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# Quantitative chemical derivatization technique in time-of-flight secondary ion mass spectrometry for surface amine group on plasma-polymerized ethylenediamine thin films

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A chemical derivatization technique in time-of-flight secondary ion mass spectrometry (ToF-SIMS) has been developed to quantify the surface density of amine groups of plasma-polymerized ethylenediamine (PPEDA) thin film deposited on the glass surface by inductively coupled plasma chemical vapor deposition (ICP-CVD)[1]. Chemical tags of 4-nitrobenzaldehyde (4-NBA) or pentafluorobenzaldehyde (PFBA) were hybridized with the surface amine group and detected as characteristic molecular secondary ions in ToF-SIMS spectra. The surface amine density was controlled in a reproducible manner as a function of deposition plasma power and was also quantified by using UV-visible spectroscopy[2]. A good linear correlation was observed between the results of ToF-SIMS and UV-visible measurements as a function of plasma power. It shows that the chemical derivatization technique in ToF-SIMS analysis would be useful in quantifying the surface density of specific functional groups that exist in the organic surface.

[참고문헌]

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