NNCI—Nanoscale Science and Engineering Introduction

What is Nanotechnology?

Nanotechnology is the science and technology of small things - in particular things that are less than 100 nanometers in size in one dimension.

What is a nanometer?

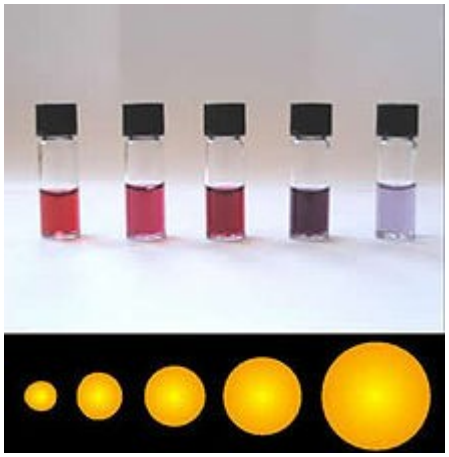
A nanometer is 1 billionth of a meter or $1X10^{-9}$ meter. A human hair is about 60,000 to 80,000 nm wide. Your fingernail grows 1nm every second.

What is different about nanotechnology?

Scientists and engineers have discovered that materials at the nanoscale can have very different properties than the same materials at the macro scale. Gold is an example - its optical properties change when it transitions into the nanoscale:

Macroscale gold

https://commons.wikimedia.org/wiki/File:Gold_bullion_1.jpg



Nanoscale gold particles

Image at: http://en.wikipedia.org/wiki/Colloidal_gold

Scientists and engineers can control the structure and composition of materials (properties) at the nanoscale to make new materials and devices.