

XPS-depth analysis using C₆₀ ion sputtering of buried interface in plasma-treated ethylene-tetrafluoroethylene-copolymer (ETFE) film

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Ethylene-tetrafluoroethylene-copolymer (ETFE) films with the surface modified layer, which shows the high hydrophilicity and strong adhesion, have been obtained by two-step treatment using the plasma discharge of hydrocarbon and oxygen-mixed gas. The relation between the adhesion and the modified state near the film surface has been also investigated by utilizing an XPS-depth profile and C 1s peak analysis with buckminsterfullerene (C₆₀)-ion beam. This analytical method enables chemically undamaged XPS analysis of organic materials with the high-depth resolution of several nanometers. In comparison, the in-depth analysis using argon ion beam was also performed. The adhesion layers treated as the first step, which are buried under the hydrophilic layer formed as the second step, were evaluated by comparing samples for which the plasma condition was systematically changed. Copyright © 2008 John Wiley & Sons, Ltd.

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