Publications, 2003.

BA Call Number: Ref 620.5 N186 2003 (B4 — References)

Electronic

IEEE Conference on Nanotechnology. **2011 11th IEEE International Conference on Nanotechnology: August 15-19, 2011, Portland, Oregon, USA**. N.p.: Institute of Electrical and Electronics Engineers (IEEE), 2011. e-book. IEEE Xplore (database).

IEEE Nanotechnology Materials and Devices Conference. **2011 IEEE Nanotechnology Materials and Devices Conference (NMDC)**. N.p.: Institute of Electrical and Electronics Engineers (IEEE), [2011]. e-periodical. IEEE Xplore (database).

International Conference on Enabling Science and Nanotechnology (ESciNano). ESciNano. e-periodical. IEEE Xplore (database).

United States. National Academies. Institute of Medicine. Board on Health Sciences Policy. Roundtable on Environmental Health Sciences, Research, and Medicine. **Implications of Nanotechnology for Environmental Health Research**. Edited by Lynn Goldman and Christine Coussens. Washington, DC: National Academies Press, 2005. e-book. ebrary (database).

Theses

Babapoor Dighaleh, Sankhiros. "Studies on Nanoparticle Based Avian Influenza Vaccines to Present Immunogenic Epitopes of the Virus with Concentration on Ectodomain of Matrix 2 (M2e) Protein". PhD diss., University of Connecticut, 2011. e-thesis. ProQuest Dissertations and Theses (database).

Bailey, Vasudev J. "Nanotechnology for Detection of DNA Methylation in Cancer". PhD diss., The Johns Hopkins University, 2010. e-thesis. ProQuest Dissertations and Theses (database).

Ciengshin, Tanashaya. "Nanotechnology of Nucleic Acids: Beyond Watson-Crick B-DNA Duplexes". PhD diss., New York University, 2010. e-thesis. ProQuest Dissertations and Theses (database).

Goyal, Deepankar. "Impact of Single Walled Carbon Nanotubes (SWNTs) on Wastewater Microbial Communities". Master's Thesis, University of Massachusetts Lowell, 2010. e-thesis. ProQuest Dissertations and Theses (database).

Lam, Robert. "Nanodiamonds as Drug Delivery Platforms: Characterization, Cellular Interrogation and Applications". PhD diss., Northwestern University, 2011. e-thesis. ProQuest Dissertations and Theses (database).

Lindquist, Nathan Charles. "Engineering Metallic Nanostructures for Surface Plasmon Resonance Sensing". PhD diss., University of Minnesota, 2010. e-thesis. ProQuest Dissertations and Theses (database).

Lou, Qin. "Block Copolymers: Synthesis and Applications in Nanotechnology". PhD diss., Clarkson University, 2011. e-thesis. ProQuest Dissertations and Theses (database).

Lyver, John W., IV. "Thermal Conductivity at the Nanoscale: A Molecular Dynamics Study". PhD diss., George Mason University, 2010. e-thesis. ProQuest Dissertations and Theses (database).

Manzur, Tanvir. "Nano-Modified Cement Composites and its Applicability as Concrete Repair Material". PhD diss., The University of Texas at Arlington, 2011. e-thesis. ProQuest Dissertations and Theses (database).

Morgan-Evans, Karel. "Adsorption and Transport of NanoTitanium Dioxide in Iron-Oxide-Coated Silica Beads". Master's Thesis, Howard University, 2011. e-thesis. ProQuest Dissertations and Theses (database).

Pejoux, Christophe. "Applications of Bionanotechnology". PhD diss., City University of New York, 2011. e-thesis. ProQuest Dissertations and Theses (database).

Shen, Christopher. "Effects of Surface Chemistry and Size on Iron Oxide Nanoparticle Delivery of Oligonucleotides". PhD diss., Georgia Institute of Technology, 2011. e-thesis. ProQuest Dissertations and Theses (database).

