

Surface-enhanced vibrational study of azabipiridyl and its Co(II), Ni(II) and Cu(II) complexes

Campos-Vallette, M.

Saavedra, M. S.

Diaz, G. F.

Clavijo, R. E.

Martinez, Y.

Mendizabal, F.

Costamagna, J.

Canales, J. C.

García-Ramos, J. V.

Sanchez-Cortés, S.

The FT-Raman spectra and surface-enhanced Raman scattering (SERS) on silver colloid of the azabipiridyl ligand and its Co(II), Ni(II) and Cu(II) complexes are reported. A resonance Raman (RR) study of the solids and a surface-enhanced infrared absorption (SEIRA) study were also accomplished. The spectral analysis indicates that there is a remarkable enhancement of the Raman spectra induced by the presence of an Ag surface. The complex-surface interaction is verified by the appearance of a $\nu(\text{Ag-N})$ band at about 216 cm^{-1} . A general energy increasing of most of the molecular modes by surface effect is associated to a charge transfer from the colloidal silver surface, thus, leading to an important contribution of the charge transfer mechanism to the SERS enhancement, which is corroborated by the resonant effect observed at different excitation lines. From the analysis of the SERS spectra a preferential planar parallel orientation of the complexes on the surface is deduced, in such a way th