

# Spontaneous adsorption of gold nanoparticles by polyelectrolyte thin films

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Nanocomposed films constituted by gold nanoparticles immobilized onto polyelectrolytes were obtained and studied. To obtain the films, amino terminated silicon wafer surfaces were put in contact with aqueous solution of polyelectrolytes derived from Poly(maleic anhydride-alt-styrene) containing aryl and amine-alkyl groups in the side chains, in this condition the adsorption of macromolecules was achieved. The effects of the chemical nature of the side chains and ionic strength on the amounts of adsorbed polyelectrolytes were studied by ellipsometry. The adsorption of polyelectrolytes increases with increasing ionic strength in agreement with the screening-enhanced adsorption regime; the results are discussed considering the steric hindrance of the side chains and flexibility of the polymers. A spontaneous adsorption process of nanoparticles onto polyelectrolyte films took place when these last were immersed in a gold nanoparticles suspension. The adsorption amounts were qualitatively e