

# Industrial cleaner production of well-stabilized silver nanoparticles using environmental benign polymer

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## Abstract

It should now be appreciated that, there is an unmet need for a low-cost technique and chemicals as well for the production of well-stable, high concentration, green synthesized colloidal silver nanoparticles (AgNPs) having controlled size suitable for industrial applications. Starch is one of the natural polysaccharide, available, inexpensive and benign biopolymer that is used for the production of AgNPs. The challenge in this instant work is to make starch as much as soluble in cold water without any change in its morphological structure. To do such challenge, sodium form of native rice starch is prepared by the aid of alkali at room temperature. The end product is called sodium starchate that act as both well-stabilizer and reducing agent for the formed AgNPs. Characterization of AgNPs was performed using, UV-vis, TEM and EDX tools. Silver nanoparticles of different concentrations (100, 500, 1000 and 2000ppm) and size (6-20nm) have been successfully prepared in one path at 60°C in short time. Additionally, the green synthesized silver nanoparticles can be used widely in variety of health care, medicinal, and industrial antimicrobial agent for promoting healing of wounds and reducing inflammation associated with burns. Salient feature and characteristics together with unique properties would render the newly formed silver nanoparticles based products competitive in local, regional and international markets because the stability of the formed colloidal silver nanoparticles reaches for more than 2 years without any further agglomeration.

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## Biography:

Dr. Moustafa M.G. Fouda is currently Professor/Textile Chemistry and Technology at National Research Center, Egypt. He earned his BSc in Chemistry/Mansoura University, Egypt (1995). His interest in this field of science motivated him for further studies and leads him to finish his Master in Organic Chemistry/Helwan University, Egypt (1999). Along the way, he has specialized in Organic Chemistry and Textile Technology and got this expertise from National Research Center, Egypt. In 2005, he got his PhD in Natural Science/Duisburg-Essen Uni., Germany. He has applied his know-how technique in Medical textile

applications, Nanotechnology; Synthesis, Characterization and Utilization of Metallic Nanoparticles and its Application as Antimicrobial finishing agent for cellulose based textiles, wound care managements. He authored the book "Use of Natural Polysaccharides in Medical Textile Applications". To date, he has 60 international publications with over of 1072 citations (h-index 21) and 4 patents. He has been invited in several speaking engagements both locally and internationally. He is reviewer in several reputable international journals