XPS and NICISS as a Combined Spectroscopic Technique for Atomic Investigation

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Abstract

X-ray Photoelectron Spectroscopy (XPS) also known as Electron Spectroscopy for Chemical Analysis (ESCA) is the most widely used surface analysis technique because it can be applied to a broad range of materials and provides valuable quantitative and chemical state information from the surface of the material being studied. On the other hand neutral impact collision ion scattering spectroscopy (NICISS) is a powerful spectroscopic technique in microanalysis and characterization of materials, allows for depth profiling of a sample giving an elemental concentration profile to a depth of 40 nanometres, with a depth resolution close to 0.3 nm near the surface. NICISS can be applied to solid samples, polymers and liquids. It is one of the most sensitive spectroscopic techniques associates with the light atom targets. In this study, the use of both XPS and NICISS to investigate the presence of dye molecules in the surface and interface of the application of dye sensitized solar cells is presented.

Keywords: XPS, NICISS, Dye Sensitized Solar Cells