Tunc, Cihan. "Variation and Defect Tolerance for Nano Crossbars". Master's Thesis, Northeastern University, 2010. e-thesis. ProQuest Dissertations and Theses (database).

Yang, Hua. "Template Synthesis of Metal-Modified DNA Complexes and Applications in the Construction of Two-and Three- Dimensional Metal-DNA Nanostructures". PhD diss., McGill University, 2009. Online e-thesis. McGill University.
http://digitool.Library.McGill.CA:80/R/-?func=dbin-jump-full&object_id=86752&silole_library=GEN01

Zhao, Huijuan. "Computational Analysis of Thermodynamic and Mechanical Properties of Nano-Materials". PhD diss., University of Illinois at Urbana-Champaign, 2010. e-thesis. ProQuest Dissertations and Theses (database).

Periodicals

Advances in Natural Sciences. Nanoscience and Nanotechnology. IOP Science. Online e-periodical.

www.iopscience.iop.org/2043-6262 [accessed 19 Feb. 2012]

AZojono-Journal of Nanotechnology Online. AZoNano. Online e-periodical.

www.azonano.com/nanotechnology-journals-index.aspx [accessed 19 Feb. 2012]

Beilstein Journal of Nanotechnology. Beilstein-Institut. Online e-periodical.

www.beilstein-journals.org/bjnano/home/home.htm [accessed 19 Feb. 2012]

E-Journal of Surface Science and Nanotechnology. Surface Science Society of Japan. Online e-periodical.

www.jstage.jst.go.jp/browse/ejsnt [accessed 19 Feb 2012]

IEEE Nanotechnology Magazine. IEEE Nanotechnology Council. e-periodical. IEEE Xplore (database).

IEEE Transactions on Nanobioscience. Institute of Electrical and Electronics Engineers (IEEE). e-periodical. IEEE Xplore (database).

IEEE Transactions on Nanotechnology. Institute of Electrical and Electronics Engineers (IEEE). e-periodical. IEEE Xplore (database).

International Journal of Nanomedicine. Dovepress. Online e-periodical.

www.dovepress.com/international-journal-of-nanomedicine-journal

[accessed 19 Feb 2012]

International Journal of Nanoscience. World Scientific. e-periodical. Academic Search Complete (database).

International Journal of Pharmaceutical Sciences and Nanotechnology. Pharma Book Syndicate. Online e-periodical.

www.ijpsnonline.com/archives.php [accessed 20 Feb 2012]

International Journal of Smart and Nano Materials. Taylor & Francis. e-periodical. Academic Search Complete (database).

Internet Journal of Nanotechnology. Internet Scientific Publications. e-periodical. Academic Search Complete (database)

ISRN Nanotechnology. International Scholarly Research Network. Online e-periodical. www.isrn.com [accessed 20 Feb 2012]

Journal of Micro-Nano Mechatronics. Springer. e-periodical. SpringerLink (database).

Journal of Nanotechnology. Hindawi. Online e-periodical. www.hindawi.com/journals/jnt [accessed 19 Feb 2012]

Micro & Nano Letters. Institution of Engineering and Technology (IET). e-periodical. IEEE Xplore (database).

NANO. World Scientific. e-periodical. Academic Search Complete (database).

Nano Biomedicine and Engineering. Online e-periodical. OAHOST. <http://nanobe.org/index.php/nbe> [accessed 19 Feb 2012]

Nano Communication Networks. Elsevier. e-periodical. ScienceDirect (database).

NanoEthics. Springer. e-periodical. SpringerLink (database).

Nano-Micro Letters. Open-Access House of Science and Technology. Online e-periodical. <http://nmletters.org/index.php/nml> [accessed 12 Apr 2010]

Nano Research. Tsinghua University Press; Springer. Online e-periodical. www.thenanoresearch.com [accessed 15 Mar 2012]

Nano Reviews. Co-Action. Online e-periodical. www.nano-reviews.net [accessed 12 Apr 2010]

Nano Today. Thomson Scientific. e-periodical. ScienceDirect (database).

