Activation analysis of an extremely small quantity of nitrogen in silicon using a cyclotron

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Abstract

In the process of the finding that an extremely small quantity of nitrogen in silicon contributes to suppression of lattice defect, its density control has attracted much attention. The JEIDA working group and their coworkers have promoted standardization of the methods of determining a nitrogen density in silicon. It is pointed out that the charged particle activation analysis (CPAA) is necessary in extreme microanalyses of components in those relevant materials. In fact, however, there are only a few facilities in Japan where the analysis is done. At S.H.I. Examination and Inspection Ltd., and the Nishina memorial cyclotron center, we irradiated proton beams onto the samples, which we were provided by JEIDA. By performing quantitative analysis of nitrogen thorough different sample processes, which are called the wet process and the dry process, we made a comparison between them. We will report the features of the two analytical methods and the respective results.