

Gold nanoparticles

AuNPs

Gold nanoparticles (colloids, AuNPs) are widely used in many fields of science due to their increased surface areas and high density of edge and corner atoms. Gold nanoparticles can be used as chemical probes, catalysts and electrocatalysts as well as materials with unique optoelectronic properties.

Realization:

The synthesis of the AuNPs is carried out as follows. An aqueous solution of a sodium lignosulfonate is prepared by dissolving the weighted amount of the solid sodium lignosulfonate (LS) in distilled water. The two solutions (sodium lignosulfonate solution and gold solution) are mixed 1:1 (v/v) and allowed to react for few days.

After mixing the solution of sodium lignosulfonate and the solution of gold precursor, the mixture can be observed to change its color gradually (after aprox. 7 days) from tea-color to ruby (smaller nanoparticles) or blue (bigger nanoparticles).

Equipment:

- Beaker,
- Magnetic stirrer,
- Dipole,
- Automatic pipette.

Reagents:

- Gold chloride potassium salt solution (KAuCl_4), concentration of gold ions of 1 g/L,
- Technical sodium lignosulfonate (LS) - 25 mg,
- Distilled water.

