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Conversion from SIMS depth profiling to compositional depth profiling of multi-layer films

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Secondary ion mass spectrometry (SIMS) was fascinated by a quantitative analysis and a depth profiling and it was convinced of a in-depth analysis of multi-layer films. Precision determination of the interfaces of multi-layer films is important for conversion from the original SIMS depth profiling to the compositional depth profiling and the investigation of structure of multi-layer films.

However, the determining of the interface between two kinds of species of the SIMS depth profile is distorted from original structure by the several effects due to sputtering with energetic ions.

In this study, the feasibility of 50 atomic % definition for the determination of interface between two kinds of species in SIMS depth profiling of multilayer films was investigated by Si/Ge and Ti/Si multi-layer films. The original SIMS depth profiles were converted into compositional depth profiles by the relative sensitivity factors from Si-Ge and Si-Ti alloy reference films. The atomic compositions of Si-Ge and Si-Ti alloy films determined by Rutherford backscattering spectroscopy (RBS).

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