

ANOMALOUS BEHAVIOUR OF SURFACE CHEMICAL SPECIES IN
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Considerable effort has been recently given to the development of efficient and low cost electrodes for solid polymer fuel cells. The high price of useful catalyst, like platinum and its alloys, resulted in the demand of high performance electrodes associated to a platinum clusters distribution such to maximise the surface to volume ratio, and to provide a suitable catalyst-carbon support interaction.

In this work an effort has been given to determine a spectroscopic feature apt to provide useful correlation between the system performances and material physical and chemical characteristics.

The evolution of surface properties of carbon supported Pt-black electrodes were studied by XPS following the steps of preparation process.

Since some spectra features were suggesting a differential charging problems indicating the presence of bad electrical contact, undesirable for well performing electrode, we probed the surface electrical response of the sample by means of the charging shift in the photoemission spectra induced by an external bias.

This method allowed us to identify and characterise the chemical species that were responsible for the anomalous behaviour of the electrode and thus to find an observable feature that correlates to the performance of the electrode.