

A Brief History of Nanotechnology: from 600 BC up to Now

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I will start with a short description of the properties that make micro and nano objects so interesting and exciting both from the point of view of the basics and their applications. I will focus on those properties that have been observed since 600 BC, particularly in artwork and military products (e.g. “the smaller the gunpowder grains, the more surface area exposed to combustion and the faster the rate at which propellant gases are produced”).

Then, I will suggest electron microscopy as a tool allowing us to see objects in the nanoscale and thus making the nanoworld visible and open for further studies.

I will particularly emphasize the second half of the 20th century, which seems to be the golden era of nanotechnology, at least in my opinion. I will cite Richard Feynman and his challenges, Norio Taniguchi and his definition of nanotechnology, as well as Eric Drexler and his famous books on “molecular machinery”.

After discussing nanodots and their nanoimaging, I will concentrate on those aspects of nanotechnology that are nowadays most important for all of us, i.e. problems related to computing and data storage. I will comment not only on their extremely fast development but also on the limits of nanotechnology, which definitely exist.

Finally, I will mention some achievements, arbitrarily chosen by myself, as the most important for the 21st century nanotechnology (like the nanocar or artificial molecular pump) particularly in medicine, which is a fundamental aspect of our lives not only in the times of the pandemic.

Having highlighted the historical facts that I regard as milestones in the development of nanotechnology, I will also add a few comments on my personal experience with nanotechnology. In particular, I will credit my master teachers for making nanotechnology the most exciting adventure in my scientific life.