Nanomedicine: Nanotechnology, Biology and Medicine. American Academy of Nanomedicine. e-periodical. ScienceDirect (database).

Nanotechnologies in Russia. MAIK Nauka/Interperiodica. e-periodical. SpringerLink (database).

Nanotechnology Law & Business. Nanotechnology Law & Business. e-periodical. Academic Search Complete (database)

Nanotechnology, Science and Applications. Dove Medical Press. Online e-periodical. www.dovepress.com/nanotechnology-science-and-applications-journal [accessed 20 Feb 2012]

Nature Nanotechnology. Nature. e-periodical. Academic Search Complete (database).

OAtube Nanotechnology. Open-Access House of Science and Technology. Online video periodical.

www.oatube.org [accessed 20 Feb 2012]

Precision Engineering. American Society for Precision Engineering; European Society for Precision Engineering and Nanotechnology; Japan Society for Precision Engineering. e-periodical. ScienceDirect (database).

Recent Patents on Nanotechnology. Bentham Science. e-periodical. Academic Search Complete (database).

World Journal of Nano Science and Engineering. Scientific Research. Online e-periodical.

www.scirp.org/journal/wjnse

Articles

Alfadul, S. M., and A. A. Elneshwy. "Use of Nanotechnology in Food Processing, Packaging and Safety–Review". **Journal of Food, Agriculture, Nutrition & Development** 10, no. 6 (Jun 2010): 2719-2739. e-article. Academic Search Complete (database).

Boisseau, Patrick, and Bernard Loubaton. "Nanomedicine, Nanotechnology in Medicine". **Compte rendu physique** 12, no. 7 (Sep 2011): 620-636. e-article. ScienceDirect (database).

Buzby, Jean C. "Nanotechnology for Food Applications: More Questions Than Answers". **Journal of Consumer Affairs** 44, no. 3 (Fall 2012): 528-545. e-article. Academic Search Complete (database).

Byrappa, K., and T. Adschiri. "Hydrothermal Technology for Nanotechnology". **Progress in Crystal Growth and Characterization of Materials** 53, no. 2 (Jun 2007): 117-166. e-article. ScienceDirect (database).

Chakravarthi, P. Vikrama, and Sri N. Balaji. "Applications of Nanotechnology in Veterinary Medicine". **Veterinary World** 3, no. 10 (Oct 2010): 477-480. e-article. Academic Search Complete (database).

Chaudry, Qasim, and Laurence Castle. "Food Applications of Nanotechnologies: An Overview of Opportunities and Challenges for Developing Countries". **Trends in Food Science & Technology** 22, no. 11 (Nov 2011): 595-603. e-article. ScienceDirect (database).

Chen, Jie, and Stephen T. C. Wong. "Nanotechnology for Genomic Signal Processing in Cancer Research: A Focus on the Genomic Signal Processing Hardware Design of the Nanotools for Cancer Research". **IEEE Signal Processing Magazine** 24, no. 1 (Jan 2007): 111-121. e-article. IEEE Xplore (database).

Chiuman, William, and Yingfu Li. "Efficient Signaling Platforms Built from a Small Catalytic DNA and Doubly Labeled Fluorogenic Substrates". **Nucleic Acids Research** 35, no. 2 (2007): 401-405. Online e-article.

nar.oxfordjournals.org/cgi/reprint/35/2/401?maxtoshow=&HITS=10&hits=10&RESU_LTFORMAT=&fulltext=nanotechnology&searchid=1&FIRSTINDEX=20&resourcetype=HWCIT [accessed 9 Feb 2012]

Drezet, A., et al. "Surface Plasmon Mediated Near-Field Imaging and Optical Addressing in Nanoscience". **Micron** 38, no. 4 (Jun 2007): 427-437. e-article. ScienceDirect (database).

Ford, M. J., C. Masens, and M. B. Cortie. "The Application of Gold Surfaces and Particles in Nanotechnology". **Surface Review & Letters** 13, no. 2/3 (Apr 2006): 297-307. e-article. Academic Search Complete (database).

