

Surface-enhanced Raman scattering activity of negatively charged bio-analytes from a modified silver colloid

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© 2016 Taylor and Francis Group, LLC. A modification to the traditional synthesis of reduced silver metal nanoparticles with hydroxylamine hydrochloride is proposed. The new colloid, obtained by decreasing the concentration of hydroxide and chloride ions, is stable in a large pH range. The low negative surface charge density of the nanoparticles allowed to obtain surface-enhanced Raman scattering (SERS) spectral activity of bio-analytes containing negatively charged groups in aqueous solution. The new colloidal system, characterized by electronic spectroscopy, atomic force microscopy, and zeta potential measurements, was used in the SERS study of the bio-analytes aspartic acid, four oligopeptides, one polypeptide and a probe, the organic dye fluorescein.