【포스터 : 표면06】

SIMS Round Robin Test(RRT) for the Quantitative Analysis of Boron in Si.

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Quantitative analysis of the minor impurities in Si substrate is one of the most important issues in SIMS analysis. Ion implanted reference materials are generally used for SIMS quantification. However, a boron ion implanted standard reference material (NIST SRM No. 2137) is the only certified reference material(CRM) which can be used as a primary standard material as stated in the ISO procedure for the SIMS quantification of B(ISO-14237). In the procedure, uniformly B-doped Si certified by a primary reference material can be used as secondary reference materials.

Silicon thin films with uniformly doped B impurities were fabricated by ion beam sputter deposition as a reference material for the quantification of boron concentration in Si by SIMS. The boron concentration of the standard specimen was measured by inductively coupled plasma mass spectrometry(ICP-MS) with isotope dilution method. It was well correlated with the SIMS results using the NIST SRM within the stated error boundary1

A domestic round robin test for the SIMS quantification of boron concentration was performed by using the B doped Si reference material. The relative sensitivity factor was measured by the integration of Si and B signals in the saturated region, where the initial transient region and interface region were excepted in the integration. The quantification procedure and RRT results will be presented.

[1] C. J. Park, K. J. Kim, M. J. Cha and D. S. Lee, Analyst, 2000(003), 493-497(2000)