

NANOPARTICLE BASED NANOTECHNOLOGY

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The content of my lectures entitled “Nanoparticle based Nanotechnology” is a result of my recent research and educational activities concerning the molecular behavior of condensed matter in small systems. It contains a special point of view on nanosystems based on my prior experiences dealing with the study of matter, especially the magnetic, optic and electronic properties of these nanomaterials. Nanomaterials are a field that takes a material-science based approach to nanotechnology. We will start with an overview of their treatment in nanotechnology with special emphasis on the history and early milestones. The fundamentals of nanotechnology will then be explained, for the freshmen or the general public course, including the scaling laws which give insight on the physical ramifications of miniaturization.

In this course we will provide the specific fundamental differences between macro scale and nanoscale phenomena. The specific materialistic properties of nanoobjects, such as metals, semiconductors, magnetic and carbon based materials, will be delivered in other series of lectures for master and PhD students.

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