

## **Abstract**

Gold and silver nanoparticles (AuNPs and AgNPs) have attracted significant attention due to their unique optical and morphological properties, making them suitable for various applications in medicine, catalysis, and sensing. In this study, we synthesized AuNPs and AgNPs using the laser ablation technique in a liquid medium, eliminating the need for chemical reducing agents. The optical properties of the nanoparticles were analyzed using UV-Vis spectroscopy, revealing distinct surface plasmon resonance (SPR) peaks characteristic of gold and silver nanoparticles. Morphological characterization was performed using scanning electron microscopy (SEM) and transmission electron microscopy (TEM), confirming particle size distribution and shape. Additionally, dynamic light scattering (DLS) was employed to assess the hydrodynamic diameter and stability of the nanoparticles. The results indicate that laser ablation is an effective and environmentally friendly method for producing stable and well-dispersed noble metal nanoparticles with tunable optical properties. These findings contribute to the growing body of research on nanoparticle synthesis and their potential applications in nanotechnology.