

Green synthesis and characterization of silver/chitosan/polyethylene glycol nanocomposites without any reducing agent.

ABSTRACT

This paper presents the green synthesis of silver nanoparticles (Ag NPs) in aqueous medium. This method was performed by reducing AgNO₃ in different stirring times of reaction at a moderate temperature using green agents, chitosan (Cts) and polyethylene glycol (PEG). In this work, silver nitrate (AgNO₃) was used as the silver precursor while Cts and PEG were used as the solid support and polymeric stabilizer. The properties of Ag/Cts/PEG nanocomposites (NCs) were studied under different stirring times of reaction. The developed Ag/Cts/PEG NCs were then characterized by the ultraviolet-visible (UV-Vis) spectroscopy, X-ray diffraction (XRD), transmission electron microscopy (TEM), scanning electron microscopy (SEM) and Fourier transform infrared (FTIR) spectroscopy.

Keyword: Silver nanoparticles; Nanocomposites; Chitosan; Polyethylene glycol; Green chemistry.