Molecular Interactions of adsorbed Malonic Acid on Zinc Surfaces

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Carboxylic acids have the usual features of polymeric coatings. The development of new functionalized layers depends upon the understanding of these groups interact with metal surfaces. Despite several investigations on the adsorption of carboxylic molecules, the information provided still insufficient for full understanding of the adsorption mechanism. Studies have shown that the metal surface plays a significant role in malonic acid adsorption interfacial bonding and the formed monolayer [1]. However, the deposition of the organic molecules is complex and depends on the substrate, the treating solution and the interactions between the organic molecules. The dependence of these and other factors (parameters) for the layer deposition and formation enables the operation information of the binding properties of the absorbed molecules which can incorporate features that specific organic groups. Of the many techniques used to study the adsorption of molecules on metal substrates were adopted techniques higher sensitivity and thus more informative regarding the organic groups: X-ray photoelectron spectroscopy (XPS) and Fourier transform infrared (FTIR). The XPS has been successfully used to obtain quantitative information describing different surface properties. Recent studies have shown that the infrared spectroscopy is a tool to study the interfacial chemistry and also to allow determination of the orientation of the chain molecules at the interface. The interfacial bonding properties of malonic acid ($C_3H_4O_4$), molecules with pure zinc sheet was examined. The composition and typical molecular structure of the assemblies on differently zinc samples before and after immersion treatment were examined.