

COMPARISON OF L-ASCORBIC ACID AND OXALIC ACID DIHYDRATE AS CHEMICAL REDUCERS IN THE SYNTHESIS OF GOLD NANOPARTICLES STABILIZED WITH TANNIC ACID IN THE DEEP EUTECTIC SOLVENT OF CHOLINE CHLORIDE-UREA

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Chemical reduction is a method of synthesizing metal nanoparticles using a bottom-up mechanism. Various chemical compounds have been used as chemical reducing agents, such as trisodium citrate, sodium borohydride (NaBH₄), squaric acid, oxalic acid, among others. Some syntheses are stabilized or controlled by adding polymers or other compounds, such as surfactants. The above examples were carried out in aqueous media. Currently, the synthesis of AuNPs in other, more environmentally friendly solvents such as DES has been explored.

DES (Deep Eutectic Solvents) are a type of solvent that are mostly biodegradable, making them an ecological and economical alternative. In addition, they are relatively inexpensive. These solvents are eutectic mixtures with hydrogen bond donors (HBD) and hydrogen bond acceptors (HAB).

This research contributes to the study of the control of tannic acid-stabilized gold nanoparticle synthesis and the exploration of L-ascorbic and oxalic dihydrate acids as chemical reducing agents in DES formed by choline chloride and urea. The nanoparticles were characterized by UV-vis, SEM/TEM, and light scattering.

Keywords: DES, Gold nanoparticles, Tannic acid

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