

# Vibrational study of sub-2,3-boronnaphthalocyanine chlorine adsorbed on metal surfaces

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Fourier transform infrared spectroscopy (FTIR), reflection-absorption infrared spectroscopy (RAIRS) and surface-enhanced Raman spectroscopy (SERS) were applied to study the adsorption of the macrocycle sub-2,3-boronnaphthalocyanine chlorine (subBCINPc) on surfaces of different nature. The analysis of the results obtained with the above techniques as well as a semiempirical calculation suggest the existence of a significant although weak adsorbate-substrate interaction and that the compound is oriented with the Cl atom toward the metallic surface. The vibrational study was completed with a normal co-ordinate analysis (NCA). © 2003 Elsevier Science B.V. All rights reserved.