

PLASMA-CHEMICAL SYNTHESIS OF SILVER NANOPARTICLES IN THE PRESENCE OF CITRATE

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Abstract. The contact non-equilibrium low-temperature plasma technique is used to synthesize silver nanoparticles (AgNPs) employing trisodium citrate as capping agent. The AgNPs were characterized using UV-Vis spectroscopy, an absorption band at 400-440 nm confirmed nanoparticles formation. The effect of reaction conditions such as the concentration of silver ions, molar ratio Ag/citrate, irradiation time on the synthesis of AgNPs was studied. Characterization of AgNPs was carried out using scanning electron microscopy, X-ray diffraction and zeta potential analysis. The average size of formed silver particles was below 100 nm. XRD analysis revealed that the particles were face-centred cubic. The synthesized silver nanoparticles had significant antibacterial activity on two strains of Gram bacteria.

Keywords: nanoparticle, silver, stabilization, plasma, antibacterial.

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