

## Time-dependent effect in green synthesis of silver nanoparticles.

### ABSTRACT

The application of "green" chemistry rules to nanoscience and nanotechnology is very important in the preparation of various nanomaterials. In this work, we successfully developed an eco-friendly chemistry method for preparing silver nanoparticles (Ag-NPs) in natural polymeric media. The colloidal Ag-NPs were synthesized in an aqueous solution using silver nitrate, gelatin, and glucose as a silver precursor, stabilizer, and reducing agent, respectively. The properties of synthesized colloidal Ag-NPs were studied at different reaction times. The ultraviolet-visible (UV-vis) spectra were in excellent agreement with the obtained nanostructure studies performed by transmission electron microscopy (TEM) and their size distributions. The prepared samples were also characterized by X-ray diffraction (XRD) and atomic force microscopy (AFM). The use of eco-friendly reagents, such as gelatin and glucose, provides green and economic attributes to this work.

**Keyword:** Silver nanoparticles; Gelatin; Green chemistry; Time-dependent effect; Ultravioletvisible spectra.