Golubovic-Liakopoulos, Nevenka, Sanford R. Simon, and Bhavdeep Shah. "Nanotechnology Use with Cosmeceuticals". **Seminars in Cutaneous Medicine and Surgery** 30, no. 3 (Sep 2011): 176-180. e-article. ScienceDirect (database).

Granqvist, C. G. "Nanomaterials for Benign Indoor Environments: Electrochromics for "Smart Windows", Sensors for Air Quality and Photo-Catalysts for Air Cleaning". **Solar Energy Materials and Solar Cells** 91, no. 4 (15 Feb 2007): 355-365. e-article. ScienceDirect (database).

Guz, I. A., et al. "Developing the Mechanical Models for Nanomaterials". **Composites. Part A. Applied Science and Manufacturing** 38, no. 4 (Apr 2007): 1234-1250. e-article. ScienceDirect (database).

Hamidreza, Sharifi, and Alizadehnozari Mehdi. "Nanotechnology in Construction of New Materials". **Australian Journal of Basic & Applied Sciences** 5, no. 8 (2011): 92-96. e-article. Academic Search Complete (database).

Harnett, C. "Nanotechnology in Environmental Sensors". **Instrumentation & Measurement Magazine** 13, no. 2 (Apr 2010): 8-12. e-article. IEEE Xplore (database).

Hassanzadeh, Parichehr, et al. "Cancer Nanotechnology". **Gastroenterology & Hepatology from Bed to Bench** 4, no. 2 (Apr 2011): 63-69. e-article. Academic Search Complete (database).

Hauck, Tanya S., et al. "Nanotechnology Diagnostics for Infectious Diseases Prevalent in Developing Countries". **Advanced Drug Delivery Reviews** 62, no. 4-5 (18 Mar. 2010): 438-448. e-article. ScienceDirect (database).

Huang, Xiaohua, and Mostafa A. El-Sayed. "Gold Nanoparticles: Optical Properties and Implementations in Cancer Diagnosis and Photothermal Therapy". **Journal of Advanced Research** 1, no. 1 (Jan 2010): 13-28. e-article. ScienceDirect (database).

Hudson, L. K., J. Eastoe, and P. J. Dowding "Nanotechnology in Action: Overbased Nanodetergents as Lubricant Oil Additives". **Advances in Colloid and Interface Science** 123-126 (16 Nov 2006): 425-431. e-article. ScienceDirect (database).

Jalali, Said, and F. Pacheco-Torgal. "Nanotechnology: Advantages and Drawbacks in the Field of Construction and Building Materials". **Construction and Building Materials** 25, no. 2 (Feb 2011): 582-590. e-article. ScienceDirect (database).

Jordá-Beneyto, M., et al. "Hydrogen Storage on Chemically Activated Carbons and Carbon Nanomaterials at High Pressures". **Carbon** 45, no. 2 (Feb 2007): 293-303. e-article. ScienceDirect (database).

Kumar, Mukul, and Yoshinori Ando. "Carbon Nanotubes from Camphor: An Environment-Friendly Nanotechnology". **Journal of Physics: Conference Series** 61 (2007): 643-646. Online e-article.
www.iop.org/EJ/article/-search=29466564.1/1742-6596/61/1/129/jpconf7_61_129.pdf [accessed 9 Feb. 2010]

Kuzma, Jennifer. "Nanotechnology in Animal Production-Upstream Assessment of Applications". **Livestock Science** 13, no. 1-3 (May 2010): 14-24. e-article. ScienceDirect (database).

Leary, James F. "Nanotechnology: What is it and Why is Small so Big?" **Canadian Journal of Ophthalmology** 45, no. 5 (Oct 2010): 449-456. e-article. ScienceDirect (database).

Li, Zheng, et al. "Cardiovascular Effects of Pulmonary Exposure to Single-Wall Carbon Nanotubes". **Environmental Health Perspectives** 115, no. 3 (Mar 2007): 377-382. e-article. Academic Search Complete (database).

