

From Lab to Industry: Current trends of nanotechnology and its industrial applications

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Nanotechnology, the manipulation of matter on an atomic or molecular scale, has emerged as a transformative field with significant implications across various industries such as healthcare, energy, materials science and electronics. This presentation will explore the current trends in nanotechnology and its industrial applications, with a particular focus on the context of attempts and future applications in Albania. As Albania seeks to enhance its economic development and technological capabilities, the integration of nanotechnology into universities, healthcare, agriculture, energy and materials science offers promising opportunities. Establishment of research groups for nanotechnology-related studies at universities and recently offering courses on this area, is a crucial development for Albania and worth to be mentioned for its impact in the country. In the healthcare sector, advancements in drug delivery systems utilizing nanoparticles are paving the way for more effective treatments and diagnostics, addressing local healthcare challenges. In agriculture, nanotechnology is revolutionizing crop protection through the development of nano-pesticides and fertilizers that enhance efficiency and reduce environmental impact. Furthermore, the energy sector is witnessing the application of nanomaterials in solar cells and batteries, promising improved efficiency and sustainability crucial for Albania's energy strategy. Additionally, the development of nanotechnology-based solutions for water purification and waste treatment is essential for addressing environmental challenges faced by the country. Despite the potential, the adoption of nanotechnology in Albania faces challenges, including limited research infrastructure, a need for investment in technology transfer, and a lack of awareness among stakeholders. In conclusion, we will outline future directions for nanotechnology research and its potential to drive innovation across various sectors in Albania. Specific examples will be given regarding transfer of knowledge from the lab to industry. By bridging the gap between laboratory discoveries and industrial applications, we can harness the full potential of nanotechnology to meet global challenges and enhance the quality of life in Albania.

Keywords: nanotechnology, nanomaterials, drug delivery, industrial applications, Albania