SYNTHESIS AND CHARACTERIZATION OF ARSONIC ACID POLYELECTROLYTES USED FOR THE SYNTHESIS AND STABILIZATION OF Au AND Ag NANOPARTICLES.

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There is a large variety of chemical methods for synthesis of nanoparticles, these methods have the objective of controlling the size and shape of nanoparticles[1]. A widely used method for nanoparticles synthesis is the colloidal method which involves the use of high toxicity and elevated chemical reactivity reducing agents such as hydrazine and sodium borohydride. Green synthesis of nanoparticles employs not toxic reducing agents or even plant extracts [2]. A novel strategy for green synthesis is the use of polyelectrolytes as reducing agents and stabilizers [3]. In this work we report the synthesis of arsonic acid polyelectrolytes by chemical modification of poly(p-acryloyloxibenzaldehyde) with ortho- and para-aminophenylarsonic acids, obtaining different degrees of chemical modification. The polyelectrolytes were characterized by the spectroscopic techniques of FT-IR and $^1$H-NMR and were used as reducing agents and stabilizers for Au and Ag nanoparticles. The nanoparticles were studied by TEM showing control of size and shape and high stability in colloidal solution. The resulting Au and Ag nanoparticles using poly(p-ACBA) modified with o-aminophenylarsonic acid have a quasi-spherical shape and average size of 6 and 10 nm, respectively. The Au and Ag nanoparticles synthetized with poly(p-ACBA) modified with p-aminophenylarsonic acid have a quasi-spherical form and an average size of 20 and 8 nm.

Keywords: Polyelectrolyte, Nanoparticle, Arsonic

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