Lim, Chwee Teck, et al. "Micro and Nanotechnology for Biological and Biomedical Applications". **Medical and Biological Engineering and Computing** 48, no. 10 (Sep 2010): 941-943. e-article. SpringerLink (database).

Linse, Sara, et al. "Nucleation of Protein Fibrillation by Nanoparticles". **Proceedings of the National Academy of Sciences of the United States of America (PNAS)** 104, no. 21 (22 May 2007): 8691-8696. Online e-article.
www.pnas.org/cgi/reprint/104/21/8691 [accessed 20 Feb 2012]

Misra, Ranjita, Sarbari Acharya, and Sanjeeb K. Sahoo. "Cancer Nanotechnology: Application of Nanotechnology in Cancer Therapy". **Drug Discovery Today** 15, no. 19-20 (Oct 2010): 842-850. e-article. ScienceDirect (database).

Miura, Kouichi, et al. "Nano-Reactor for Producing High Performance Nanomaterials". **Chemical Engineering Science** (2007). e-article. ScienceDirect (database).

Mobarak, Fardous, and Tamer Y. A. Fahmy. "Green Nanotechnology: A Shortcut to Beneficiation of Natural Fibers". **International Journal of Biological Macromolecules** 48, no. 1 (Jan 2011): 134-136. e-article. ScienceDirect (database).

Morose, Gregory. "The 5 Principals of "Design for Safer Nanotechnology". **Journal of Cleaner Production** 18, no. 3 (Feb. 2010): 285-289. e-article. ScienceDirect (database).

Musee, Ndeke. "Nanotechnology Risk Assessment from a Waste Management Perspective: Are the Current Tools Adequate?". **Human & Experimental Toxicology** 30, no. 8 (Aug 2011): 820-835. e-article. Academic Search Complete (database).

Nasalean, Lorena, et al. "Controlling RNA Self-Assembly to Form Filaments". **Nucleic Acids Research** 34, no. 5 (Mar 2006): 1381-1392. Online e-article.
nar.oxfordjournals.org/cgi/reprint/34/5/1381?maxtoshow=&HITS=10&hits=10&RESU_LTFORMAT=&fulltext=nanotechnology&searchid=1&FIRSTINDEX=10&resourcetype=HWCIT [accessed 9 Feb 2012]

Pan, Fenggang, et al. "Fabrication of Au-DNA-Au Nanostructure with New-Type DNA-Au Conjugate". **Nucleic Acids Symposium Series**, no. 50 (2006): 317-318. Online e-article.
nass.oxfordjournals.org/cgi/reprint/50/1/317?maxtoshow=&HITS=10&hits=10&RESU_LTFORMAT=1&andorexacttitle=and&andorexacttitleabs=and&fulltext=nanotechnology&andorexactfulltext=or&searchid=1&FIRSTINDEX=10&sortspec=relevance&fdate=1/1/2006&resourcetype=HWCIT [accessed 9 Feb 2012]

Pandey, Rajesh, and G. K. Khuller. "Oral Nanoparticle-Based Antituberculosis Drug Delivery to the Brain in an Experimental Model". **Journal of Antimicrobial Chemotherapy** 57 (2006): 1146-1152. Online e-article.
jac.oxfordjournals.org/cgi/reprint/57/6/1146?maxtoshow=&HITS=10&hits=10&RESU_LTFORMAT=1&andorexacttitle=and&andorexacttitleabs=and&fulltext=nanotechnology&andorexactfulltext=or&searchid=1&FIRSTINDEX=50&sortspec=relevance&fdate=1/1/2006&resourcetype=HWCIT [accessed 9 Feb 2012]

Pedroso, Seidy, and Isabel Alicia Guillen. "Microarray and Nanotechnology Applications of Functional Nanoparticles". **Combinatorial Chemistry & High Throughput Screening** 9, no. 5 (Jun 2006): 389-397. e-article. Academic Search Complete (database).

