

III Simposio de Investigaciones en Quiralidad

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Transferencia de quiralidad en nanopartículas metálicas con ligando biomolecular

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Resumen de la plática

The optical activity that emerges in hybridized systems conformed by a core of metallic nanoparticle, originally achiral, and a monolayer of chiral biomolecules as ligands is a demonstration of chirality transfer at the nanoscale. In order to elucidate the exact mechanisms of this phenomenon more experimental data must be acquired, in particular by circular dichroism. In this work we present the experimental results obtained on optical activity and vibrational characteristics of L- and D-cysteine adsorbed on achiral gold, silver and copper nanoparticles (1-5 nm diameter) synthesized by microwave assisted hydrolysis. While our results of electric circular dichroism reveal the excitations mixing electronic states from metal, sulphur, and other biomolecule atoms, the complementary experimental information obtained from Raman spectroscopy determine the conformation of the ligand on the metallic surface. Combined, our data sheds light on the nature of the metal-thiolate interface for each case and the transfer of chiral information from the ligand to the metallic core.