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Green-synthesis of anisotropic gold nanoparticles for Surface Enhanced Raman Spectroscopy and bio-applications

Gold nanoparticles (Au-NPs) present low toxicity and remarkable optical and electronic properties, so their integration in biological systems could prove very useful, either as a probe for imaging or as a drug carrier for medical therapy applications[1]. The anisotropic nanoparticles synthesis methods often include toxic surfactants like CTAB (Cetyl trimethylammonium bromide) that has to be eliminated before their application in biological environment. Alternative methods consist in using plant extracts as reducing agents[2, 3]. In this work, we present the biosynthesis of Au-NPs using Aloe Vera leaf extract. In a first set of experiments, the concentration of reducing agents is modified and the distributions in size, shape, crystalline structure and quantity of Au-NPs are systematically analyzed using transmission and scanning electron microscopy and atomic force microscopy. In a second phase, the impact of the synthesis duration on the particles size and shape has been studied. Finally, UV-vis-NIR absorption spectroscopy measurements have been performed, highlighting the plasmonic properties of the nanoparticles. Surface Enhanced Raman Spectroscopy (SERS) measurements are under investigation.

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[3] S.P. Chandran, M. Chaudhary, R. Pasricha, A. Ahmad, M. Sastry, *Biotechnol. Prog.*, 2006, **22**, 577–583

Choix de session parallèle

5.3 SFO: Metamatériaux, plasmonique

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