Puurunen, Karina, and Petri Vasara. "Opportunities for Utilising Nanotechnology in Reaching Near-Zero Emissions in the Paper Industry". **Journal of Cleaner Production** 15, no. 13-14 (Sep 2007): 1287-1294. e-article. ScienceDirect (database).

Rathod, Kinjal B. "Glimpses of Current Advances of Nanotechnology in Therapeutics". **International Journal of Pharmacy & Pharmaceutical Sciences** 3, no. 1 (Jan 2011): 8-12. e-article. Academic Search Complete (database).

Roberts, Amanda S. "Nanotechnology: The Incredible Invisible World". **Technology & Engineering Teacher** 70, no. 6 (Mar 2011): 10-17. e-article. Academic Search Complete (database).

Sadeghitoosi, E. "Exploitation of Nanotechnology in the Share of Biomass". **Australian Journal of Basic & Applied Sciences** 5, no. 9 (2011): 2015-2018. e-article. Academic Search Complete (database).

Sanchez, Florence and Konstantin Sobolev. "Nanotechnology in Concrete: A Review". **Construction and Building Materials** 24, no. 11 (Nov 2011): 2060-2071. e-article. ScienceDirect (database).

Schulte, Paul A., and Fabio Salamanca-Buentello. "Ethical and Scientific Issues of Nanotechnology in the Workplace". **Environmental Health Perspectives** 115, no. 1 (Jan 2007): 5-12. e-article. Academic Search Complete (database).

Singer, Peter. "Nanotechnology: Turning Nanoscience into Nanomanufacturing". **Semiconductor International** 30, no. 1 (Jan 2007): 36-40. e-article. Academic Search Complete (database).

Stylios, George, Taoyu Wan, and Peter Giannoudis. "Present Status and Future Potential of Enhancing Bone Healing Using Nanotechnology". **Injury** 38, no. 1 (Mar 2007), suppl. 1: S63-S74. e-article. ScienceDirect (database).

Sweet, Leonard, and Bradford Strohm. "Nanotechnology: Life-Cycle Risk Management". **Human & Ecological Risk Assessment** 12, no. 3 (Jun 2006): 528-551. e-article. Academic Search Complete (database).

Wickson, Fern, Khara Grieger, and Anders Baun. "Nature and Nanotechnology: Science, Ideology and Policy". **International Journal of Emerging Technologies & Society** 8, no. 1 (2010): 5-23. e-article. Academic Search Complete (database).

Yokel, Robert A, and Robert C. MacPhail. "Engineered Nanomaterials: Exposures, Hazards, and Risk Prevention". **Journal of Occupational Medicine & Toxicology** 6, no. 1 (2011): 7-22. e-article. Academic Search Complete (database).

Zarbin, Marco A., et al. "Nanotechnology in Ophthalmology". **Canadian Journal of Ophthalmology** 45, no. 5 (Oct 2010): 457-476. e-article. ScienceDirect (database).

Web Resources

Merkle, Ralph. "Nanotechnology". ZYVeX.
www.zyvex.com/nano [accessed 20 Feb 2012]

Nanoforum.org: European Nanotechnology Gateway.
www.nanoforum.org [accessed 19 Feb 2012]

nanoHUB: Online Simulation and More.
www.nanohub.org [accessed 19 Feb 2012]

"Nanotechnology Glossary". **Nanotechnology Now.**
www.nanotech-now.com/nanotechnology-glossary-N.htm [accessed 19 Feb 2012]

The Nanotechnology Health and Safety Information Site.
www.safenano.org [accessed 19 Feb 2012]

Nanowerk.
www.nanowerk.com [accessed 20 Feb 2012]

Nano.gov: National Nanotechnology Initiative.
www.nano.gov [accessed 20 Feb 2012]

Nano.org.
www.nano.org [accessed 19 Feb 2012]

Project on Emerging Nanotechnologies.
www.nanotechproject.org [accessed 19 Feb 2012]