

# Preparation of Gold Nanoparticles Using 2-Ethoxyethanol, 2-Methoxyethanol and 1,3-Butyleneglycol Supported in Chitosan

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**Abstract** The aim of this work was to prepare and characterize several properties of Au nanoparticles colloids prepared by the “chemical liquid deposition” method, which involves the co-deposition of metallic Au with organic vapors (2-ethoxyethanol, 2-methoxyethanol and 1,3-butyleneglycol at 77 K). AuNPs supported on chitosan were performed by solvated metal atom dispersed method. Then, colloids were characterized by transmission electron microscopy (TEM), electron diffraction (ED), UV–Vis spectroscopy, electrophoretic mobility, physical stability, medium–far infrared spectroscopy and thermogravimetric analysis. These studies had demonstrate that Au nanoparticles solvated with 1,3-butyleneglycol and 2-ethoxyethanol, shows higher stability, due to their high dielectric constant and a better NPs solvation. TEM analysis showed a size distribution between 4.61 and 48.8 nm. From ED, a face-centered cubic structure was found. UV–Vis analysis showed lower stability of nanoparticles solvated with 2-methoxyethanol. FTIR spectra showed that the solvent was incorporated and surround the Au NPs. The thermograms shows that thermal decomposition of AuNPs–chitosan decreases with the metal presence. Bioassays of acute toxicity on fishes with AuNPs–chitosan with 1,3-butyleneglycol were carried out due to the lower toxicity. The bioassay showed that

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