

# Gold-copolymer nanoparticles: Poly( $\epsilon$ -caprolactone)/poly(N-vinyl-2-pyrrolidone)

## Biodegradable triblock copolymer as stabilizer and reductant

Leiva, Angel

Saldías, César

Quezada, Caterina

Toro-Labbé, Alejandro

Espinoza-Beltrán, Francisco J.

Urzúa, Marcela

Gargallo, Ligia

Radic, Deodato

Block copolymers have been extensively used in the synthesis of many types of nanoparticles, where generally are considered as stabilizer and protective agent. In this work a double function of the biodegradable triblock copolymer poly(N-vinyl-2-pyrrolidone)-b-poly( $\epsilon$ -caprolactone)-b-poly(N-vinyl-2-pyrrolidone), (PVP-PCL-PVP) in the gold nanoparticle-copolymer synthesis is reported. Gold-copolymer composed nanoparticles were synthesized using the triblock copolymer (PVP-PCL-PVP) and potassium tetrachloro aurate (III), both in aqueous solution. The copolymer work as both, reductant and stabilizer agent. The obtained nanoparticles were characterized by FT-IR, dynamic light scattering (DLS), atomic force microscopy (AFM) and transmission electron microscopy (TEM). The shape and the size of the obtained nanoparticles are dependent on the copolymer/salt of gold concentration ratio used in the synthesis. To complement the experimental results about the copolymer role in the nanoparticles syn