



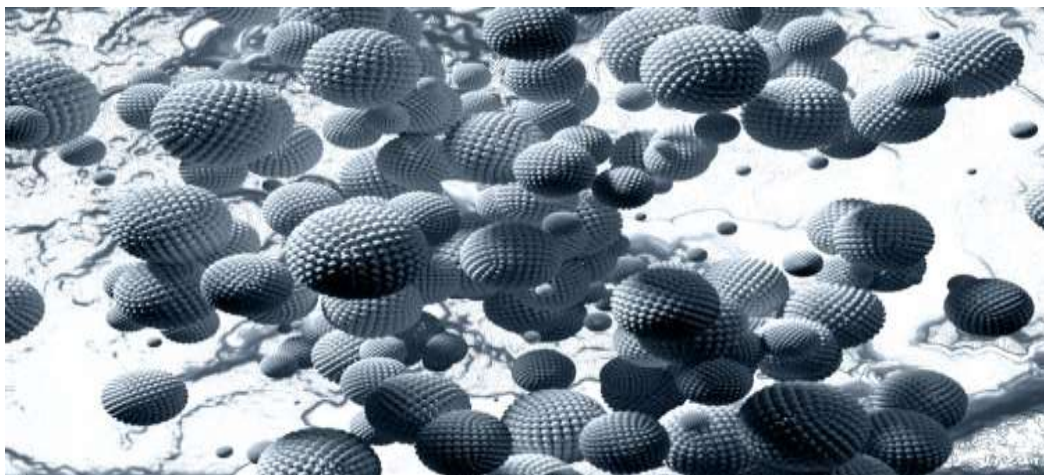
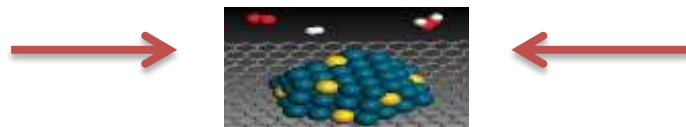
AL-Mustaqbal University College
Radiology Techniques Department

First Class

Practical General Chemistry

Second lecture (2)

Nanoparticle



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Nanoparticle

A nanoparticle or ultrafine particle is usually defined as a particle of matter that is between 1 and 100 nanometres (nm) in diameter. The term is sometimes used for larger particles, up to 500 nm .

Application of nanoparticle

The applications of nanotechnology are wide-ranging and fall into many industrial, medical, agricultural and other fields

1- medicine

1.1 Diagnosis :It uses nanoparticles and bound to an appropriate antibody to classify certain particles, particles, and microorganisms.

1.2 Medication delivery:Nanotechnology is one of the technologies that has caused prosperity and progress in the medical field, with the ability to

deliver drugs to specific cells using nanoparticles.

1.3 Tissue Engineering: Nanotechnology helps to reproduce and repair damaged tissue. Tissue engineering takes advantage of artificially stimulated cell proliferation by using growth factors on appropriate nanomaterial.

2- Chemistry and the environment

2.1 Motivation: Potential applications of nanoparticles in catalysis range from fuel cells to catalytic converters and photocatalytic devices. The importance of stimulation also appears in the production of chemicals.

2.2 Filtration: Photochemistry is expected to have a strong impact on both wastewater treatment and air purification processes as well as energy storage devices.

