**Nanotechnology and in the**

**modern computer**

**BSCS-NS-2AB**

**Orain, Jieson R.**

**Manalaysay, Bryan Aiman O.**

**Espinosa, Princess Nichole**

**Olete, Maria Nesha**

1. **Introduction |**

Drexler, K. Eric (1986) This topic is all about **Nanotechnology**, it refers to the study and application of extremely small structures, typically at the scale of atoms and molecules. In the computer world, nanotechnology can be used to create computer components and devices that are much smaller and more efficient than traditional components. **Nanotechnology**, often shortened to nanotech, is the use of matter on [atomic](https://en.wikipedia.org/wiki/Atom), [molecular](https://en.wikipedia.org/wiki/Molecular), and [supramolecular](https://en.wikipedia.org/wiki/Supramolecular) scales for industrial purposes.

The earliest, widespread description of nanotechnology referred to the particular technological goal of precisely manipulating atoms and molecules for fabrication of macroscale products, also now referred to as [molecular nanotechnology](https://en.wikipedia.org/wiki/Molecular_nanotechnology).

[Nanotechnology](https://ec.europa.eu/health/scientific_committees/opinions_layman/glossary/mno/nanotechnology.htm) is the term given to those areas of science and engineering where phenomena that take place at dimensions in the [nanometer scale](https://ec.europa.eu/health/scientific_committees/opinions_layman/glossary/mno/nanoscale.htm) are utilized in the design, characterization, production and application of materials, structures, devices and systems.

Although in the natural world there are many examples of structures that exist with nanometer dimensions (hereafter referred to as the [nanoscale](https://ec.europa.eu/health/scientific_committees/opinions_layman/glossary/mno/nanoscale.htm)), including essential [molecules](https://ec.europa.eu/health/scientific_committees/opinions_layman/glossary/mno/molecule.htm) within the human body and components of foods, and although many technologies have incidentally involved nanoscale structures for many years, it has only been in the last quarter of a century that it has been possible to actively and intentionally modify molecules and structures within this size range. It is this control at the nanometer scale that distinguishes nanotechnology from other areas of technology. (e.g., Asia Pacific Nanotechnology Forum 2005),

However, just as phenomena taking place at the [nanoscale](https://ec.europa.eu/health/scientific_committees/opinions_layman/glossary/mno/nanoscale.htm) may be quite different to those occurring at larger dimensions and may be exploitable for the benefit of mankind, so these newly identified processes and their products may expose the same humans, and the environment in general, to new health risks, possibly involving quite different mechanisms of interference with the physiology of human and environmental species.

1. **Background of the Study |**

The background of the study, Nanotechnology is process in the engineering of functional systems at the molecular scale. This covers both current work and concepts that are more advanced. In its original sense, nanotechnology refers to the projected ability to construct items from the bottom up, using techniques and tools being developed today to make complete, high-performance products. One [nanometer](https://en.wikipedia.org/wiki/Nanometer) (nm) is one billionth, or 10−9, of a meter.

Nanotechnology, in the context of computer science, is a type of engineering geared toward building electronic components and devices measured in nanometers, which are extremely tiny in size and structure. Nanotechnology facilitates the building of functional matter and systems at the scalar level of an atom or molecule. It incorporates concepts from physics, biology, engineering, and many other disciplines. (Margaret, Rouse, Technopedia, 2018).

Nanotechnology is a scientific field that uses system or component development techniques to build products on highly granular levels. Nanotechnology works through different approaches to build nano materials or products, including bottom-up, top-down, and functional system development. In a bottom-up approach, a product is designed as it evolves from its tiniest form factor to larger product. In a top-down approach, a large product may be reverse engineered to develop products scaled according to nanometer. A functional approach deals with a complete system and may incorporate bottom-up and top-down approaches. (Margaret, Rouse, Technopedia, 2018).

**References:**

(e.g., Asia Pacific Nanotechnology Forum 2005), https://ec.europa.eu/health/scientific\_committees/opinions\_layman/en/nanotechnologies/l-3/1-introduction.htm#0p0

Allhoff, Fritz; Lin, Patrick; Moore, Daniel (2010). What is nanotechnology and why does it matter? from science to ethics. John Wiley and Sons. pp. 3–5. [ISBN](https://en.wikipedia.org/wiki/ISBN_(identifier)) [978-1-4051-7545-6](https://en.wikipedia.org/wiki/Special:BookSources/978-1-4051-7545-6).

Bates, D. W., Landman, A. B., Levine, D. M., & Department of Medicine, Brigham and Women's Hospital, Boston, MA 02115, USA. (2014). Health apps and health policy: What is needed? *Journal of the American Medical Association*, 312(12), 1293–1294. <https://doi.org/10.1001/jama.2014.13128>

Bennett, W. L., & Strange, N. (2011). *The media and society: An introduction* (2nd ed.). Routledge.

Cheon, J., Lee, S., Crooks, S. M., & Song, J. (2012). An investigation of mobile learning readiness in higher education based on the theory of planned behavior. *Computers & Education*, 59(3), 1054–1064. <https://doi.org/10.1016/j.compedu.2012.04.015>

Drexler, K. Eric (1986). [Engines of Creation: The Coming Era of Nanotechnology](https://archive.org/details/enginesofcreatio00drex). Doubleday. [ISBN](https://en.wikipedia.org/wiki/ISBN_(identifier)) [9780385199735](https://en.wikipedia.org/wiki/Special:BookSources/9780385199735). [OCLC](https://en.wikipedia.org/wiki/OCLC_(identifier)) [12752328](https://www.worldcat.org/oclc/12752328).

Feldman, V. (2019). The positive and negative effects of technology on communication. *Small Business - Chron.com.* <https://smallbusiness.chron.com/positive-negative-effects-technology-communication-26363.html>

Gottschalk, F., Nowack, B., & Stintz, M. (2013). Engineered nanomaterials in waters and soils: A risk quantification based on probabilistic exposure and effect modeling. Environmental Toxicology and Chemistry, 32(6), 1278-1287. https://doi.org/10.1002/etc.2163

Hampton, K. N., Goulet, L. S., Rainie, L., & Purcell, K. (2011). Social networking sites and our lives. *Pew Research Center.*

Kong, X., Zhang, Y., Liang, X., Li, X., Li, Y., & Li, S. (2021). Development and prospects of nanomaterials for MRI contrast agents. Frontiers in Chemistry, 9, 666903

(Margaret, Rouse, Technopedia, 2018). https://www.techopedia.com/definition/3151/nanotechnology

Maynard, A. D., Aitken, R. J., Butz, T., Colvin, V., Donaldson, K., Oberdörster, G., Philbert, M. A., Ryan, J., Seaton, A., Stone, V., Tinkle, S. S., & Tran, L. (2006). Safe handling of nanotechnology. Nature, 444(7117), 267-269.

Park, Y. J., & Kim, H. (2021). Status and prospects of graphene-based nanoelectronics. Journal of Nanomaterials, 2021, 5568658.

Tian, Y., Wang, S., & Cao, X. (2021). Recent progress in nanostructured electrodes for high-performance rechargeable lithium-ion batteries. Frontiers in Chemistry, 9, 726101.