Nanoscience and nanotechnology have indeed emerged as fascinating fields of study, with numerous applications in various sectors. Nanoparticles, which are particles with sizes ranging from 1 to 100 nanometers, possess unique properties that make them valuable in several industries. These properties include their large surface area, which enhances their reactivity and functionality. The synthesis of nanoparticles can be achieved through different technologies, such as chemical and biological processes.

In recent years, the use of green chemistry routes has gained popularity due to its environmentally friendly nature. Green chemistry methods aim to produce nanomaterials with improved physiochemical properties for use in fields like medicine, physics, and biochemistry. AgNPs have been extensively investigated and utilized. AgNPs have distinct properties that make them highly valuable in scientific research. The current review you mentioned discusses the modern expansion of AgNP synthesis, characterization, mechanisms, as well as their global applications and limitations.

The review likely explores the various methods for synthesizing silver nanoparticles, including their characterization techniques to determine their size, shape, and purity. It may also delve into the mechanisms behind their formation and the reasons for their widespread use in different industries. Additionally, the review may touch upon the limitations or challenges associated with the use of AgNPs, such as their potential environmental impact. Overall, the review aims to provide a comprehensive understanding of the synthesis, characterization, and applications of silver nanoparticles, shedding light on their potential benefits and drawbacks.

AgNPs (silver nanoparticles) have already found numerous applications in commercial and medical fields due to their unique properties. They possess antibacterial, antifungal, antiviral, and anti-inflammatory properties, making them valuable in wound dressings and other medical products. Additionally, recent research has uncovered their osteo-inductive properties, suggesting potential applications in bone regeneration. However, there are still uncertainties surrounding the mechanisms and biological interactions that drive these properties. One particular area that requires further investigation is the relationship between the size and shape of AgNPs and their biological properties and toxicity. Understanding this correlation is crucial as the use of AgNPs continues to expand.

To ensure the safe and effective use of AgNPs in medical applications, it is necessary to fully elucidate the mechanisms underlying their efficacy and toxicity. This research will be vital in determining the appropriate use and dosage of AgNPs, ultimately paving the way for their widespread medical application.

The objectives of our work are (i) to be prepareAgNPsnano particles using those process such as“bottom-up” approach or a “top-down” approach. (ii) to study the structural, transmission and surface properties of the prepared AgNPsnano particles.