3-heavy industries

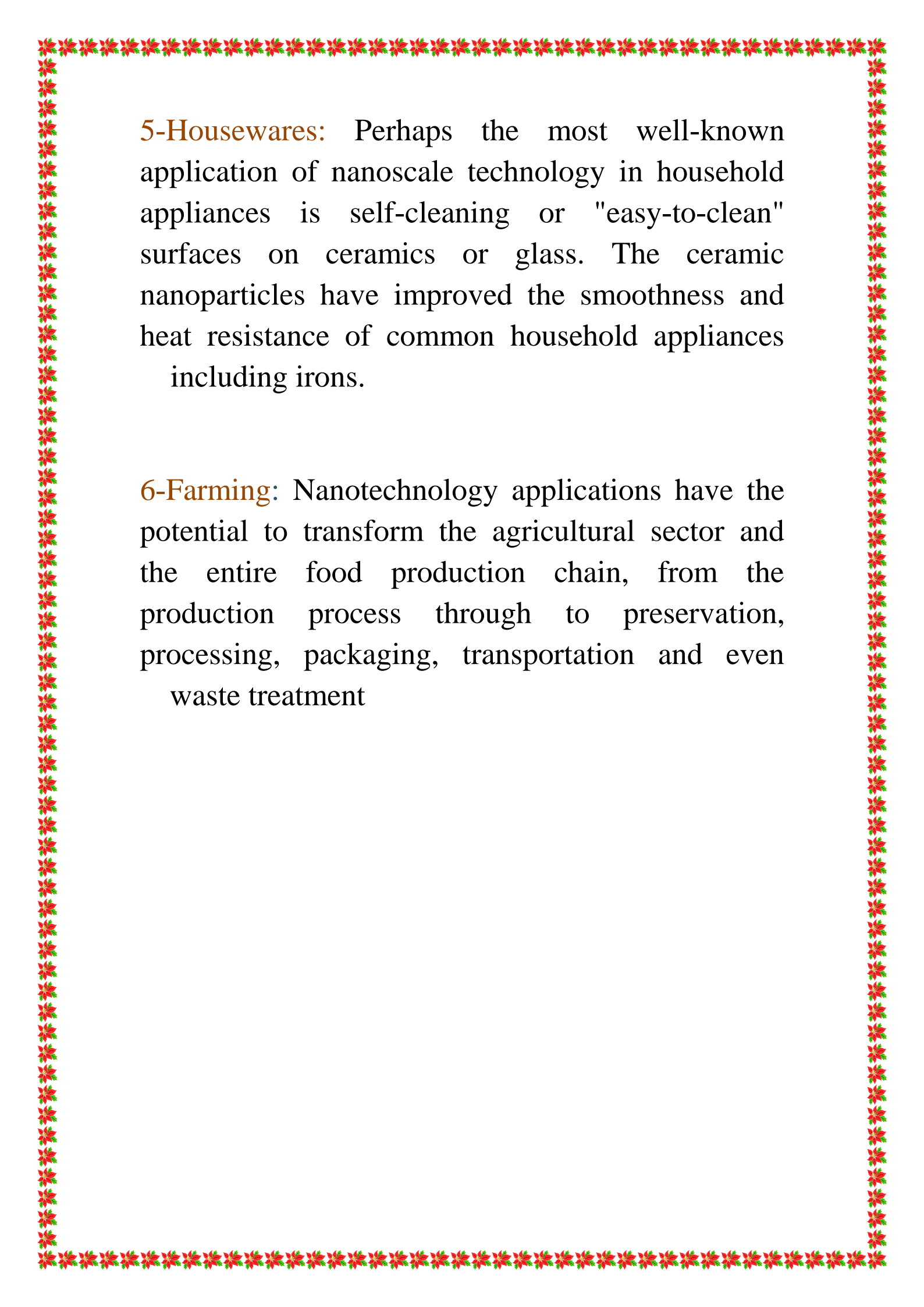
3.1 space:Lighter, stronger materials will be a huge benefit in aircraft manufacturing, increasing performance efficiency.

3.2 Constructions: Nanotechnology has the power to increase the rate of construction and make it a faster, cheaper and more versatile process. The automation process of nanotechnology may allow construction to create structures and buildings ranging from advanced homes to massive skyscrapers much faster and at a much lower cost.

3.3 Strainers:As a result of using nanotechnology applications, refineries producing materials, including steel and aluminum, will be able to remove and eliminate any impurities in the materials they produce .

3.4 Manufacture of vehicles: Just as in spacecraft manufacturing, lighter, stronger materials are a great asset in making vehicles and cars that are faster and safer. Combustion engines also benefit from parts that are rigid and heat-resistant.

4-makeup: One area of application of nanotechnology is in sunscreens. The traditional UV protection method suffers from its lack of long-term stability. However, sunscreens based on mineral nanoparticles, including titanium dioxide, provide more benefits.



5-Housewares: Perhaps the most well-known application of nanoscale technology in household appliances is self-cleaning or "easy-to-clean" surfaces on ceramics or glass. The ceramic nanoparticles have improved the smoothness and heat resistance of common household appliances including irons.

6-Farming: Nanotechnology applications have the potential to transform the agricultural sector and the entire food production chain, from the production process through to preservation, processing, packaging, transportation and even waste treatment