Vanadyl naphthalocyanine and vanadyl porphine phenyl substituted macrocycles: SERS and thin film organisation studies

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Infrared (middle and far) and Raman spectroscopy were used to study the adsorption of vanadylnaphthalocyanine and vanadylporphine tetraphenyl substituted macrocycles adsorbed onto metallic surfaces. The IR spectra of the compounds deposited onto a KBr monocrystal and onto a smooth copper surface suggest a weak adsorbate-substrate interaction and no significant structural modifications imposed by surface effect. The reflection-absorption IR (IRRAS) spectra allowed to propose a preferential molecular orientation of the molecules deposited onto the copper surface. Surface-enhanced Raman spectral data obtained on colloidal Ag as well as Ag island films suggest a weak macrocycle interaction and small structural modifications of the naphthalocyanine complex on the surface. The whole spectral data indicate that the naphthalocyanine complex is orientated with the naphthalocyanine plane face-on to the surface. In both complexes the vanadyl group is perpendicular to the coordination site and opp