High Resolution XPS Chemical State Imaging of Fuel Cell Membranes

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Nafion based membranes are being developed for applications in fuel cells. These fuel cell membranes are multi-layer structures with a permeation membrane and two thin layers of noble metal in a polymer matrix acting as the anode and the cathode of the fuel cell. The cross-sectional chemical analysis of these membranes, both new and used, may be extremely useful in improving the performance of the fuel cells. In this study we will highlight new and advanced scanning XPS microprobe based techniques to provide cross-sectional line scans and high resolution chemical mapping of these membranes. The line scan and chemical mapping results elucidate the modifications of the membrane chemistry as a function of use.

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