# Nano Engineering

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Nano engineering is a subfield of engineering that focuses on the design, building, and operation of nanoscale engines, equipment, and structures. Nanoengineering is the study of nanomaterials and their interactions with other materials to build useful products, structures, devices, and systems. While nanoengineering is not a new science, it is a highly effective technique that has applications in a range of areas, including electronics, energy, health, and biotechnology. Although the phrases nanoengineering and nanotechnology are sometimes used interchangeably, the former refers to the subject's engineering components, while the latter encompasses a broad variety of scientific and technological concerns. Most likely, the phrases nanofabrication and nanomanufacturing are used interchangeably in this context.

Chemical manufacturing is a commercial activity characterised by industrial production areas and various automated integration lines, owing to the industrial scale outputs and advantages associated with the brand name. On the other hand, nanofabrication is a research endeavour focused on the creation of innovative materials and procedures; it is a realm of specialists rather than a mass-produced area. Engineering is the scientific and technological discipline concerned with the design, building, and operation of engines, machines, and structures. On the other hand, nanoengineering exploits the unique properties of nanoscale objects (size and quantum effects) to develop and create devices and systems with whole new functions and capabilities at the atomic and molecular scales. Building materials' characteristics may change significantly at the nanoscale for two reasons.

To begin, nanoparticles have a far higher surface area than the same quantity of biological materials. This may alter an object's chemical performance, as well as its energy and electrical qualities. Second, quantum effects have the potential to influence nanoscale behaviour, particularly in the lower extremities, altering optical acuity, electrical activity, and magnetic activity. The materials are challenging to employ because they are too tiny to be seen with the naked eye, too small to grip, and often have unsuitable meeting points inside the designed constructions. As a consequence, advanced nanoarchitecture will need nanoscale-based engineering methodologies. Nano engineers do this by using a number of techniques to manipulate atoms and molecules for industrial purposes. The need for high control on a nanoscale scale for setup and setting is one of the primary obstacles researchers face while creating nanoengineering methods and procedures.